CHAPTER III

RESEARCH METHOD

A. Types of Research

This study is explanatory research, because the studies explain, causal relationship between variables through hypothesis testing. According to Singarimbun (2006:5), "if research explains the causal relationships between variables through the hypotheses testing is no longer called a descriptive research but rather a research is testing hypothesis or explanatory research". The analysis approach, used in this research is a quantitative approach. Basically, a quantitative approach to research conducted inferential (framework of hypothesis testing). Moreover, this research focused on hypothesis testing using the measured data and from this research can be obtained at the conclusion that generalizes.

B. Research Site

The research was conducted on the Indonesia Stock Exchange using the data Cross-section and time series the data collection conducted in a corner of Indonesia Stock Exchange Brawijaya University Malang Jl. MT. Haryono No. 165 and the research object is the company's food and beverage's that go public on Indonesia Stock Exchange with the observation period 2008-2010.

C. Identification of Research Variables

The variables observed in this research are grouped into two, that are:

1. Dependent Variable (Y), is profitability as measured using the ratio of Return On Asset (ROA).
2. Independent variables that are:

   X_1 = Sales Growth

   X_2 = Price Earnings Ratio

   X_3 = Debt Ratio

D. The Definition of Operational Research Variables

The definitions of operational variables used in this research are as follows:

1. Profitability (Y)

   Profitability is the company's ability to generate profit. It is measured by Return On Asset (ROA), as follows:

$$\text{Return on Asset (ROA)} = \frac{\text{Net Income}}{\text{Total Asset}}$$

2. Sales Growth (X_1)

   Sales growth is another common goal among many firms. Thus, sales growth is also the result of other more basic forces on which manager can and should focus. Value of sales growth obtained by the following formula:

$$\text{Sales growth} = \frac{\text{st} - \text{st} - 1}{\text{st} - 1} \times 100\%$$

Where:

st = sales value this period

st - $_1$ = sales value last period

3. Price Earnings Ratio (PER) (X_2)

   Price earnings ratio is the ratio of market valuation that shows the amount of investor for every dollar invested profits of the investment.

   Price Earnings Ratio formula:

$$\text{PER} = \frac{\text{Market price per share}}{\text{Earning per Share}}$$

4. Debt Ratio (DR) (X_3)

   Debt ratio is the ratio that measures a company's ability to cover total obligation. Debt Ratio (DR) as follows:

$$\text{DR} = \frac{\text{total debt}}{\text{total assets}}$$

E. Population and Sample

1. Population

According to Howel (2011:7) "population is the entire of collection of events in which you are interested, because it involves the whole subject of research'. Other statement according to Schlotzhaver (2009:131) "a population is a collection of values that has one value for every member in the group of interest". The population in this research includes all companies engaged in food and beverages sectors industries that listing, and actively traded on the Indonesia Stock Exchange during the period 2008-2010. The amount of food and beverage's company listed on the Stock Exchange until December 2010 is 20 companies.

2. Sample

"A sample is also a collection of values, but is does not represent the entire group of interest" (Schlotzhaver, 2009:131). Another statement by Fink (2003:1) stated that "a sample is a portion or subset of a larger group called a population". The sampling techniques in the research were purposive sampling, where samples are selected on the basis of certain criteria or growth.

Considerations or criteria are used in the process sample selection is as follows:

1. The company publishes financial reports on a regular basis at end of the year during 2008-2010.
2. Companies have data according to variable of the research.

Based on these criteria, there are 16 foods and beverages companies listed on the Indonesia Stock Exchange in the period 2008-2010. The research samples based on the above criteria are as follows:

1. PT. Smart, Tbk.
2. PT. Tunas Baru Lampung, Tbk
3. PT. Cahaya Kalbar, Tbk
4. PT. Fast Food Indonesia, Tbk
5. PT. Delta Djakarta, Tbk
6. PT. Indofood Sukses Makmur, Tbk
7. PT. Multi Bintang Indonesia, Tbk
8. PT. Mayora Indah, Tbk

9. PT. Prasidha Aneka Niaga, Tbk
10. PT. Sekar Laut,Tbk
11. PT. Ultrajaya Milk Industry and Trading Company, Tbk
12. PT. Tiga Pilar Sejahtera Food, Tbk
13. PT. Siantar Top, Tbk
14. PT. Davomas Abadi, Tbk
15. PT. PTSP, Tbk
16. PT. SIPD, Tbk

F. Types and Techniques of Data Collection

Type of data used in this study is secondary data obtained from IDX, Indonesian Capital Market Directory and also from the official website of IDX, www.jsx.co.id. Type of data collected is the company's financial reports obtained from the Indonesia Stock Exchange period 2008-2010. Data collection techniques used in this research is documentation. Data is obtained from Indonesia Stock Exchange in the form of publications such as: capital Market Directory, JSX Annual Report.

G. The Method of Data Analysis

1. Descriptive Statistic

The data statistic is processed using different statistics methods. However, before more processing, called an inference process, carried out a description of the data. This process is called descriptive statistics. Function a technical term to symbolic relationship between variables.

When variables very together in a systematic way say that are functionally related, Jain and Sandhu (2009:21). The results of descriptive statistics is the number of statistical quantities that can describe the characteristic data, such as averages, standard deviations of the other's help to describe.

2. The assumptions of Classical

1. Normality Test

This test is used to determine whether in a regression model of the residual value of a regression has a normal distribution if the distribution of the residual value cannot be considered to be normally distributed then it is said there is a problem on the assumption normal.

To test the normality of the residuals can be done by performing a *Kolmogorov-Smirnov* test. Hypothesis testing is:

H_O: Data is normal distribution residuals

H_1: Data is not normal distribution residuals

The Guidelines are used to accept or reject the hypothesis if the hypothesis H_O is proposed:

1. Ho accepted if the p-value in column Asymptotic Significant (two tailed)> level of significant (α).
2. Ho is rejected if the p-value in column Asymptotic Significant (two tailed) <level of significant (α).

While the guidelines are used to accept or reject the hypothesis if the hypothesis H_1 is proposed:

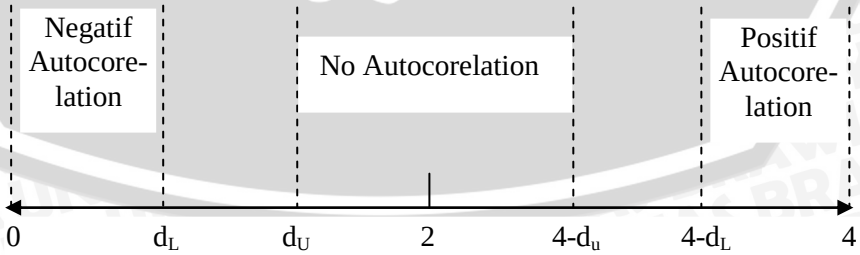
1. H_1 accepted if the p-value in column Asymptotic Significant (two tailed) <level of significant (α).
2. H_1 is rejected if the p-value in column Asymptotic Significant (two tailed)> level of significant (α).

2. Autocorrelation test

Autocorrelation test aims to test whether the model regression linear between the error in period t with an error in period t-1 (before). If there is autocorrelation arise because the residuals (errors) are not free from one other observation.

The easy way to detect the presence or absence of autocorrelation can be used Durbin Watson test. Multiple linear regression models free of autocorrelation if the calculated value of Durbin Watson is located in the No autocorrelation. Possible location is supported by tables' dl and du, and the value of k (the number of independent table). This test can be described as follows:

Figure 3 Region of the autocorrelation Durbin-Watson



(Nugroho, 2005 : 60)

d_U = Durbin – Watson *Upper*

d_L = Durbin – Watson *Lower*

The underlying hypothesis testing is as follows:

H_O = (r = 0): no autocorrelation

H_1 = (r ≠ 0): autocorrelation

The Durbin Watson formula can be written as follows:

$$DW = \frac{\sum_{t=2}^{N} (\varepsilon t - \varepsilon t - 1)^2}{\sum_{t=2} \varepsilon^2}$$

(François, 2004:171)

Where ε is the estimated residuals and $_N$ is the simple regression size

3. Multi-collinearity test

Different independent variable multiple regression model are related. However, when this relationship is to strong, some problems arise when testing and fitting model. Multicollinearity test aims to test whether the regression model found no correlation between free variables (independent). A good regression model should not be a correlation between the independent variables. To detect the presence or absence of multicollinearity in the regression model, can be performed such as by looking at the variance inflation factor and tolerance values. If the variance inflation factor of not more than 10, and the Tolerance value of not less than 0.10, then the model can be said to be free from multicollinearity.

4. Heteroscedasticity test

Heteroscedasticity test aimed at testing whether the regression model occurs variance inequality of the residual of the observations to other observations. If the residual variance from one observation to another observation remains, it is called Homokedastisitas and if different from is called heterokedastisitas. Good regression models are homokedastisitas or not Heteroscedasticity.

To detect the presence or absence heterokedastisitas, can be done by testing Glejser. Glejser test based on the hypothesis:

H_O: homogeneous residual variance

H_1: residual variance not homogeneous

If a significant independent variable a statistically affect the dependent variable then there is any indication heterokedastisitas, but if there is no independent variable is statistically significant influence the dependent variable (α = 5%), it can be concluded that there is no regression model containing heterokedastisitas. In the test Glejser, the SPSS output display will show whether there is a significant independent variable statistically affect the dependent variable values Absolute Ut (Ut Abs).

3. Multiple Linear Regression Analysis

To analyze the relationship profitability (ROA) as dependent variable (Y) with a independent variable (X), then established model of analysis multiple linear regression model, with help of computer program

Statistical package for social sciences (SPSS) 12. In this research determined the level of significant (α) = 5%.

Multiple linear regression models are used to create a relationship between one dependent variable and several independent variables. In general multiple linear regression equation according to Sharma (2010:514), as follows:

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k + e$$

Where:

y = Profitability

β_0 = Constant which represent the value of y when value of all independent variable ii zero

β_1 = Sales growth

β_2 = Price earnings ratio

β_3 = Debt ratio

e = random error associated with the sampling process. It represents the unpredictable variation in *y* values from the population regression model

Null hypothesis (denote by the symbol H_0) and the alternative hypothesis (denote by H_A) it can be set as follows:

$H_O : \mu_1 = \mu_2 = \ldots \mu$

H_1: not all μ_{js} are equal (j, 1,2,3, … k)

Null hypothesis indicates that all population mean for all levels of treatments are equal. If one population mean different from another, the

null hypothesis is rejected and the alternative hypothesis is accepted. (Bajpal 2010:389).

Multiple linear regression models can be termed as a good model if the model satisfy the assumptions of normality Data and free from multikolieritas, autocorrelation and heterokedastisitas.

4. f-test

f test statistic is basically to show that all variables are independent or free inclusion in the model has simultaneously influence on the dependent variable. F-test results are the SPSS output can be seen in the ANOVA table.

Testing hypothesis is:

H_0: suspected of selling growth, PER, and simultaneously leverage has no effect on PER.

H_1 :suspected of selling growth, PER, and Leverage simultaneous effect on the PER.

Guidelines used to accept or reject the hypothesis if the proposed hypothesis H_0:

a. Ho accepted if F calculated <F table, or the p-value in the column sig.> level of significant (α).

b. Ho is rejected if F calculated> F table, or the p-value in the column sig. <Level of significant (α).

While the guidelines are used to accept or reject the hypothesis if the hypothesis H1 is proposed:

a. H_1 is accepted if F calculated> F table, or the p-value in the column sig <level of significant (α).

b. H_1 is rejected if F calculated <F table, or the p-value in the column sig.> Level of significant (α).

f table it can be seen by looking at the first numerator df = k-1 (number of group-1), and the denominator df = n-k (total sample size - number of group). Significant here means H0 rejected and H1 accepted.

Specifically, the general equation the F test is given by:

$$F = \frac{R^2/k}{(1 - R^2)/(n - k - 1)}$$

Where:

R : Multiple linear coefficients

n : number of data

k : number of independent variables

5. t-test

t test statistic basically indicates how far the influence of one variable explanatory / independent individual in explaining the variation in the dependent variable. The results of this test in SPSS output can be seen in table Coefficients.

Value of the t-test trials can be seen from the p-value (the column sig) in each independent variable, Significant here means that H_1 is accepted and rejected H_O.

$$\text{test statistic} = \frac{\text{observed value} - \text{hypothesised value}}{\text{standard error of observed value}}$$

(valery and Bennet, 2007:16)

6. Coefficient of determination (R^2)

The coefficient of determination is given by r^2 or R^2 its percentage of variation in the y variable that's explanation by the x variable. Coefficient of determination R^2 aims to find out how much the ability of independent variables explain the dependent variable. Coefficient of determination value is between zero until one. Small value of R^2 is the ability of independent variables in the dependent variable identifies the variation is very limited. Value approach one means the independent variables provide almost all the information needed to predict the variation in the dependent variable.

The coefficient of determination formula can be written as follows:

$$R^2 = \frac{b_0 \sum y + b_1 \sum x_1 y + b_2 \sum x_2 y - \frac{(\sum y)^2}{n}}{\sum y^2 - \frac{(\sum y)^2}{n}}$$

Where:

$b_{1,2}$: regression coefficient
$X_{1,2}$: variable score $X_{1,2}$
Y : variable score Y

In the multiple regression, using the coefficient of determination that has been adjusted (adjusted R square) was better in seeing how well the model compared to the coefficient determinant.

In addition to the coefficient of determination, there is also a correlation coefficient (R) which shows the magnitude of the relationship

between the dependent variable with a variable independent. Correlation coefficient (R) is considered the better if close to one.