

CHAPTER III

RESEARCH METHODOLOGY

3.1. Population and Sample

In this study, the writer used quantitative method with regression linear. This approach emphasizes the hypothesis testing through the measurement of variables and data analysis with statistical procedures. In this study also tested the influence of board gender diversity in corporate governance the firm performance and firm risk taking. Thus the writer could generalize conclusions based on the hypothesis. Population means the number of people living in particular area. It could be elements, individuals, or units that meet the selection criteria for the group to be studied or a group of individual persons, objects, or items from which samples were taken for statistical measurement. Meanwhile sample is a fixed part of a statistical population whose properties were studied to gain information about the whole. It will one of a number of things or people and used for showing what the rest like.

In samples there were some aspects of the population used to estimate unknown population characteristics. Therefore, the population of this study were board of directors and board of commissioner in Indonesia banking industry while the sample was taken from the annual report of the companies.

This study examined whether board of directors' gender and board of committees' gender diversity improves corporate performance. The

initial sample of the study comprises the financial report on banking firms listed in *Otoritas Jasa Keuangan (OJK)* for the time period of 2015-2017. The financial and board-related variables of the companies (obtained from the annual reports of the entities) were used to examine the association between board gender diversity and firm performance.

3.2. Data Collection and Technique

This study was quantitative research that the data collection method of this study was used secondary data. There was data which have been collected for some purposes. The data was collected from 104 banking sector companies that were listed in *Otoritas Jasa Keuangan* for time period 2015 – 2017 obtained from the site www.ojk.go.id. There were 103 banks, that consist of 4 stated owned enterprises banks, 63 national private commercial banks, 27 regional development banks, and 9 overseas branch bank. The variables that analysed in this study were gender in corporate governance structure as independent variable and firm performance as dependent variable. In this reseach, the writer would use SPSS 23.0 to collect the data from the companies.

3.3. Variable Measurement Scale

The firm's risk taking was measured using non-performing loan and equity to assets. The firm's performance was calculated using return on assets and return on equity. The gender board of directors were identified using the independent variable indicator.

Based on empirical study, there was no relationship between board gender diversity. Nevertheless, women were more likely to have an effect on improving company performance based on the results of various studies. On corporate governance, the board variety has been measured to be an instrument to increase the effectiveness (Kılıç & Kuzey, 2016). Variety could be categorized as gender, age, ethnicity, knowledge, education, values and perception. In this study, we would focus on gender on the corporate governance. Diversity among board members perceived as high profitably and better return on equity in context of firm performance (Hassan et al., 2015).

According to McKinney stated that a strong correlation between the presence of women in company top management and better financial results (Desvaux et al., 2017). In firm performance measurement used seven aspects to measures the company. Firm performance can be measure by profitability, growth, market value, customer's satisfaction, employee's satisfaction, environmental performance and social performance (Santos & Brito, 2012). Profitability measures the ability of the company to generate returns.

3.4. Operational Variable Definition

Independent variable was a variable that was expected to effect the dependent variable. In this study, the independent variable was the percentage of woman on board consists of the percentage of the board of commissioners and the board of directors who were supported by control

variables such as firm size and leverage. While the dependent variable was firm performance and firm risk taking.

3.4.1. Woman on Board

Gender interest was proved by recent findings that shows how interest can explain gender difference in several areas. The interest represent beliefs, returns, and financial knowledge of women and men. It also present a social model thinking through the reaction of information (Driva et al., 2016).

Diversity among board members perceived as high profitably and better return on equity in context of firm performance (Hassan et al., 2015). Variety also increases the quality of decisions made at individual and group levels in the organizations. This variable measured by the percentage of woman in each board.

3.4.2. Firm Performance

Return on Asset or ROA indicates company's capability to allocate and manage the resources effectively. ROA is how much the profit is being generated for each cash of the company has in assets. The higher ROA creates efficient profitability, it stated that ROA represent as indicator of gender diversity studies (Kılıç & Kuzey, 2016). The other measurement was return on equity (ROE). ROE is how well the company using shareholders' equity. This measurement indicates the evaluation, representing the return on shareholder investments (Kılıç & Kuzey, 2016).

3.4.3. Risk Taking

This study would use equity to assets ratio and non-performing loans as a measurement for risk taking variable (Ska & Weill, 2018). Those measurements were expecting to reduce their bank risky positions in the following year. Moreover, risk was measured by utility of effectiveness performance, distribution of profits and losses that were linked.

3.4.4. Control Variables

This study selects firm size and leverage as the controlled variables. Firm size defined as natural logarithm of total assets (size). While leverage is a percentage of the book value of total debt to total assets.

3.5. Data Analysis Method

3.5.1. Descriptive Statistic Analysis

Descriptive analysis is an analysis that explains the study data into sentence form. Descriptive analysis aims to convert raw data into easily understood data in a brief information.

3.5.2. Classical Assumption Test

3.5.2.1. Multicollinearity test

Multicollinearity test is used to determine existence of high correlation between variables in a multiple regression model. If there is a high correlation between the independent variables, then relation between them of the dependent variable will be disrupted. A good regression model should not be a correlate between independent variables, or may be mutually

collinear but not highly correlated. Multicollinearity testing can be done by looking at Variance Inflation Factors (VIF) and Tolerance. Both of these values show which independent variables were explained by other independent variables (Ghozali, 2016).

Tolerance measures the variability of selected independent variables that were not explained by other variables. A low tolerance value is equal to a high VIF value; because $= 1 / \text{Tolerance}$. The cut off value used to indicate the presence of multicollinearity is the tolerance value < 0.10 or equal to the value of $\text{VIF} > 10$ (Ghozali, 2016).

The procedure for determining the operational hypothesis is as follows:

1. Determine the operational hypothesis:

Ho: there is no effect of multicollinearity

Ha: there is the effect of multicollinearity

2. Establish acceptance criteria and rejection of the hypothesis:

Ho is accepted if $\text{VIF} < 10$ and $\text{tolerance} > 0.10$

Ho is rejected if $\text{VIF} \geq 10$ and $\text{tolerance} \leq 0.1$

3. Calculating VIF values and tolerance

Calculation of VIF values and tolerance is processed using data processing program namely SPSS

4. Concluding in accordance with points (2) and (3).

3.5.2.2. *Heteroscedasticity test*

Heteroscedasticity test is used to test there is a regression model residual variance inequality from one observation to another observation (Kothari, n.d.). Regression formula obtained by assuming error has a constant residual variance. Heteroscedasticity occurs if there is residual variance is not constant. While if there is no heteroscedasticity, the results model is good. Heteroscedasticity testing also can be done by Glejser Test, Park Test, Whites Test, and Spearman's rho test. Glejser test is conducted by regression between independent variable and absolute residual as dependent variable.

The Heteroscedasticity test is done by looking at the plot graph between the predicted value of the independent variable and the residual (Ghozali, 2016). The detection of heteroscedasticity is done by seeing the presence or absence of a certain pattern on the scatterplot chart between the predictive value of the dependent variable and the residual where the Y axis is Y predicted and the X axis is residual (Ghozali, 2016).

The heteroscedasticity testing steps are as follows:

1. Determine the operational hypothesis:

Ho: there is no effect of heteroscedasticity on multiple regression models

Ha: there is the effect of heteroscedasticity in the multiple regression model

2. Establish acceptance criteria and rejection of the hypothesis:

Ho is accepted if the residual in the scatterplot graph is seen to spread randomly

Ho is rejected if the residual scatterplot graph in the scatterplot looks not spread randomly

3. Creating a scatterplot graph processed out using the SPSS data processing program.

4. Concluding in accordance with points (2) and (3)

3.5.2.3. Normality test

Normality test is used to determine whether or not the normal distribution of data (Ainiyah, Deliar, & Virtriana, 2016). The normal distribution creates bell shaped, it means the data has spread equally thus it can represent the population. When data is not normal creates skewed (skewness). If the data tends to be skewed to the left is called positive skewness, if the data tend to be skewed to the right is called negative skewness, and the data is said to be normal if the data is symmetrical.

The way to detect residual values is normally distributed, is using graph analysis or statistical analysis. There are several ways that can be used to measure the normality test, including normal P-Plot test, histogram test, Chi Square test, Skewness and Kurtosis and Kolmogorov Smirnov test. In this study, to test the data distributed normally or abnormally using the Kolmogorov Smirnov test. The basis for concluding is as follows:

1. If the significance value is < 0.01 , the data is not normally distributed.

If the data spreads far from the diagonal line and does not follow the

direction of the diagonal line, then the regression model does not meet the normality test.

2. If the significance value is > 0.01 then the data is normally distributed. If the data spreads around the diagonal line and follows the direction of the diagonal line, the regression model meets the normality test.

3.5.3. Hypothesis testing

After the regression equation is free from classical assumption test, then the hypothesis is tested. The collected data was analysed using statistical analysis tools, namely multiple linear regression analysis.

3.5.3.1. Multiple Regression Analysis

Data would be analyse using multiple regression. Regression is the purpose of a statistical relationship between two or more variables (Kothari, n.d.). Regression analysis also shows the way of the relationship between the dependent variable and the independent variable (Ghozali, 2016). The model will analyse the influence of board gender diversity to firm performance and board gender diversity to firm risk taking. In this study, multiple regression analysis is the right technique to use:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4$$

Y = Firm performance or firm risk taking

X₁ = The percentage of women in the board of directors

X₂ = The percentage of women in the board of commissioners

X₃ = Firm Size

X₄ = Leverage

3.5.3.2. Coefficient Determination Test (R^2)

Coefficient Determination Test (R^2) is used to test the goodness-fit of the regression model. According to Ghozali (2013:98) the coefficient of determination is used to measure the ability of the regression model to explain the variation of the dependent variable. Coefficient of determination is between zero and one. If the value of R^2 approaches 0 it indicates a small value indicates that the ability of independent variables in explaining the variation of the dependent variable is very limited. R^2 value that is close to one means that the independent variables provide almost all the information needed to predict the independent variables.

3.5.3.3. F-Test

The F test is used to determine whether the independent variables simultaneously or simultaneously affect the dependent variable. The F test can be done by looking at the SPSS output at a significance value of F with a significance level of α of 0.01. If the results show a significance value of $F < 0.01$, H1 to H4 together effect the firm performance and risk taking variables.

3.5.3.4. T-Test

The function of T-test is to find out how much effect each independent variable to on the dependent variable. The level of significance used is 0.01 ($\alpha = 1\%$). If the test results show a significance value of < 0.01 ($\text{sig} < \alpha$), the hypothesis is accepted. Conversely, if the significance value is more than 0.01 ($\text{sig} > \alpha$) then the hypothesis is not accepted.