CHAPTER III
RESEARCH METHOD

A. Research Objects

Objects used in this research are banking sector companies in Indonesia, Malaysia, Philippines, and Thailand. The banking should be listed in Bursa Efek Indonesia (BEI or IDX), Bursa Malaysia (BM), Philippines Stock Exchange (PSE), and Stock Exchange of Thailand (SET) with the period of the time year 2015 until 2017. This data period is selected to see the renewal that occurs in banking sector companies which have more impact on the surrounding environment as a result of the company's activities by using the most updated data.

B. Type and Source of Data

This research using secondary data. Secondary data is obtained and collected from the existing resources. The secondary data in this research is annual financial reports of banking companies listed in Bursa Efek Indonesia (BEI or IDX), Bursa Malaysia (BM), Philippines Stock Exchange (PSE), and Stock Exchange of Thailand (SET) in the year 2015 until 2017.

C. Sampling Technique

The population used in this research is all companies listed in Bursa Efek Indonesia (BEI or IDX), Bursa Malaysia (BM), Philippines Stock Exchange (PSE), and Stock Exchange of Thailand (SET) in the year 2015

until 2017. The sample used is all banking companies with intellectual intensive, a company which gives good services to the customer with their knowledge, skill, and human resource ability intellectually.

Sampling technique used in this research is purposive sampling. It is a technique where the determination is not random with information and criteria are obtained with a certain consideration.

The sample used that will be used in this research are:

1. The banking companies used as a sample have to be listed consistently as a banking company in Bursa Efek Indonesia (BEI or IDX), Bursa Malaysia (BM), Philippines Stock Exchange (PSE), and Stock Exchange of Thailand (SET) during the year 2015 until 2017.

2. The banking companies published its audited financial statements

3. The banking disclosed their intangible assets in the course of 3 years, 2015 until 2017.

D. Data Collection Technique

The data collection technique undertaken in this research is the documentation method. This method was done by searching for and collecting data from banking's audited financial statement. The resource of data is obtained from official sites related companies.

E. Research Variable and Its Operational Definition

1. Independent Variable

    Independent variable is a variable which determines the value of dependent variables. Independent variable used in this research is Intellectual Capital (IC). VAIC (Value Added Intellectual Capital) is a model developed by Pulic (2000) to measure Intellectual Capital. Based on the developed Value Added in Intellectual Capital, it consists of three components: Value-Added Human Capital (VAHU), Value Added Capital Employee (VACA), and Structural Capital Value Added (STVA). According to Ulum (2009), the formula used in measuring VAIC are as follows:

    a. Value Added (VA)

        The difference between operating income and non-labored operating expenses will give the result of Value Added. Non labored operating expenses is the amount that comes from the deduction between operating expenses and employee expense/labor expenses. Because the labor expenses are the entity in creating value so it is out from the calculation.

    VA= Operating income – Non-labored operating expenses

    b. Value Added Human Capital (VAHU)

VAHU is a comparison between VA and Human capital (HC). VAHU shows the amount of cost incurred for labor investment in creating value for the company.

$$VAHU = VA/HC$$

Explanation:

VA: Value Added

HC: Human Capital/Employee Expenses

VAHU: Value-Added Human Capital

c. Value Added Capital Employed (VACA)

According to Ulum (2009), VACA is the comparison between VA and Capital Employed (CE). The ratio between value added and capital employed indicates the contribution of everyone or employee towards organization Value Added.

$$VACA = VA/CE$$

Explanation

VA: Value Added

CE: Capital Employed (Total Asset – Intangible Asset)

VAHU: Value-Added Human Capital

d. Structural Capital Value Added (STVA)

STVA is a comparison between VA and Structural Capital (SC). This ratio is used to measure the company' success in creates value for the company.

$$STVA = SC/VA$$

Explanation:

STVA   : Structural Capital Value Added

SC   : Structural Capital (VA-HC)

VA   : Value Added

e. Value Added Intellectual Capital

VAIC identifies intellectual ability as an indicator (Business Performance Indicator) and VAIC can be calculated with 3 components: *Value Added Human Capital* (VAHU), *Value Added Capital Employed* (VACA), and *Structural Capital Value Added* (STVA).

$$VAIC = VAHU + VACA + STVA$$

Explanation:

VAIC   : Value Added Intellectual Capital

VAHU   : Value Added Human Capital

VACA   : Value Added Capital Employed

STVA   : Structural Capital Value Added

2. Dependent Variable

       Dependent variable is a variable that is affected by the free variable (independent variable). In this research, it is measured with Market to Book Value (M/B) and Z-Score Index.

a. **Market to Book Value (M/B)**

       Firm Value measured by Market to Book Value (M/B) can be measured by comparing the market value and the book value.

M/B: Market value/Book value

Explanation   :

Market Value: Outstanding stock x stock price

(31st December)

Book Value: Total assets book value

b. **Z-Score Index**

       In the financial distress variable, the measurement instrument used to measure the financial distress of a bank is using Z-Score Index. The bank is said to be far from Risk of Financial Distress when Z-Score Index is > 0. The larger the Z-Score Index indicates the further the bank's distance from bankruptcy.

       The Z-Score model used in this study is a modified Z-Score Index model devoted to service companies. The Z-Score model can be used to measure the distance from the Financial Distress symptom where the loss is above equity (Eq <- π) where Eq is equity and π is profit, TA as total assets, ROA (π / TA) as return on

assets, π (ROA) as the standard deviation of ROA, and CAR (Eq / TA) as capital to asset ratio.

Equity to Total Asset Ratio is a ratio that measures the relationship between the firm's equity and total assets. This ratio is used to measure how much the proportion of company assets financed by investors and owners of companies (Hutasoit and Haryanto, 2016). The chance of financial distress can be described with probability (- ROA <CAR). If the profit is normally distributed then Z can be calculated (Z = ROA + CAR / σROA). Bank is stated far from risk if ROA + CAR / σROA> 0. Higher Z Score Index results indicate the bank is more stable.

Z-score Index can be formulated as follows:

$$\text{Z-Score Index} = \frac{ROA + Eq/TA}{\sigma ROA}$$

F. Instrument and Data Testing

1. Descriptive Statistics Test

Descriptive statistics are methods related to the collection and presentation of a data cluster so as to estimate the quality of data in the form of variables, statistical summary (mean, median, mode, standard deviation, etc), distribution, and pictorial representation (graph), without the probabilistic formula anything (Walpole, 1993; Correa-Prisant, 2000; Dodge, 2006).

2. Classical Assumption Test

In classical Assumption Test, the tests done are Normality Test, Autocorrelation Test, Heteroscedasticity Test, and Multicollinearity Test.

a. Normality Test

Normality test is used for determining the collected data whether it distributed normally or taken from the normal population. The data can be assumed as distributed normally if the data used is reached more than 30 numbers (Nazarudin & Basuki, 2017). Besides that, if the significance value $> 0,05$ it can be assumed that the data is distributed normally and if the significance value $< 0,05$ means that the data is not distributed normally. Classical method used in this test is One Sample Kolmogorov – Smirnov (K-S) Test.

b. Autocorrelation Test

In this research, the period used is from the year 2015 until 2017, so the autocorrelation test is needed. Autocorrelation test is used to know whether or not there is deviation of the classical autocorrelation assumption that is correlation happened between residual exist in the regression model. The often used method is the Durbin Watson Test (D-W Test), (Nazzarudin and Basuki, 2015). The criteria of this test are by looking at the provision if the value of dU<DW<4-dU. The value of dU is derived from the Durbin Watson

statistics table. Other than that, there are several ways to detect the autocorrelation symptoms such as Lagrange Multiplier test (LM) and Runs Test.

c. Heteroskedasticity Test

Heteroscedasticity test is used to know the variance dissimilarity from the residual for searching all regression models. The heteroscedasticity test aims to test whether in a regression model there is a variance inequality of the residual from one observation to another (Gozali, 2011). The significance level used is 5% or $\alpha = 0.05$. If the significance value $> 0,05$, it can be concluded that there is no heteroscedasticity (heteroscedasticity free) in the regression equation. There are several ways that can be used to detect the heteroscedasticity symptoms in the data, they are Glejser Test, Park Test, Spearman's rho Test, and White Test.

d. Multicollinearity Test

Multicollinearity test is used to determine whether or not a correlation between independent variables (independent) in a regression model. Multicollinearity detection can be assessed through Varian Inflation Factor (VIF) and Tolerance Value. Testing criteria are if VIF < 10 and Tolerance Value $> 0,10$, it can be concluded that there is no multicollinearity among independent variable and contrarily so that variable independent can be used. (Nazarudin and Basuki, 2017)

G. Hypotheses Testing and Data Analysis

1. Regression Analysis

    Regression Analysis is a measurement of hypothesis testing undertaken along with statistics linear model to find out that is there any relation or influence of independent variable denoted as X variable towards the dependent variable denoted as Y.

    Regression model used in this research is:

Regression Model H$_1$ – Firm Value

$$\mathbf{MV} = \boldsymbol{\alpha} + \boldsymbol{\beta_1} \, \boldsymbol{VAIC} + \boldsymbol{\varepsilon}$$

Explanation:

MV   : Market Value (M/B)

VAIC   : Intellectual Capital

E   : Error

Regression Model H$_2$ – Financial Distress

$$\mathbf{ZSCORE} = \boldsymbol{\alpha} + \boldsymbol{\beta_2} \, \boldsymbol{VAIC} + \boldsymbol{\varepsilon}$$

Explanation:

ZSCORE   : Risk of Financial Distress

VAIC   : Intellectual Capital

E   : Error

2. Coefficient Determination Test (R^2)

    Coefficient Determination declared in R^2 has the function to measure the variation of the independent variable can be elucidated by the model. The value of Adjusted R Square shows the influence of the

independent variable. Coefficient Determination is between 0 and 1. Independent variable can be said has the ability to explain dependent variable limitedly if R^2 is small.

3. T-Test

The t-test is the test used to find out the significant influence of independent variable towards dependent variable. Independent variable can be said significantly influence the dependent variable if the significant t < 0,05.

Criteria used in the T-Test are as follows:

a) If the value of significant t < alpha (0,05) and the beta coefficient is in the same direction, the hypothesis is accepted

b) If the value of significant t > alpha (0,05) and the beta coefficient is not in the same direction, the hypothesis is rejected.