Global Business and Management Research: An International Journal
Vol. 13, No. 4s (2021)

The Effect of Board Characteristics towards the Financial Performance among Malaysian Public Listed Companies

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Abstract
Purpose: The aim of this study is to explore the effect of board characteristics towards financial performance in Malaysian context.
Design/methodology/approach: Based on the sample of 45 active Malaysian listed companies in R&D for the period 2017 to 2019, this study employs linear regression to analyse the relationship between board characteristics and financial performance.
Findings: The outcome of board characteristics towards the financial performance are significant.
Research limitations/implications: This study does not represent the broad population of companies in Malaysia. This is because the population of this study is limited to only 45 active Malaysian listed companies in R&D. Hence, the findings from the study could not be generalised to other companies in Malaysia.
Practical implications: This study contributes by highlighting the importance of corporate governance towards the financial performance of Malaysian listed companies that are actively involved in R&D.
Originality/value: This study represents the first attempt to study the effect of board characteristics towards financial performance of active Malaysia listed companies in R&D.
Paper type: Research paper

Keywords: Board characteristics, Corporate governance, Financial performance, R&D intensity, Malaysia

Introduction

Corporate governance has been one of the most investigated research in the social science realm for more than three decades (Bawaneh, 2020). Previous scholars have explored the effect of corporate governance such as investigating the impact of corporate governance on firm financial performance (Malik & Makhdoom, 2016; Rutledge, Karim & Lu, 2016; Akisimire, Masoud, Baisi & Orobia, 2016; Gafoor, Mariappan & Thyagarajan, 2018; Arulvel &

Pratheepkanth, 2019; Al-ahdal, Alsamhi, Tabash & Farhan, 2020). Hence, what is corporate governance and why is it important?

Kyereboah-Coleman and Nicholas-Biekpe (2005) defined corporate governance as the relationship of the firm and its shareholders. Meanwhile, Farrar (2008) explained that the word “governance” derived from Latin language which arise from “gubernare” and “gubernator” in which referring to the captain of the ship. In other words, corporate governance involves the function of direction instead of control (Dibra, 2016). Dibra (2016) further stated that the corporate governance is a critical aspect of an organisation (Dibra, 2016). Besides, Bawaneh (2020) elucidated that corporate governance is an important element for rapid economic growth and function in attaining valuable transparency and business collectively.

Alqatan, Chbib and Hussainey (2019) stated that companies have been struggling with financial scandals over the past four decades. As a result, these financial scandals have led to intensive research on:

a) 2008-2009 global financial crisis which impacted the corporate governance (Dibra 2016; Rathnayake & Sun, 2017).

b) features and characteristics of corporate governance (Alqatan et al,. 2019).

c) failure in corporate governance such as Enron which was the example of poor and ineffective internal control that resulted in financial failure (Bawaneh, 2020).

Given many corporate scandals which were introduced to the public about the insufficient and poor supervision of corporate governance, the issue of board of directors occupies an essential role in the corporate governance developments (Farhan, Tabash, Almaqtari & Yahya, 2020). Hoseini, Gerayli and Valiyan (2019) explained that the board of directors are the most important part of the corporate governance system. Since board plays various functions in an organisation, their decision possesses a significant impact towards the corporate functions and organisation’s stakeholders (Hoseini, et al., 2019). Moreover, Al Azeez, Sukoharsono and Andayani (2019) describes that the boards are an important catalyst for the smooth functioning and facilitation of the organisations. Similarly, Bawaneh (2020) stated that the board of directors are the crucial component in decision and policy-making process.

Given the increasing magnitude of boards in research, it is crucial to identify the board characteristics which make a board more functional from another (Mohammed, 2018). Despite many previous scholars have examined the impact of board characteristics, there is uncertainty and no clear evidence that board characteristics will influence the financial performance of companies particularly those actively involved in R & D.

Hence, the characteristics of the board of directors are used in this study to examine their influence towards the firm performance. In this study, the board characteristics comprises of education of board, board size, board meetings, age of board members and board gender are used to examine their relationship towards the firm performance.

Literature Review

Critical Analysis of Past Scholars

Globally, many previous scholars have examined the effect of board characteristics towards financial performance. For example, Chaudhary and Gakhar (2018) explored the effect board size and frequency of board meetings towards the firm’s financial ratio based on automobile companies from India. From their study, it is concluded that both board size and frequency of board meetings are not statistically significant towards all the financial performance measures. The study indicates that there is no conclusive relationship between the board size, frequency of board meeting and firm financial performance. Moreover, Khan, Yaseen, Mustafa and Abbasi (2019) explored the correlation between corporate governance which comprises of board size and outside directors towards firm's Tobin's Q. Using 130 out of 384 non-financial

firms in Pakistan from the fiscal year 2012 to 2015, Khan et al. (2019) concluded that board size has a significant association towards the Tobin's Q while the outside directors possess insignificant relationship towards Tobin's Q.
In addition, Song, Yoon and Kang (2020) studied the relationship between board diversity which includes gender diversity and age diversity towards firm's Tobin's Q using samples from US lodging industry. Song et al. (2020) concluded that gender diversity is positively significant towards the firm performance while age diversity possesses insignificant effect towards the firm performance. Furthermore, Al-ahdal, Alsamhi, Tabash and Farhan (2020) examined the associations between corporate mechanism such as board accountability index, transparency and disclosure index and audit committee index and financial performance which are measured by ROE and Tobin Q. Using a sample of comprising 53 non-financial public listed companies from India and 53 non-financial public listed companies from Gulf Corporation Council (GCC) from financial year 2009 to 2016, Al-ahdal et al. (2020) concluded that board accountability and audit committee have insignificant impact towards the organisation's ROE and Tobin's Q. Moreover, García-Ramos and Díaz (2020) investigated the impact of several board features towards firm financial performance of 295 public listed companies from Spain and Italy for the period of 2001 to 2010. Based on their research, it was concluded that board size, board independence, leadership structure and board meetings are significant altogether in analysing the effect towards firm financial performance. However, as individual independent variables, they are not significant towards the financial performance. In other words, this study concluded that larger boards, board with less independent directors and board with CEO duality can attain higher financial performance.
Analysis from the previous studies on the relationships between board characteristics (in various forms) and firm performance from many countries, the authors discovered some limitations from the previous studies. The limitations are summarised in Table 1.

Table 1: Limitations of Previous Scholars

Authors	Limitations
Khan et al., (2019); Al-ahdal et al. (2020); García-Ramos & Díaz (2020)	The conclusion arising from previous scholars is outdated as it compiles samples before financial year 2016.
Chaudhary & Gakhar (2018); Khan et al. (2019); Song et al. (2020);	Past researchers only measure one or two independent variables in investigating their relationship towards the dependent variable
Al-ahdal et al. (2020); García-Ramos & Díaz (2020)	Research was conducted using samples from more than one countries. Since corporate governance may differ in different countries, the conclusion arrive from the research may not be accurate.

Hypotheses Development
This study aims to investigate the impact or relationship of board characteristics in aggregate as well as to explore the individual board characteristics with firm performance. Thus, the study comes up with one main hypothesis (aggregated board characteristics) and 5 sub hypotheses (individual board characteristics).

The main (aggregated) hypothesis developed in this study is:
H1: *There is significant relationship between board characteristics and financial performance.*

The other five sub-hypotheses which consists of the individual board characteristics are discussed below:

a. Relationship between Education of Directors and Financial Performance

Hambrick and Mason (1984) deduced that the strategic choices and performance are predicted partially by managerial background characteristics. Moreover, Badolato, Donelson and Ege (2014) stated that board with expertise and knowledge are crucial and effective in monitoring the opportunistic behaviour of managers. Additionally, Wang, Su, Wang and Chen (2017), using a sample of Taiwanese public listed firm from financial year 2006 to 2012, concluded that highly educated board will hold more cash and are correlated to higher value of cash. Therefore, this study proposes the following hypothesis:
H1 (a): *There is significant relationship between education of director and financial performance.*

b. Relationship between Board Size and Financial Performance

As per Tulung, Elly and Ramdani (2018), board size refers to the number of board members in the organization's structure. Referring to Isik and Ince (2016) research on board size towards financial performance in Turkey, it is noted that there is significant positive association between board size and bank performance. Salim, Arjomandi and Seufert (2016), who research the effect of corporate governance towards the Australian banks' performance, conclude that the increased board size will improve the financial performance. Therefore, this study proposes the following hypothesis:
H1 (b): *There is significant relationship between board size and financial performance.*

c. Relationship between Board Meetings and Financial Performance

Buchdadi, Ulupui, Dalimunthe, Pamungkas and Fauziyyah. (2019) concluded that the higher the board meetings annually, the higher the Tobin's Q. In other words, Buchdadi et al. (2019) stated that the board meeting will significantly enhance the company performance (Tobin's Q). However, Bawaneh (2020) who studied the impact of corporate governance towards ROA, ROE and EPS, discovered that there is negative significant relationship between board meetings and ROE while there is no significant relationship between board meeting and both ROA and EPS. Therefore, this study proposes the following hypothesis:
H1 (c): *There is significant relationship between board meetings and financial performance.*

d. Relationship between Age of Board Member and Financial Performance

Ararat, Aksu, and Tansel Cetin (2010), using a samples from Turkish companies, reported that the age diversity has significant influence towards return on equity (ROE), but not on Tobin's Q. Hence, this study proposes the following hypothesis:
H1 (d): *There is significant relationship between age of board member and financial performance.*

e. Relationship between Board Gender and Financial Performance

Shrader, Blackburn and Iles (1997), in investigating the women in management and firm financial value for 200 Fortune 500 US companies, reported that there is a negative relationship between female board of directors and both ROA and ROE. Similarly, Adam and Ferreira (2009) also concluded that the average board diversity affects the firm negatively. Therefore, the hypothesis suggested for this study is:
H1 (e): *There is significant relationship between board gender and financial performance.*

Methods

Populations & Samples

The research method applied in this study is deductive approach and quantitative data. The hypotheses are derived first while the data are collected later in confirming the propositions whether the board characteristics have an influential role in deciding the financial performance of Malaysian listed companies. The population of this research comprises of 45 active Malaysian listed companies in R&D which were collected from financial year 2017 to 2019. These data of active Malaysian listed companies in R&D is extracted from Bloomberg Professional software. Based on Krejcie and Morgan (1970) table, if the number of data for population is 45 (N), then 40 (n) samples should be selected. Similarly, using Sekaran & Bougie (2016) table as a basis of determining the number of samples, for a given population of 45 (N), approximately samples of 40 (n) should be employed. However, in this research, all the 45 companies were tested. As a result, these 45 companies selected were not only represent 100% of the population selection but also would generate better results. In this study, the samples are gathered from financial year 2017 to 2019, thereby creating 135 observations. However, it is to be noted that there were 21 missing data on the key variables. Hence, after excluding companies with the missing data on the key variables, the final data consist of 114 observations. Meanwhile, the financial year 2017 to 2019 was selected because 2017 has the lowest effect from the 2008 global financial crisis in which providing added value and reliable findings (Alqatan, Chbib & Hssainey, 2019). Table 2 provides the summary of the population and samples used for this study.

Table 2: Summary of the Population and Samples

Populations	45 active Malaysian listed companies in R&D
Sampling	100%
Samples	45 active Malaysian listed companies in R&D
Year	From financial year 2017 to financial year 2019
Observations	114 observations

Variables

This study examines the impact of board characteristics towards financial performance. The dependent variable in this study is company’s financial performance which comprise of:

a) Return on assets (ROA),
b) Return on equity (ROE), and
c) Tobin’s Q.

The ROA is a measurement used to determine how effective a company generates its earnings from the asset (Ogunsanwo, 2019; Mojambo, Tulung & Saerang, 2020). ROA is an indicator used in previous literatures (Arulvel & Pratheepkanth, 2019; Ogunsanwo, 2019; Ibrahim, Zin, Kassim & Tamsir, 2019; Chen & Keefe; 2020; Mojambo et al., 2020). The ROA is computed by dividing the company’s net profit by its total assets (de Oliveira, Basso, Kimura & Sobreiro, 2018; Ogunsanwo, 2019; Chen & Keefe; 2020).

In addition, the company’s financial performance is also measured using ROE. Al-ahdal et al. (2020) has stated that ROE measures the return of shareholder’s equity by determining how efficient the company is generating profits. Many prior researchers have utilised ROE as a basis of measuring financial performance which includes Endraswati (2018), Al-ahdal et al. (2020) and Ravšelj & Aristovnik (2020). The ROE is calculated by dividing the net profit for the financial year by the company’s shareholder’s equity (Ravselj & Aristovnik, 2020).

Meanwhile, Tobin Q is the other dependent variable used to measure the company's financial performance in this study. The Tobin's Q represents market's expectation of the firm's financial performance (Al-ahdal et al., 2020). Vu and Nguyen (2017) describes that Tobin's Q which is the most popular proxy for market-based firm performance is used to determine firm's future potentiality and success in leveraging its investment. Previous researches such as Vu and Nguyen (2017), Bravo and Reguera-Alvarado (2017), Murwaningsari (2019), Khan et al. (2019), Freihat, Farhan & Shanikat (2019) and Al-ahdal et al. (2020), have applied Tobin's Q in measuring the companies' performance. The Tobin's Q is calculated by adding the equity market value to company's total debt in the numerator and company's total asset book value in the denominator (Al-ahdal et al., 2020).
The characteristics of board of directors were used as the independent variables in this study. The followings are the selected board characteristics, hence independent variables, employed in this research:

a) Education of directors
b) Board Size
c) Board Meetings
d) Age of board members
e) Board Gender

One of the independent variables in this study is the education of directors. According to Chen et al. (2013), the education is measured by averaging the education of directors in a firm. In his study, the average duration of directors were calculated as follow: firstly, the education of directors is divided into four ranks whereby rank 1 for high-school or below, 2 for bachelor's degree, 3 for professional certificate and 4 for postgraduate. Then, the total value of education of directors for every firm is accumulated based on the ranking that has been categorised for each financial year.
Furthermore, board size is the second variable selected in this study. The board size is the number of directors on the board. Referring to previous researchers such as Khan et al. (2019), Alqatan et al. (2019), it is noted that Board Size is measured using the number of directors in the organisation.
In addition, the third independent variable for this study is board meetings. Board meetings are calculated via the total number of board meeting of the company held during the current financial year. This is extracted from previous researchers (Ting, Kweh & Hoanh, 2018; Bawaneh, 2020).
Moreover, the board members age is the other independent variable used in this study. Wiersema and Bantel (1992) have used the measurement of age of board members previously. The age of all the directors collected were accumulated and divided with the total number of the directors for the financial year.
Finally, the other independent variable used in this study is board gender. According to Pathan, Haq and Gray (2013), the women directors is measured by the percentage of female directors in the board. This study attains the total number of women directors and dividing it by the total number of the directors during the financial year.
In this study, two control variables, namely leverage and firm value, were used. Based on research by Erdogan and Yamaltdinova (2019), leverage refers to the division of total debt from total equity while the firm size is the natural log of total assets of the company. Table 3 provides the summary of the measurements of variables adopted by this study.

Table 3: Measurement of Variables

Variables	Abbreviation	Definition	Measurement	Adopted from
Dependent variables				
Return on Asset	ROA	Net earnings of the year divided by total asset value	(Net Profit ÷ Total Assets) × 100%	de Oliveira et al., (2018), Ogunsanwo, (2019), Chen & Keefe (2020)
Return on Equity	ROE	Net profit a company generates based on its capital	(Net Profit ÷ Total Equity) × 100%	Ravselj & Aristovnik (2020)
Tobin's Q	TQ	Market expectation of companies' performance	(Market Capitalisation + Total Debt) ÷ Total Assets	Al-ahdal et al. (2020)
Independent variables				
Education of Directors	EDU	Average the education of directors in a firm	(Education of directors ÷ Number of Directors) The education of the every director is ranked according to the education attained : High-school or below = 1 Bachelor's Degree = 2 Professional Certificate = 3 Postgraduate = 4	Chen, Ho & Hsu (2013)
Board Size	BSIZE	Number of Board of Directors	Total number of directors on the board	Khan, Yaseen, Mustafa & Abbasi (2019), Alqatan, Chbib & Hssainey (2019)
Board Meetings	BMGTS	Number of Board of Director meetings per year	Total number of board meetings of the firm in the current year	Ting, Kweh & Hoanh (2018), Bawaneh (2020)
Age of Board Member	AGE	Average age of each board of directors	(The total age of directors ÷	Wiersema & Bantel (1992)

			Number of Directors)	
Board Gender	GEN	Percentage of female directors in the board	(Number of Female Directors ÷ Number of Directors) × 100%	Pathan, Haq & Gray (2013)
Control variables				
Leverage	LEVERAGE	Firm's Debt divided by Equity	Total Debt/Total Assets	Erdogan & Yamaltdinova, (2019)
Firm Size	VALUELG	Firms Value which is calculated to natural log of Total Assets	Natural log of Assets	Erdogan & Yamaltdinova (2019)

Model Specification

In order to test the relationship of board characteristics and firm R&D intensity, the following multiple regression analysis is employed:

$$\textbf{FPERF} = \alpha + \beta 1\textbf{EDULG} + \beta 2\textbf{BSIZELG} + \beta 3\textbf{BMTGSLG} + \beta 4\textbf{AGE} + \beta 5\textbf{GENLG} + \beta 6\textbf{LEVERAGE} + \beta 7\textbf{VALUELG} + \varepsilon$$

where:

FPERF	=	Firm Performance (either ROA, ROE or Tobin's Q)
EDULG	=	Education of Director which is transform to natural log
BSIZELG	=	Board Size which is transform to natural log
BMTGSLG	=	Board Meetings which is transform to natural log
AGE	=	Board Age
GENLG	=	Board Gender which is transform to natural log
LEVERAGE	=	Firm's Debt divided by Equity
VALUELG	=	Firms Value which is calculated to natural log of Total Assets

Findings

Descriptive Statistics

Table 4 explicates the descriptive information about each independent variable, dependent variable of Malaysian companies which are highly involved in R&D investment. The data were collected for three (3) years from the period of 2017 to 2019. In addition, the data were collected using secondary sources such as Annual Report and Bloomberg Professional software.

Table 4: Descriptive statistics of variables

Variable	Observations	Minimum	Maximum	Mean	Std. Dev
EDU	114	1.33	3.67	2.8294	0.46378
BSIZE	114	4.00	13.00	7.5702	2.07799
BMTGS	114	3.00	21.00	5.8947	3.10685
AGE	114	44.38	70.67	58.9668	5.34474
GEN	114	0.00	50.00	18.2391	13.29188
ROA	114	-101.96	31.96	5.1043	14.03044
ROE	114	-125.64	38.09	8.1189	19.40379

TBQ	114	0.19	6.30	1.7679	1.28128
LEVERAGE	114	0.18	42.90	17.6204	12.06719
VALUELG	114	7.17	11.25	9.0048	1.00448

Notes:

EDU	=	Education of Director
BSIZE	=	Board Size
BMTGS	=	Board Meetings
AGE	=	Board Age
GEN	=	Board Gender
ROA	=	Return on Asset
ROE	=	Return on Equity
TBQ	=	Tobin's Q
LEVERAGE	=	Firm's Leverage
VALUELG	=	Firms Value which is calculated to natural log of Total Assets

This study includes 114 observations of 45 active Malaysian public companies in R&D between 2017 to 2019. There are five independent variables (education of director, board size, board meetings, age of board member, board gender) being tested in this study. Amongst the sample being tested is education of directors (EDU). As shown in Table 4, it is noted that the EDU has both minimum and maximum of 1.33 and 3.67 average ranking respectively. This indicates that there are Board of Directors who possess only high-school education and also attain postgraduate qualification such as Masters and PhD. Meanwhile, the EDU has average (mean) of 2.82, indicating that the Board of Directors do have both Bachelor's Degree and Professional Certificate as their education background.

Besides, the board size ranges from at least 4 members to at most 13 members sitting on the board with an approximate mean of 8 board members. On the other hand, the results of annual board meetings have minimum, maximum and mean of 3.0, 21.0 and 5.8 times respectively. Referring to Table 4, it can be deduced that board meetings on average amongst the Malaysian listed companies are held about six times annually which is almost consistent with Arora and Bodhanwala (2018) research in which their data finding noted that the board meetings in Indian listed firms are held about five times yearly.

Moreover, the age of board members ranges from at least 44 years old to 71 years old and includes approximate mean of 59 years old. Besides, it is noted that the lowest percentage of GEN (which represent female directors) sitting in the board is none (0%) while the highest percentage of GEN sitting in a board is 50%. However, the average of GEN sitting in board is 18.23% in which is lesser than the stipulation made in MCG 2017 in which targets a minimum of 30% of BOD comprise of women within these companies.

Table 4 also elucidates the results of the descriptive statistics for the dependent variables which comprises of ROA, ROE and TBQ. Both ROA and ROE has minimum value of -101.96% and -125.64%, hence indicating that there are companies which made financial losses during the financial year. The ROA which has maximum of 31.96% has average of 5.10% while the ROE which has maximum of 38.09% has average of 8.11%. The Tobin's Q which measure the market performance has mean value of 1.77 with a minimum value of 0.19 and maximum value of 6.30.

Meanwhile, it is noted that based on Table 4, the firm value has an average of 9, maximum value of 11.25 and minimum of 7.17 while the leverage has the highest value of 42.90 and lowest value of 0.18.

Regression Analysis

Regression Analysis is a statistical method employed in estimating relationships between one or more independent variables towards dependent variable. This research investigates the effect of board characteristics towards the financial performance of active Malaysian listed companies with R&D. In this section, the regression analysis is applied to define the relationship of board characteristics towards financial performance.

Referring to the regression analysis where **FPERF = α + β1EDULG + β2BSIZELG + β3BMTGSLG + β4AGE + β5GENLG + β6LEVERAGE + β7VALUELG + ε** developed in previous section, Table 5 summaries the results where ROA, ROE and TBQ were being tested individually:

Table 5: Regression Analysis between Board Characteristics and Financial Performance

Variables	**ROA**		**ROE**		**Tobin's Q**	
	β	**P-value**	**β**	**P-value**	**β**	**P-value**
Constant	2.60	0.000	2.11	0.001	1.37	0.005
Education of Director	0.43	0.542	0.35	0.624	1.61	0.004***
Board Size	-0.35	0.390	-0.50	0.229	-0.11	0.717
Board Meeting	0.54	0.032**	0.39	0.122	0.45	0.021**
Age of Member	0.00	0.624	0.01	0.321	-0.01	0.016**
Board Gender	-0.44	0.034**	-0.31	0.132	-0.46	0.003***
Firm Value	0.18	0.013**	-0.13	0.086*	-0.09	0.099*
Leverage	-0.01	0.068*	-0.00	0.544	0.00	0.995
R-squared	51.90%		29.90%		33.10%	
F-statistic	8.33***		3.30***		4.45***	

Similar to Vu and Nguyen (2017) research, this study employed three measurements of financial performance, that are ROA, ROE and Tobin's Q. Referring to Vu and Nguyen (2017) and Tulung and Ramdani (2018) findings, if the particular independent variable is significant towards two measurements (majority) of the financial performance, then the hypothesis which is developed for the particular independent variable is accepted.

Table 5 shows the results of the regression analysis of board characteristics towards financial performance. Based on the results, it is concluded that the board characteristics have a significant influence towards all the financial performance (ROA, ROE and Tobin's Q). All the models are significant at $p < 0.01$ which indicates that board characteristics strongly influence the financial performance of the active Malaysia companies in R&D. As a result, Hypothesis 1, which assumes there is significant relationship between board characteristics and financial performance, are accepted.

Moreover, it is noted that only board meeting and board gender has significant association towards ROA with p-value less than 0.05 level. However, the other independent variables such as education of directors, board size and age of board member are not significant towards the ROA. The R-squared of the model is 51.90% which explains that the combined effect of all the independent variables explains 51.90% changes in the ROA.

Besides, it is also noted that based on Table 5, there are no significant correlations amongst the independent variables towards the ROE. Nevertheless, the model able to explains that one unit changes in the board characteristics is able to influence the ROE to increase by 29.90%.

Furthermore, employing Tobin's Q as a proxy of financial performance, it is concluded that almost all the independent variables are significant associated towards the Tobin's Q. The education of director, board meetings, age of board member and board gender are significant towards Tobin's Q. Meanwhile, board size is not significant towards the Tobin's Q. Both the education of director and board gender are significant with p-value less than 0.01 level while board meeting and age of board member possess significant relationship with $p < 0.05$ level.
Hypothesis 1 (a) which assumes that there is a significant relationship between education of directors and financial performance is rejected. Although there is education of director has significant relationship towards Tobin's Q with p-value less than 0.01 level, it is noted that there no statistical significant relationship between education of director towards both ROA and ROE. This indicates that the education of directors is pivotal in influencing the market value of the active Malaysian listed companies in R&D. However, the education od director does not influence the ROA and ROE of the active Malaysian listed companies in R&D.
Besides, Hypothesis 1 (b) is rejected. This is because there is no statistical significant relationship between board size and all the financial performance (ROA, ROE and Tobin's Q). The findings from this study contradicts with the findings of past researches such as Isik and Ince (2016), Salim, Arjomandi and Seufert (2016) and Rathnayake and Sun (2017). Similar to Bawaneh (2020) results, it is noted there is no significant association between board size towards ROA and ROE. Moreover, this study also has similar results of Alqatan et al. (2019) findings in which they concluded that the board size has no influence towards Tobin's Q.
Referring to Table 5, there is positive significant association between board meeting towards financial performance in ROA (p-value of 0.032 with < 0.05 level) and Tobin's Q (p-value of 0.021 with < 0.05 level). However, there is no significant relationship in ROE in which the p-value is 0.122 which is greater than 0.10 level. Hence, this results lead to acceptance of Hypothesis 1 (c). The positive significant of board meeting towards ROA and Tobin's Q reveals that the higher board meeting aid in improving the financial performance of the active Malaysian listed companies in R&D. It is noted that the acceptance of this Hypothesis 1 (c) in this study is contradicted towards the findings of Ting et al. (2018) and Bawaneh (2020).
Referring to Table 5 above, it is noted there is no significant impact of age of board member towards the ROA and ROE, in which results for Hypothesis 1 (d) was also rejected. Although the age of member is significant in influence the Tobin's Q with p-value less than 0.01 level, the age of board member has significance greater 0.10 level towards both ROA and ROE. This indicates that the age of board member is efficient towards the market based measurement but it is not strong in impacting the accounting based measurement
Furthermore, when ROA and Tobin's is used as the proxy of financial performance, it is noted that the board gender has negative significant influence towards the financial performance. Hence, Hypothesis 1 (e) is accepted. Similar to Endraswati (2018) research, the results as per Table 5 deduced that board gender has negative effect towards the financial performance. This denotes that the more diverse board does not necessarily lead to better firm performance in active Malaysian listed companies in R&D.

Discussion and Conclusion

In this study, as an overall, it is concluded that board characteristics are significant towards the financial performance. However, by investigating the individual independent variables, it is noted that only board meetings and board gender are significant towards financial performance. Meanwhile, it is also noted that the relationship of other remaining board characteristics such as education of director, board size and age of board member are not significant towards financial performance. Nevertheless, this study manages to provide findings of financial performance based on active Malaysian listed companies in R&D.

Basically, the aim of this study is to gauge better understanding concerning on active Malaysian listed companies in R&D. Using active Malaysian listed companies in R&D is relevant because there is lack of research on this topic previously. Since there is uncertainty and lack of knowledge to provide evidence that board characteristics will influence financial performance using Malaysian listed companies which are active in R&D, these findings contribute significantly to the corporate governance in the Malaysian settings which are active in R&D.

Theoretical Implications

This study would like to give positive impact by contributing to other literature's body of knowledge that want to focus in finding more causal effects or outcome between board characteristics and financial performance especially in the Malaysian settings which are active in R&D.

Practical and Social Implications

This study provides an instrument in understanding the board composition in being the dominant force in affecting the financial performance especially in the Malaysian settings which are active in R&D. Through this research, the shareholders can play an important role in the decision making process in electing the board members especially to the organisation which desire to enrich the profitable returns of the organisation.

Limitations and Suggestions for Future Research

Although this research was able to provide contributions by filling the gap in investigating the effect of board characteristics towards firm financial performance of active Malaysian listed companies in R&D, this study also displays some limitations and offers many unanswered questions. Among the limitation of this study was that the samples used do not represent the broad population of companies in Malaysia. This is because, the population of this study is limited to only 45 active Malaysian listed companies in R&D. Therefore, findings from this study may not be generalised as this study did not investigate the board characteristics in non-active R&D listed companies and non-listed companies in Malaysia. Besides, the board characteristics used in this study does not represent a broad definition of corporate governance in determining its effect towards firm performance. This study employs board characteristics such as education of director, board size, board meeting, age of board member and board gender as the independent variable in examining its effect towards financial performance. There is limitation in which this study fails to consider other board characteristics such as board interlock, board ethnicity diversity. The corporate governance mechanism can be divided into two group of which are internal and external. The internal corporate governance refers to the board of directors and director's shareholdings while the external corporate governance includes disclosure, legal system and corporate governance codes. Therefore, the financial performance can also be examined by considering other predictors other than board characteristics. The future researcher who aspire to conduct research within this scope could ponder some modification of this study. Future research can consider using large samples in which will enable better statistical research analysis. The future researchers who are interested in taking account Malaysian context may consider using entire listed companies from Malaysia as population in their future research. The entire listed companies in Malaysia represents broad population of companies in Malaysia and future research may consider to increase the size of the population and samples by considering unlisted companies to be included as population and samples in conducting the research. Furthermore, future researchers may take into account other board characteristic variables that could possibly affect the financial performance. Since corporate governance comprises of internal and external in which the internal corporate governance refers to the board of directors and director's shareholdings while the external corporate governance includes disclosure, legal system and corporate governance codes, future researcher can consider in investigate the impact other characteristics in corporate governance towards financial performance.

Acknowledgement
The authors would like to thank you to the management of UNITEN and Innovation & Research Management Centre (iRMC) UNITEN for granting us to use the Pocket Grant 2-2021 (J510050002/2021100) to carry out and hence publish this research.

References

Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics, 94*(2), 291-309. https://doi.org/10.1016/j.jfineco.2008.10.007

Akisimire, R., Masoud, M. S., Baisi, M. D., & Orobia, L. A. (2016). Board member age diversity and financial performance of manufacturing firms: a developing economy perspective. *Journal of Economics and Behavioral Studies, 8*(5), 120-132. https://doi.org/10.22610/jebs.v8i5 (J).1437

Al Azeez, H. A. R., Sukoharsono, E. G., & Andayani, W. (2019). The impact of board characteristics on earnings management in the international oil and gas corporations. *Academy of Accounting and Financial Studies Journal, 23*(1), 1-26. Retrieved from https://www.abacademies.org/

Al-ahdal, W. M., Alsamhi, M. H., Tabash, M. I., & Farhan, N. H. (2020). The impact of corporate governance on financial performance of Indian and GCC listed firms: An empirical investigation. *Research in International Business and Finance, 51*, 101083. https://doi.org/10.1016/j.ribaf.2019.101083

Alqatan, A., Chbib, I., & Hussainey, K. (2019). How does board structure impact on firm performance in the UK? *Corporate Board: Role, Duties and Composition, 15*(2), 18-27. https://doi.org/10.22495/cbv15i2art2

Ararat, M., Aksu, M. H., & Tansel Cetin, A. (2010). The impact of board diversity on boards' monitoring intensity and firm performance: Evidence from the Istanbul Stock Exchange. https://dx.doi.org/10.2139/ssrn.1572283

Arora, A., & Bodhanwala, S. (2018). Relationship between corporate governance index and firm performance: Indian evidence. *Global Business Review, 19*(3), 675-689. https://doi.org/10.1177%2F0972150917713812

Arulvel, K. K., & Pratheepkanth, P. (2019). Board composition and firm performance: The Sri Lankan case. *Arabian Journal of Business and Management Review (Oman Chapter), 8*(1), 40-49.

Badolato, P. G., Donelson, D. C., & Ege, M. (2014). Audit committee financial expertise and earnings management: The role of status. *Journal of Accounting and Economics, 58*(2-3), 208-230. https://doi.org/10.1016/j.jacceco.2014.08.006

Bawaneh, S. S. (2020). Impact of Corporate Governance on Financial Institutions? Performance: A Board Composition Case. *Asian Economic and Financial Review, 10*(1), 54.

Bravo, F., & Reguera-Alvarado, N. (2017). The effect of board of directors on R&D intensity: Board tenure and multiple directorships. *R&D Management, 47*(5), 701-714. https://doi.org/10.1111/radm.12260

Buchdadi, A. D., Ulupui, I. G. K. A., Dalimunthe, S., Pamungkas, B. G., & Fauziyyah, Y. (2019). Board of director meeting and firm performance. *Academy of Accounting and*

Financial Studies Journal, 23(2), 1-7. Retrieved from https://www.abacademies.org/

Chaudhary, N., & Gakhar, K. (2018). Corporate Governance and Financial Performance with a Perspective on Board Size and Frequency of Board Meetings: Empirical Evidence from India. *Drishtikon: A Management Journal, 9*(1), 37.

Chen, H. L., Ho, M. H. C., & Hsu, W. T. (2013). Does board social capital influence Chief Executive Officers' investment decisions in research and development? *R&D Management, 43*(4), 381–393. https://doi.org/10.1111/radm.12025

Chen, Z., & Keefe, M. O. C. (2020). Rookie directors and firm performance: Evidence from China. *Journal of Corporate Finance, 60*, 101511. https://doi.org/10.1016/j.jcorpfin.2019.101511

de Oliveira, J. A. S., Basso, L. F. C., Kimura, H., & Sobreiro, V. A. (2018). Innovation and financial performance of companies doing business in Brazil. *International Journal of Innovation Studies, 2*(4), 153-164. https://doi.org/10.1016/j.ijis.2019.03.001

Dibra, R. (2016). The role of corporate governance failures in the banking sector. *European Scientific Journal, 12*(34), 68-74. https://doi.org/10.19044/esj.2016.v12n34p68

Endraswati, H. (2018). Gender diversity in board of directors and firm performance: A study in Indonesia Sharia Banks. *Review of Integrative Business and Economics Research, 7*, 299-311.

Erdogan, M., & Yamaltdinova, A. (2019). A panel study of the impact of R&D on financial performance: Evidence from an emerging market. *Procedia Computer Science, 158*, 541-545. https://doi.org/10.1016/j.procs.2019.09.087

Farhan, N., Tabash, M., Almaqtari, F., & Yahya, A. (2020). Board composition and firms' profitability: Empirical evidence from pharmaceutical industry in India. *Journal of International Studies, 13*(3), 180-194. https://doi.org/10.14254/2071-8330.2020/13-3/12

Farrar, J. (2008). *Corporate governance: theories, principles and practice*. Oxford University Press. Retrieved from econpapers.repec.org

Freihat, A. F., Farhan, A., & Shanikat, M. (2019). Do board of directors characteristics influence firm performance? Evidence from the emerging market. *Journal of Management Information and Decision Sciences, 22*(2), 148-166.

Gafoor, C. A., Mariappan, V., & Thyagarajan, S. (2018). Board characteristics and bank performance in India. *IIMB Management Review, 30*(2), 160-167. https://doi.org/10.1016/j.iimb.2018.01.007

García-Ramos, R., & Díaz, B. D. (2020). Board of directors structure and firm financial performance: A qualitative comparative analysis. *Long Range Planning*, 102017. https://doi.org/10.1016/j.lrp.2020.102017

Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organisation as a reflection of its top managers. *Academy of Management Review, 9*(2), 193-206. https://doi.org/10.5465/amr.1984.4277628

Hoseini, M., Gerayli, M. S., & Valiyan, H. (2019). Demographic characteristics of the board of directors' structure and tax avoidance. *International Journal of Social Economics, 46*(2), 199-212. https://doi.org/10.1108/IJSE-11-2017-0507

Ibrahim, N. A., Zin, N. N. M., Kassim, A. A. M., & Tamsir, F. (2019). How Does Directors' Remuneration and Board Structure Impact on Firm Performance in Malaysia Telecommunication Industry? *European Journal of Business and Management Research, 4*(4).

Isik, O., & Ince, A. R. (2016). Board size, board composition and performance: An investigation on Turkish banks. *International Business Research, 9*(2), 74-84. https://doi.org/10.5539/ibr.v9n2p74

Khan, S. N., Yaseen, M. N., Mustafa, F., & Abbasi, S. (2019). The interaction effect of financial leverage on the relationship between board attributes and firm performance: Evidence of non-financial listed companies of Pakistan. *Journal of Accounting and Finance in Emerging Economies, 5*(1), 115-122. https://doi.org/10.26710/jafee.v5i1.681

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30*(3), 607-610. Retrieved from https://journals.sagepub.com/

Kyereboah-Coleman, A., & Biekpe, N. (2006). The relationship between board size, board composition, CEO duality and firm performance: Experience from Ghana. *Corporate Ownership and Control, 4*(2), 114-122. https://doi.org/10.22495/cocv4i2p11

Malik, M. S., & Makhdoom, D. D. (2016). Does corporate governance beget firm performance in Fortune Global 500 companies?. *Corporate Governance. 16*(4), 747-764 https://doi.org/10.1108/CG-12-2015-0156

Mohammed, A. M. (2018). The impact of ownership structure on firm performance: Evidence from Jordan. *Academy of Accounting and Financial Studies Journal, 22*(5), 1-9. Retrieved from https://www.proquest.com/

Mojambo, G., Tulung, J. E., & Saerang, R. T. (2020). The Influence of Top Management Team (TMT) Characteristics Toward Indonesian Banks Performance During the Digital Era (2014–2018). Available at SSRN 3541856.

Murwaningsari, E. (2019). The relationship of corporate governance, corporate social responsibilities and corporate financial performance in one continuum. *Indonesian Management and Accounting Research, 9*(1), 78-98. http://dx.doi.org/10.25105/imar.v9i1.1289

Ogunsanwo, O. F. (2019). Effect of corporate governance on firm performance in Nigeria. Œconomica, 15(6), 82-97. Retrieved from http://journals.univ-danubius.ro/

Pathan, S., Haq, M., & Gray, P. (2013). Does board structure in banks really affect their performance? *Journal of Banking & Finance*. https://doi.org/10.1016/j.jbankfin.2012.12.016

Rathnayake, D., & Sun, G. (2017). Corporate ownership, governance and performance: Evidence from Asian countries. *Research Journal of Finance and Accounting, 8*(15), 28-36. Retrieved from https://ssrn.com/abstract=3134585

Ravšelj, D., & Aristovnik, A. (2020). The impact of R&D expenditures on corporate performance: Evidence from Slovenian and world R&D companies. *Sustainability, 12*(5), 1943. https://doi.org/10.3390/su12051943

Rutledge, R. W., Karim, K. E., & Lu, S. (2016). The Effects of Board Independence and CEO Duality on Firm Performance: Evidence from the NASDAQ-100 Index with Controls for Endogeneity. *Journal of Applied Business & Economics, 18*(2).

Salim, R., Arjomandi, A., & Seufert, J. H. (2016). Does corporate governance affect Australian banks' performance?. *Journal of International Financial Markets, Institutions and Money, 43*, 113-125. https://doi.org/10.1016/j.intfin.2016.04.006

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. John Wiley & Sons.

Shrader, C. B., Blackburn, V. B., & Iles, P. (1997). Women In Management And Firm Financial Performance: An Exploratory Study. *Journal of Managerial Issues, 9*(3), 355–372. http://www.jstor.org/stable/40604152

Song, H. J., Yoon, Y. N., & Kang, K. H. (2020). The relationship between board diversity and firm performance in the lodging industry: The moderating role of internationalisation. International *Journal of Hospitality Management, 86*, 102461. https://doi.org/10.1016/j.ijhm.2020.102461

Ting, I. W. K., Kweh, Q. L., & Hoanh, L. T. H. (2018). Board meeting frequency and financial performance: A case of listed firms in Vietnam. *International Journal of Business and Society, 19*(2), 464-472. Retrieved from http://www.ijbs.unimas.my/

Tulung, J. E., & Ramdani, D. (2018). Independence, size and performance of the board: An emerging market research. *Corporate Ownership & Control, 15*(2).

Vu, N. H., & Nguyen, T. (2017). Impacts of corporate governance on firm performance-Empirical studies of listed Singaporean companies.

Wang, M. J., Su, X. Q., Wang, H. D., & Chen, Y. S. (2017). Directors' education and corporate liquidity: Evidence from boards in Taiwan. *Review of Quantitative Finance and Accounting, 49*(2), 463-485. https://doi.org/10.1007/s11156-016-0597-6

Wiersema, M. F., & Bantel, K. A. (1992). Top management team demography and corporate strategic change. *Academy of Management Journal, 35*(1), 91-121. https://doi.org/10.5465/256474