CHAPTER III

RESEARCH METHODOLOGY

3.1   Overview of Research Objects

Along with the economic recovery after the Covid-19 pandemic which can be seen through good GDP growth, the banking sector in Indonesia is also starting to show a recovery in performance. As of September 2021, the growth of loans disbursed by banks in Indonesia increased by 3% on an annual basis (Katadata, 2021). It can be said that this growth is still at a slow level when compared to the growth of Third-Party Funds (DPK) which is at the level of 9.6% on an annual basis (Tribunnews, 2021). This difference is caused by the changing nature of the post-pandemic society which is becoming more careful in spending.

The existence of this growth inequality causes banking income to be less than optimal. However, the thing to note is that this means that there is an increase in liquidity represented by the loan to deposit ratio. This condition makes the banking industry hold a lot of cash, so it has sufficient cushion in the face of bad conditions.

The object of research taken in this study are companies listed in the financial sector, in particular the banking sub-sector listed on the Indonesia Stock Exchange from 2017-2020 that publishes annual financial reports in accordance with applicable accounting standards and has carried out an audit process handled by independent auditors.

3.2   Research Design

- **Problem Statement**

According to Sekaran & Bougie (2016), a good problem statement is a problem statement that is unambiguous, specific, focused, and the issues raised are from an academic point of view. This study aims to analyze the effect of income diversification, capital adequacy, operating efficiency, and loan to deposit ratio on non-performing loans either simultaneously or partially.

- **Purpose of Study**

There are three types of purpose of study, namely exploration, description, and hypothesis testing (Sekaran & Bougie, 2016). The purpose of hypothesis testing is to determine accurately whether the null hypothesis can be rejected in favor of an alternative hypothesis. In this study, the research objective is to test the hypothesis described in chapter 2, where there are five financial ratios that become independent variables, namely income diversification, capital adequacy, operating inefficiency, and loan to deposit ratio. Meanwhile, the dependent variable of this research is non-performing loan.

- **Units of Analysis**

In this study, the unit analyzed by the researcher is a banking company listed on the Indonesia Stock Exchange during the 2017-2020 period.

- **Types of Investigation**

This research includes both empirical methods through the collection and analysis of financial statement data, as well as theoretical methods with an understanding of the existing variables. The method used in this research is causal quantitative.

This study uses a causal approach with the aim of explaining the influence between research objects or research results and looking for a strong relationship between the variables of income diversification, capital adequacy, operating inefficiency, and loan to deposit ratio on non-performing loan banks listed on the Indonesia Stock Exchange. 2017-2020 through correlation analysis and make predictions with regression analysis.

- **Sampling Design & Time Horizon**

In this study, the target population used is the banking sub-sector companies listed on the Indonesia Stock Exchange during the 2017-2020 period. From this total population, researchers took a certain number of samples. According to Roscoe (1975), the ideal sample size is 30 - 500 data. This is a guide for researchers in determining the sample size.

The data that the researchers took used a non-probability purposive sampling method which was limited by time and certain criteria. The time period of the company's financial statement data that the researchers took started from 2017-

31

2020. The sample criteria that have been determined by the author in this study are as follows:

1. Banking sub-sector companies that have annual financial report data for 2017-2020 on the Indonesia Stock Exchange website.

2. Companies in the banking sub-sector that do not have a special notation from the Indonesia Stock Exchange.

3. Companies in the banking sub-sector with a market capitalization greater than IDR 1 trillion.

4. Companies in the banking sub-sector classified as minimum BUKU III banks.

- **Data Collection Method**

According to Sekaran & Bougie (2016), observation is observation, recording, analysis, interpretation of a behavior, action, or event that is carried out in a planned manner. In this study, researchers conducted observations on financial data from banking companies that became the research sample.

The data collection method that the researcher did was by downloading files from a trusted website. Data on financial statements, publication reports, and annual reports of research companies were taken from the Indonesia Stock Exchange website and the websites of the sample companies. For other supporting instruments such as previous similar studies, research data and journals to support this research, were taken through the Google Scholar, Researchgate, and Emerald Insight websites.

- **Measurements**

In this study, the authors want to analyze the effect of income diversification, capital adequacy, operating inefficiency, and loan to deposit ratio on non-performing loans. The operational definitions of research variables are as follows:

Table 3. 1 Operational Definitions

Variable	Measurement Formula	Reference
Income Diversification	*Non-interest income / total income*	Rachman et al. (2018)
Capital Adequacy (CAR)	*Shareholders' equity / Risk weighted assets*	Kumar & Kishore (2019)
Operating Inefficiency (BOPO)	*Non-interest expense / non-interest income*	Rachman et al. (2018)
Loan to Deposit Ratio (LDR)	*Total loan / total deposit*	Rahman et al. (2017)

3.3 Data Analysis Method

In analyzing the data, the researcher conducted various tests on the sample. First, the researcher conducted a descriptive analysis, then continued with statistical tests, and then tested the hypothesis. The software used in this research is SPSS version 25.

3.3.1 Descriptive Statistics

Descriptive analysis is the presentation of the average or mean and standard deviation of the data used with the aim of providing a basic description of the data.

3.3.2 Statistic Tests

3.3.2.1 Classic Assumption Test

The researcher used four classical assumption tests, namely normality, multicollinearity, heteroscedasticity, and autocorrelation tests.

3.3.2.1.1 Normality Test

The normality test is a test of the normality of the data distribution. The normality test is used in statistical analysis because the assumption of the data held must be normally distributed (Santosa & Ashari, 2005). In this study, researchers used the normality test with the Kolmogorov-Smirnov method.

In using the Kolmogorov-Smirnov method, the normal distribution test of the data can be concluded as follows:

1. The tested data can be said to be normally distributed if the significance probability value is greater than 0.05.

2. The tested data can be said to be not normally distributed if the significance probability value is less than 0.05.

3.3.2.1.2 Multicollinearity Test

The multicollinearity test aims to test whether the independent variables in the regression model have a correlation or not. A good regression model does not have a correlation between the independent variables (Ghozali, 2007). To detect multicollinearity, Value Inflation Factor (VIF) can be used. If the VIF value > 10, then multicollinearity occurs. However, if VIF < 10, multicollinearity does not occur (Wijaya, 2009).

3.3.2.1.3 Heteroscedasticity Test

Heteroscedasticity test is the observed error or residual that does not have a constant variance. To detect the presence or absence of heteroscedasticity, a scatterplot can be used between the predicted value of the dependent variable, namely ZPRED and the residual SRESID. To test for heteroscedasticity, the data in the scatterplot should not form a certain pattern. The data in the scatterplot must spread above and below the number 0 on the Y axis. If this happens, then the regression model passes the heteroscedasticity test.

3.3.2.1.4 Autocorrelation Test

Autocorrelation test is an assumption test with regression where the dependent variable is not correlated with itself (Santosa & Ashari, 2005). This test must be carried out on data using time series, so researchers use this test. The basis for making decisions on the autocorrelation test is based on the Durbin-Watson number.

Table 3. 2 Durbin-Watson Table

Null Hypothesis	Decision	If
No positive autocorrelation	Reject	$0 < d < dl$
No positive autocorrelation	No decision	$dl \leq d \leq du$
No negative correlation	Reject	$4 - dl < d < 4$
No negative correlation	No decision	$4 - du \leq d \leq 4 - dl$
No positive autocorrelation	Accept	$du < d < 4 - du$

3.3.2.2 Goodness of Fit Test

Testing the accuracy of the model was carried out by means of a simultaneous significance test and a coefficient of determination test (R square).

3.3.2.2.1 Simultaneous Significance Test (F-test)

Simultaneous significance test is a test to see whether the various independent variables in the study affect the dependent variable significantly simultaneously. This F test has the following criteria:

- If F count > F table, then H0 is rejected.

- If F count < F table, then H0 is not rejected.

If H0 is rejected, it can be ascertained that the various independent variables affect the dependent variable significantly. However, if H0 is not rejected, then the various independent variables do not affect the dependent variable simultaneously (can affect partially or not affect at all). The f-test can also be done by looking at p-value. If p-value is more than 0,05, null hypothesis is rejected, and vice versa.

3.3.2.2.2 Coefficient of Determination Test (R square)

The coefficient of determination serves to determine the magnitude of the influence of the independent variable on the dependent variable which is manifested in the form of a percentage.

3.3.2.3 Hypotheses Test

3.3.2.3.1 Partial Multiple Regression Analysis (t-test)

Hypothesis testing was carried out using multiple regression analysis which aims to test how the partial effect of the independent variable on the dependent variable is by comparing t-count and t-table. If t-count is greater than t-table, then H0 is rejected, and if t-count is smaller than t-table, then H0 is not rejected. The t-test can also be done by looking at p-value. If p-value is more than 0,05, null hypothesis is rejected, and vice versa.