

# Demographic Diversity and Firm Value: A Review on Large Companies Using Panel Data Approach

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**Abstract:** This paper examines the demographic diversity at top-level management and its impact on firm performance. The paper focuses on Upper-echelon theory, which explains board characteristics and firm performance. Theoretical framework is specially designed using concepts, measures and models. Relevant hypotheses are developed to test diversity impact with the use of appropriate variables and measures. A total sample of large 60 top listed companies are considered based on their market capitalization. This empirical work uses BODs attributes and financial data, which are gathered over the period 2009 to 2013. This study incorporates econometrics methodology on panel data analysis, which is used rigorously for hypothesis testing. The results indicate that demographic diversity at board level does have a relationship with market value.

**Keywords:** Gender Diversity; Ethnic Diversity; TOBIN'Q; Age Profile; BODs; Market Performance

## I. INTRODUCTION

Developing societal, political and cultural views of corporate board members are part of demographic diversity of top management. In addition, the major factor is better corporate governance and the global desire [1]. Previously, the world had faced high profile scandals like Worldcom, Enron and Adelphia, which cause of firms failure. After this policy makers began to concentrate on the issues of corporate governance [2]. Malaysian economy badly affected by financial crisis and many major corporations had shut down in 1997. The reason behind this corporate failure was poor practices of corporate governance among companies [3]. Diversity and corporate governance has a strong relationship in context of top-level management. Board of directors are leaders in the organization. They always take strategic decision and set strategic goals. Board performance and efficiency can be measure through firm performance [4, 5]. Diversified corporate boards have a very significant impact on firm performance and firm value creation. As result of this, wealth maximization and enhance stakeholder's confidence. Demographic diversity has a positive impact on firm performance [6]. Diverse boards may better monitor managers and top management teams because board diversity increase board independence [7]. In contrast, researchers found that gender diversity among board members could result in poor firm performance [8]. Women participation at board level has a positive relationship with organizational performance. Ethnic diversity among board of directors can perform their responsibilities more effectively in [9]. There is ambiguity among previous researches regarding diversity issue at board level [10].

Previously studies used simple statistical tool and techniques to investigate the diversity issue. There is a need to

investigate diversity issue in more holistic way by using different sample size and sampling techniques [10]. It is a great interest for many researchers to explore demographic diversity with regard to firm performance. Empirical studies showed that there is a strong correlation between demographic diversity and firm performance [11]. Hence, this empirical examination offers more insights on demographic diversity at board level with regard to firm value.

The paper focuses on investigating diversity at top-level management of large companies with regard to their market value. Since the literature of demographic diversity has rigorously covered on other performance measures like ROA and ROE, the researcher attempts to examine and justify the extent to which are the diversity dimensions at board level regard to Tobin'Q that can explain and enhance market values of companies. The outcomes of this study will be useful for Malaysian government and regulatory bodies in formulating future policy for the nation. It will also helpful for stakeholders of the companies. This research is unique with regard to new methods and techniques to investigate diversity issue at board level. (i.e. gender, ethnic and age diversity among board members) with firm value. A total sample of 60 large companies is considered from the population of 938 listed companies. The methods, which are used to analyze this study descriptive statistics, econometrics techniques and panel data techniques etc. The remainder of the paper follows as such Sections 2 covers the literature review. In section 3, 4, 5 and 6, demographic issues, theoretical framework, methodology and measures. Empirical results, discussions and limitations of the study are explained in section 7 and 8 sections. Finally, this paper was concluded in last section.

## II. LITERATURE REVIEW

This study addresses the diversity at top-level management and relationship between diversity and firm performance in listed companies that are strongly associated with corporate governance in order to improve their firm performance. A view on the background of the study which includes research background, problem statement, research objectives, research questions, hypotheses of the study and significant of the study will be carried out in this study.

### A. Theoretical Perspective on Demographic Diversity

Board diversity and its impact on firm performance is essential for any organizations, which are operating in this dynamic environment. In context of board diversity, boards consist of different members with different characteristics and backgrounds, e.g. gender, age and ethnicity that cause advantage for success of firms. There is a strong relationship between diversity and firm performance. Diversity could lead

to a firm's competitive advantage[4, 5]. There is no specific theory that predicts the nature of relationship between board diversity and financial performance. In this study, social theory like upper-echelon theory discussed from various aspects.

### B. Upper-echelon Theory

The upper echelons theory is based on behavioral decision-making theories as well as concepts of organizational demography. Corporate boards are important and can be used for organizational outcomes such as firm performance and strategic achievements. This theory explains the impacts of demographic and cognitive diversity in context of firm performance. Researchers argued that diversified boards can make more effective decisions as compare to homogenous boards[12]. Organizations can attract, retain, and take competitive edge from diverse talent to begin by increasing the diversity among top management teams [13]. This study based on upper echelon theory, because it related to top level management characteristics and its effect on firm performance.

## III. DEMOGRAPHIC DIVERSITY ISSUES

Ethnic diversity and its impact on firm performance is essential for any organizations, which are operating in this dynamic environment. Gender is a status, which constructed through social, cultural, and psychological means; it is not based on personal traits [14]. Gender diversity is an integral of board diversity. Board diversity claims that board should reflect society and represent the gender, ethnicity, professional experience and background [15]. Diversity among boards always bring a better understanding of market place, innovation, increases creativity, leadership, better decision making and effective global relationships [16]. In corporate world, female participation on boards is very low. According to Catalyst census, female participation among boards is only 12.4 per cent in the US and 6.4 in the UK [17]. A researcher found that women on boards have significant positive impact on firm performance [18] and another researcher found that there is no significant relationship between women directors and shareholder returns. In view of these inconsistent findings, there is a need to investigate this issue. A developed country, Norway, requires at least 40 per cent women participation on board since 2008 [19]. Currently, Malaysia has laws and regulations, which are encouraging women participation quotas on boards in private sector and required companies to engage at least 30 percent females at board level (MCCG, 2012).

## IV. THEORETICAL FRAMEWORK OF DEMOGRAPHIC DIVERSITY AT BOARD LEVEL AND FIRM PERFORMANCE

The below Fig.1. theoretical framework presents the relationship between demographic diversity at board level and firm performance. Here, variable of investigation is demographic diversity. Demographic diversity includes (gender, ethnicity and age profile of Board of directors). Gender diversity can be measured through dividing total females by total board members on board. Ethnic diversity measured through dividing total Non-Bumiputera (Non-Malay) by total board members. Age Profile can be measures through average age of board members. The dependent variable of this study is firm performance, which can be measured market

value (Tobin'Q). The Tobin'Q measured through dividing total market value of firm by total asset value of firm. The control variables are board size, firm age, firm size, financial leverage, business risk and growth opportunity. This study will show the actual relationship between diversity and firm performance.

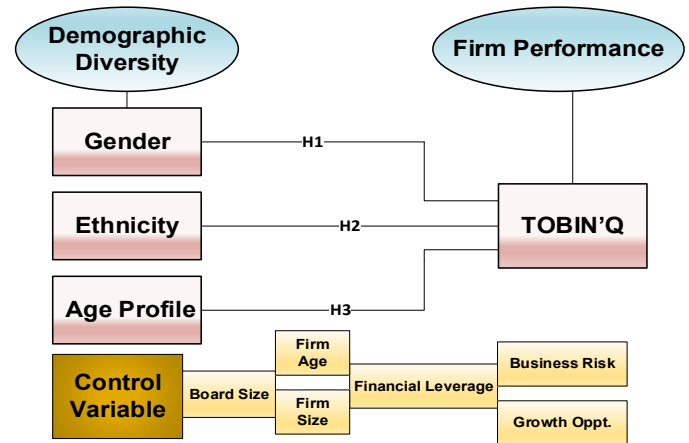


Fig.1. Theoretical Framework (Demographic diversity at board level and firm performance)

## V. ECONOMETRICS METHODOLOGY

The econometrics methodology with focus of panel data modeling, methods and test used to prove accuracy of results in this study.

### A. Panel Data Modeling

The panel data modeling incorporate both time series and cross-sectional data. By using panel data, the main advantage that panel data allow identification of certain parameters without making any restrictive assumptions [20]. The features of panel data have space and as well as time dimensions [21]. Baltagi argued that when firms are considered for over the period, panel data required to include heterogeneity; more variability, less collinearity (among variables), more degrees of freedom, more efficiency; dynamics of change; larger sample size, more informative data, and thus, bias is minimized.

In view of the above discussions, in short, let us say all variables have cross-sectional units (referring companies- i.e. listed companies), thus,  $i = 1, 2, 3, \dots, N$  and time period, thus,  $t = 1, 2, 3, \dots, T$ . Therefore, the standard linear model is as follows;

$$y_{it} = \beta_0 + x_{it}'\beta + \varepsilon_{it}$$

$x_{it}$  are the predictors and  $\beta_0$  and  $\beta$  represent intercept and slope coefficients are identical for all firms and time periods,  $\varepsilon_{it}$  is the error term and  $y_{it}$  is the dependent variable. In addition, panel data model assumes;  $\varepsilon_{it} = \alpha_i + \mu_{it}$

$\mu_{it}$  denotes that homoskedasticity is assumed and not correlated over time  $\alpha_i$  is time variant and homoskedasticity is assumed across firms. The above model is also regarded as random effect model [20],[21].

In the case of fixed effect model, includes an individual firm-specific intercept term in the model as given below;

$$y_{it} = \alpha_i + x_{it}'\beta + \mu_{it}$$

$y_{it}$  is the regressand,  $\alpha_i$  ( $i = 1, 2, 3, \dots, N$ ) are fixed unknown

constants that are estimated along with  $\beta$  and  $\mu_{it}$  is assumed to be i.i.d over individuals and time. The overall intercept term  $\beta_0$

is dropped. In addition, Hausman Test and Breusch-Pagan LM were specially adopted in determining the most appropriate model (either pooled effect, fixed effect or random effect model) as presented in the empirical discussion section.

### B. Fixed Effects or Random Effects?

Panel data approach always helps to give robust results especially for modeling purposes. In addition to this, a panel data set is expected to produce regression results based on the pooled effects, fixed effects and random effects. However, by using different tests, researchers may have choice for the better between fixed effect method and random effect method. As for this purpose, two specific tests could be considered, and they are **Breusch-Pagan LM Test (1980)** and **Hausman Test (1978)** [22]. However, the Hausman Test is used in most cases as it tests whether the fixed effects and random effects estimators are significantly different [20] and the statistical model can be computed as follows;

$$\xi_H = (\hat{\beta}_{FE} - \hat{\beta}_{RE})' [V(\hat{\beta}_{FE}) - V(\hat{\beta}_{RE})]^{-1} (\hat{\beta}_{FE} - \hat{\beta}_{RE})$$

[V's] Refer to true covariance matrices.  $(\hat{\beta}_{FE} - \hat{\beta}_{RE}) = 0$

(null hypothesis),  $\xi_H$  refers to asymptotic chi-squared distribution with K degrees of freedom, where K = number of elements in  $\beta$ .

## VI. METHODS AND MEASURES

The main focus of this study is to conduct an empirical investigation of demographic diversity at board level and its impact on firm value. This study incorporated 60 non-financial listed companies on the Bursa Malaysia and data were collected from the Datastream database and manually, over the period 2009 to 2013 (5 years). The sampling technique was judgmental in nature and a 5-year average market capitalization was used. The following hypotheses are proposed in this section;

### A. Measures

Panel data analysis:  $Y_{i,t} = \alpha + \beta X_{i,t} + \epsilon_{i,t}$ ;  $i$  = cross-sectional dimension,  $t$  = time-series dimension,  $Y_{i,t}$  = dependent variable,  $X_{i,t}$  = independent variable,  $\epsilon$  = error term. The regression output was based pooled effect (PE), fixed effect (FE) and random effect (RE) methods. The two approaches were used to check on the consistency of the results. Thus, this robustness will pave a way for meaningful interpretations.

### B. Hypotheses Testing

The Upper Echelon Theory argued that board characteristics (top-level management) and its impact on firm performance [12]. Consequently, literature shows the actual relationship between demographic diversity among board members and its impact on firm value [6, 10, 11]. Hence, the proposed hypotheses for this study are as below;

**H1:** Gender diversity among the board members (BODs) has a positive impact on firm performance (TOBIN'Q).

**H2:** Ethnic diversity among the board members (BODs) has a positive impact on firm performance (TOBIN'Q).

**H3:** Age profile of board members (BODs) has a positive impact on firm performance (TOBIN'Q).

## C. Model Applied

The below modeling equation shows relationship between demographic diversity and market value of firm. Table I. shows the variables operationalization. To check on the effect of diversity and firm value, the following model would be use;

$$TOBINQ_{it} = \alpha + \beta_1 GENDIV_{it} + \beta_2 ETHNICDIV_{it} + \beta_3 AGE_{it} + \beta_4 FAGE_{it} + \beta_5 FSIZE_{it} + \beta_6 MKTP_{it} + \beta_7 BSIZE_{it} + \beta_8 BR_{it} + \beta_9 GROWTHOPPT_{it} + \epsilon$$

TABLE I. OPERATIONALIZATION OF VARIABLES

Variable	Measurement
TOBIN'Q	Total market value of firm / Total asset value of firm
GENDIV	Total number of females / Total board members [Gender diversity]
ETHNICDIV	Total Non-Bumiputera (Non-Malay) / Total board members [Ethnic diversity]
AGEP	Average age of all board member [Age profile]
FAGE	Number of years since incorporation [Firm age]
FSIZE	Log of total assets [Firm Size]
MKTP	Total market capitalization
BSIZE	Total board members [Board size]
FINLEV	Total Debt / Total Asset [Financial leverage]
BR	S.D (Operating Profit) /Mean of Operating Profit [Business Risk]
GROWTHOPPT	Sales <sub>t</sub> /Sales <sub>t-1</sub> [ $\Delta$ Sales]

## VII. EMPIRICAL ANALYSIS AND DISCUSSIONS

The proposed model and hypotheses of this study are rigorously tested with descriptive statistics, panel unit root test, cook's distance outliers test, poled OLS, random effect and fixed Effect techniques.

### A. Descriptive Statistics

The descriptive statistics results of all variables are presented in Table II. The largest board size is 14 and a maximum woman on a board is 3. The average gender diversity at board level is 0.0846. Ethnic diversity average .5594 and age profile average 59.133. Sample is N = 300. The time for study T= 5 Years.

TABLE II. DESCRIPTIVE STATISTICS ON DIVERSITY & FIRM PERFORMANCE

Variable	Mean	Std. Dev.	Min	Max
Tobin 'Q'	1.3799	1.432	.00013	9.552
Female	.82	.9221	0	3
Gender Diversity	.0846	.0936	0	.3333
Bumi Putera	4.136	2.837	0	12
Non-Bumi Putera	4.906	2.425	0	11
Ethnic Diversity	.5594	.2650	0	1
Age Profile	59.133	4.3762	48.75	70.833
Firm Age	32.733	17.205	2	103
Firm Size	15.716	1.215	12.834	18.411
Total Asset	1.31e+07	1.62e+07	374844	9.90e+0
Mktp (RM '000)	12372.58	18037.12	591.46	183081
Board Size	8.94666	1.967	5	14
Financial Leverage	23.8283	17.399	0	71.46
Business Risk	.1095	.0752	.0033099	.6123
Growth Oppt.	11.789	19.875	-40.85	176.93

N = 300, n = 60, T = 5

### B. Panel Unit Root Test

**H<sub>0</sub>:** each time series contains a unit root **H<sub>1</sub>:** each time series is stationary. As the results in Table III. presents that panel of this study do not have a unit root factor. Refer to the p-value which is highly significant among in all variables, thus we rejects the null hypothesis of this test. Thus, the evidence suggests that all variables in panel have stationary nature. In other words, we can argue that data is stable and there is no biased information in panel.

TABLE III. PANEL UNIT ROOT TEST RESULTS

Series	TOBINQ		GENDIV		ETHNICDIV		AGEP		BSIZE	
	No Trend	Trend	No Trend	Trend	No Trend	Trend	No Trend	Trend	No Trend	Trend
<b>Level</b>										
Levin Lin	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
IPS	0.000***	0.000***	0.651	0.521	0.000***	0.000***	0.314	0.163	0.291	0.60
ADF-Fisher	0.004***	0.001***	0.965	0.964	0.086	0.012*	0.859	0.163	0.737	0.98
<b>Level</b>										
Levin Lin	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
IPS	0.960	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
ADF-Fisher	0.998	0.164	0.036*	0.124	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***

Note: P < 0.05\*, P < 0.01\*\*, P < 0.001\*\*\*

C. Cook's Distance Outliers Test

Cook's distance outlier test is used to measure combines the information of leverage and residual of the observation. The graph Fig.2. is showing that there is some outliers, which are not consistent with the data. After deleting these problematic companies. Some cases have large residual (i.e. the difference between the predicted and observed value for cases are exceptionally large) but some cases does not have much leverage. Therefore, we can conclude that our panel is in smooth form after deleting these cases. [Number of obs = 300m, F (10,289) = 33.99, Prob > F = 0.0000]

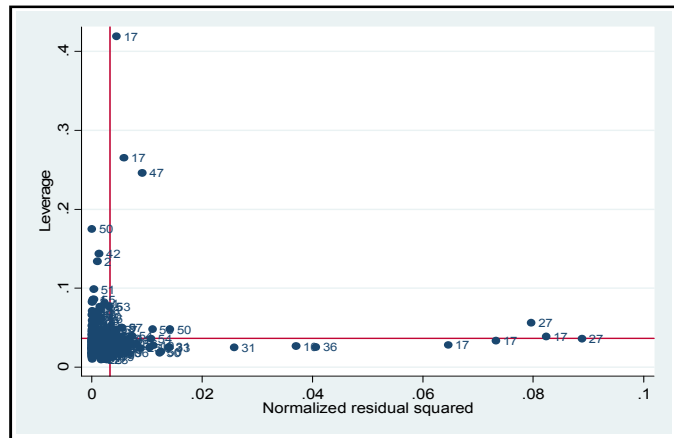


Fig.2. Cook's Distance Outliers Test

D. Poled OLS, Random Effect and Fixed Effect

The key aspects of diversity and firm value discussed in literature review. In this study, panel data sets were used for the analyses that involved pooled effect, fixed effect and random effect methods. The summary of the regression results are presented in Table IV below. The regressand is Tobin'Q and regressors are gender diversity, ethnic diversity and age profile under demographic diversity. Furthermore, Breusch-Pagan LM Test is rejected pooled OLS effect in favour of random effect model and random effect model is rejected in favour of the fixed effect model based on Hausman Test for top listed non-financial companies. Additionally, the poled OLS effect, most of variables showed significant correlations with Tobin'Q for non-financial listed companies. As PE results

showed that age profile is negative relationship that means average age of board increase the value of firm also decrease. The same contradicting results were obtained in other variables.

However, under the fixed effect, the results indicated that gender and ethnic diversity were no longer significant with Tobin 'Q and negatively correlated. Nevertheless, age profile is positively significant with regard to Tobin'Q. Thus, by increasing age profile at board level will increase firm value. On the other hand, firm age, board size are very positively significant with firm value. Nonetheless, firm size is very negative significant with firm value. Market capitalization and growth opportunity are not significant but positive relationship with firm value. Financial leverage and business risk are not significant but negative relationship with firm value.

Referring to Table IV (fixed effect), for diagnostic check of panel i) Multicollinearity ii) Heteroskedasticity iii) Serial correlation checks were applied to see the panel data reliability. Under multicollinearity check, it was found that there was no multicollinearity problem in panel data. As (vif) < 10, which means no multicollinearity problem. In case of heteroskedasticity, the p-value less than 0.05. This means variance are constant. In serial correlation, p-value is highly significant which means there is not serial correlation problem. To see the time effect when we used fixed effect model, as the p-value is less than 0.05, we accepted H<sub>0</sub>, which means time effects are needed and all years coefficients are jointly significant.

TABLE IV. RESULTS OF PANEL DATA ANALYSIS - DEPENDENT VARIABLE: TOBIN'Q

	Pooled OLS (PE)	Random Effect (RE)	Fixed Effect (FE)
Constant	12.573*** (9.57)	5.927*** (2.79)	15.484*** (3.93)
Ethnic Div.	.615** (2.21)	.4149 (0.95)	-.624 (-1.09)
Gender Div.	.498 (0.62)	1.167 (1.35)	-.841 (-0.91)
Age Profile	-.0606*** (-3.58)	.0461** (2.18)	-.0529** (2.25)
Board Size	-.0650 (-1.71)	.0704 (1.42)	.120** (2.18)
Financial Lev.	-.0151*** (-3.43)	-.0044 (-0.83)	-.00064 (-0.11)

<b>Business Risk</b>	<b>-2.711***</b> (-2.96)	<b>-1.427**</b> (-2.04)	-1.165 (-1.79)
<b>Growth Oppt.</b>	-0.064 (-1.87)	-0.036 (-1.65)	.00166 (0.79)
<b>Firm Age</b>	.0028 (0.69)	.0110 (1.28)	<b>.2883***</b> (7.01)
<b>Firm Size</b>	<b>-.441***</b> (-6.34)	<b>-.534***</b> (-4.55)	<b>-1.732***</b> (-6.17)
<b>Market Capt.</b>	<b>.00001***</b> (3.14)	<b>8.80e-06**</b> (2.49)	1.28e-06 (0.38)
<b>Breusch-Pagan LM Test (chibar<sup>2</sup>)</b>	<b>0.0000</b> (221.22)		
<b>Hausman Test (chibar<sup>2</sup>)</b>	-	<b>0.0000</b> (111.20)	
<b>Observations</b>	300	300	300
<b>Multicollinearity (vif)</b>	-	-	(1.23)
<b>Heteroskedasticity (chibar<sup>2</sup>-stat)</b>	-	-	0.0125 <b>(2.55)**</b>
<b>Serial Correlation (F-stat)</b>	-	-	0.0000 <b>(6.01)***</b>
<b>Testing for Time Effect</b>	-	-	0.0161 <b>(3.10)**</b>

Note: P < 0.05\*\*, P < 0.01\*\*\*

TABLE V: SUMMARY RESULTS OF THE HYPOTHESES TESTED

Objective: To investigate diversity at top-level management of large companies with regard to their market value.	Tobin'Q
H1: Gender diversity among the board members (BODs) has a positive impact on firm performance (TOBIN'Q).	Not Supported
H2: Ethnic diversity among the board members (BODs) has a positive impact on firm performance (TOBIN'Q).	Not Supported
H3: Age profile of board members (BODs) has a positive impact on firm performance (TOBIN'Q).	<b>Supported</b>

The table V. shows the summary results of the hypotheses tested on developed Model. It should be noted that there is an important hypothesis (H3) strongly supported on upper-echelon theory. In fact, even gender diversity (H1) and ethnic diversity (H2) in (Table III) is negatively correlated with firm performance (Tobin'Q) but not significant. Here, two hypotheses results of this study is not supported. Therefore, it proves that there is still inconsistency between current and previous researches regarding diversity issues at board level.

## VIII. LIMITATIONS OF THE STUDY

Some limitations must be addressed here, there are 938 Malaysian listed companies and out of which top 60 non-financial companies are suitable for the study. The sample excluded all financial listed companies due to keep homogeneity in data. The variables used in this study verbalized by different measure as given in the literature and thus, might be results inconsistent and interpretations. For example, firm size can be measured by total asset, total sales, total market capitalization, etc.

## IX. CONCLUSIONS AND RECOMMENDATIONS

The findings from diversity at board level with regard to firm performance has significant positive and negative results. Age profile has very positive significant impact on firm value. As gender and ethnic participation, have no significant impact on firm value. As previous studies also showed inconsistency in results. It should be noted that age profile of directors of large companies seem to positive relation with firm value. Hence, that aged profile of directors participation at board level can enhance the profits and perhaps improving internal

operations of their companies. As results of this study is inconsistent as previous studies. There are might be several reasons behind this issue. Nevertheless, results depict quite interesting picture regarding diversity and firm performance. Firm age, firm size and board size were positively significant which means these variables are also effecting the firm value. However, the presence of diversity at board level does have impact on firm value and hence more diversified boards higher the firm value in case of large companies.

## REFERENCES

- [1] R. Monks and N. Minow, "Corporate Governance, Vol. 3," ed: Blackwell Publishing, Malden, MA, 2004.
- [2] O. f. E. Co-operation and Development, *OECD Principles of Corporate Governance 2004*: OECD Publishing, 2004.
- [3] T. Mitton, "A cross-firm analysis of the impact of corporate governance on the East Asian financial crisis," *Journal of financial economics*, vol. 64, pp. 215-241, 2002.
- [4] S. N. Abdullah, "The causes of gender diversity in Malaysian large firms," *Journal of Management & Governance*, pp. 1-23, 2013.
- [5] M. Lückereath-Rovers, "Women on boards and firm performance," *Journal of Management & Governance*, vol. 17, pp. 491-509, 2013.
- [6] R. Hassan and M. Marimuthu, "GENDER DIVERSITY ON BOARDS AND MARKET PERFORMANCE: AN EMPIRICAL INVESTIGATION ON MALAYSIAN LISTED COMPANIES," *PLATFORM - A Journal of Engineering, Science and Society*, vol. 10, pp. 17-25, 2014.
- [7] D. A. Carter, B. J. Simkins, and W. G. Simpson, "Corporate governance, board diversity, and firm value," *Financial Review*, vol. 38, pp. 33-53, 2003.
- [8] R. B. Adams and D. Ferreira, "Women in the boardroom and their impact on governance and performance," *Journal of financial economics*, vol. 94, pp. 291-309, 2009.
- [9] M. Marimuthu and I. Kolandaisamy, "Demographic diversity in top level management and its implications on firm financial performance: An empirical discussion," *International Journal of Business and Management*, vol. 4, p. P176, 2009.
- [10] R. Hassan, M. Marimuthu, and S. Kaur Johl, "Diversity, Corporate Governance and Implication on Firm Financial Performance," *Global Business and Management Research: An International Journal*, vol. 7, pp. 28-36, 2015.
- [11] R. Hassan, M. Marimuthu, and S. Kaur Johl, "Women on Boards and Market Performance: An Exploratory Study on the Listed Companies," *International Business Management*, vol. 10, pp. 84-91, 2016.
- [12] D. C. Hambrick and P. A. Mason, "Upper echelons: The organization as a reflection of its top managers," *Academy of management review*, vol. 9, pp. 193-206, 1984.
- [13] M. J. G. J. L. Raver and L. H. N. B. Schneider, "Discrimination in organizations: An organizational-level systems perspective," *Discrimination at work: The psychological and organizational bases*, p. 89, 2004.
- [14] C. West and D. H. Zimmerman, "Doing gender," *Gender & society*, vol. 1, pp. 125-151, 1987.
- [15] F. J. Milliken and L. L. Martins, "Searching for common threads: Understanding the multiple effects of diversity in organizational groups," *Academy of management review*, vol. 21, pp. 402-433, 1996.
- [16] G. Robinson and K. Dechant, "Building a business case for diversity," *The Academy of Management Executive*, vol. 11, pp. 21-31, 1997.
- [17] V. Singh and S. Vinnicombe, "Women pass a milestone: 101 directorships on the FTSE 100 boards," 2004.
- [18] N. Smith, V. Smith, and M. Verner, "Do women in top management affect firm performance? A panel study of 2,500 Danish firms," *International Journal of Productivity and Performance Management*, vol. 55, pp. 569-593, 2006.
- [19] G. Monbiot, "The denial industry," *The Guardian*, vol. 19, 2006.
- [20] M. Verbeek, *A guide to modern econometrics*: John Wiley & Sons, 2008.
- [21] D. N. Gujarati, "Basic Econometrics. 4th," ed: New York: McGraw-Hill, 2003.
- [22] J. A. Hausman, "Specification tests in econometrics," *Econometrica: Journal of the Econometric Society*, pp. 1251-1271, 1978.