CHAPTER III

RESEARCH METHODOLOGY

3.1. Research Approach

The research approach is an attempt to study reality in an experimental setting based on accurate and accountable data. Furthermore, the research method is one of the primary strategies used by experts to achieve research objectives.

"The research technique is a logical strategy for collecting substantial knowledge fully intended on finding, developing, and displaying specific information so that it tends to be used to understand, address, and anticipate challenges," according to (Sija Binoy, 2019)"

3.2. Research Strategy

Overall, there are two types of research methods: qualitative and quantitative. This study employs quantitative methods, which are specific examination techniques based on positivism's way of thinking, and are used to examine specific populations or tests. Inspection methods are generally carried out at random, and data analysis is quantitative/measurable to test the predetermined theory (Samira Anggraeini& Krisnando , 2020).This research approach is also renowned for its insightful measurements, particularly the insights employed to break down data by portraying or depicting current data.

3.3. Object of research

In a study, the purpose of research is a concern since it is the goal to be met in order to obtain answers or solutions to problems that arise. The aim of study, according to (Sugiyono, 2020), is "the factors studied by researchers at the location where the research was done". In addition, the research target is a scientific purpose to collect data for specific goals and applications involving something objective, legitimate, and trustworthy (certain variables).

Based on the clarification above, the object in this study is the banking subsector of finance sector in IDX Indonesia which is examined in terms of financial statements using financial ratios such as current ratio, debt to asset ratio, return of asset ratio and total asset turn over and working capital to total asset with data period for 4 years starting from 2018-2021.

According to a review of the literature, various studies on the landscape of liquidity management have been done. The previous study examined liquidity management from the viewpoints of a variety of enterprises and locations. In this vein, it is expected that a similar study would be conducted in Indonesia. In Indonesia, there are few research in the subject of liquidity management, which provides motivation to begin work on the current topic in order to fill the vacuum in empirical studies in the ostensible domain. As a result, the current paper examines the relationship between liquidity and profitability of companies listed on the Indonesia Stock Exchange in depth (IDX).

A research technique, according to (Melia Trie Utami, Gusganda Suria Manda, 2021), is "a scientific way of acquiring valid data with the purpose of finding, developing, or improving something. "and proving it to a certain knowledge so that it can be found, developed, and proven to a certain knowledge so that it can be found, developed, and proven to a certain knowledge so that it can be found, developed, and proven to a certain knowledge so that it can be It can then be utilized to comprehend, solve, and anticipate issues. This study is a collaborative effort. Descriptive associative research Descriptive research, according to (Nanda Rizki Amalia, 2021)is study that focuses on a certain topic. Undertaken to assess the value of a single or multiple independent variables without conducting any comparisons or linking one variable to another.

According to (ROYDA, 2019)the associative approach is a study that seeks to determine the association between two or more variables. This research can lead to the development of a theory that can be used to explain, predict, and control a phenomenon. Using logistic regression to categorize for proof of analysis between variables. In this investigation, logistic regression was utilized since it does not make the assumption of normality for the independent variables in the model, allowing limitations such as data normality to be ignored. Number 1 is the corporate code for financial trouble, while number 0 is for non-financial distress. That instance, if the resulting equation value approaches 1, it indicates that a company's risk of financial crisis is high. It signifies that a company's chances of experiencing financial difficulties are high. Meanwhile, if the value generated is near to 0, it suggests that the risk of non-financial distress for businesses is low. (Bangladesh Open University, 2019)

3.4. Population and Sample

According to (Alex Casteel&Nancy L.Bridier, 2021) the population is a speculation region comprising of objects/subjects that have specific characteristics not entirely settled by specialists to be concentrated and afterward made determinations. Table shows the sector that were chosen for the investigation. The Indonesia stock market is divided into About 40 companies from banking sub-sector. The current analysis takes into account 40 different banks. The Financials Sector includes companies that provide financial services such as Banks.

Table 3 List of Financial Sector Companies of Banking Sub-Sector

List of Financial Sector Companies Banking Sub-Sector in IDX		
No.	Company	Stock code
1	Bank Rakyat Indonesia Agroniaga	AGRO
2	Bank Amar Indonesia	AMAR
3	Bank Jago	ARTO
4	Bank MNC International	BABP
5	Bank Capital Indonesia	BACA
6	Bank Central Asia	BBCA

7	Bank Bukopin	BBKP
8	Bank Mestika Dharma	BBMD
9	Bank Negara Indonesia	BBNI
10	Bank Rakyat Indonesia	BBRI
11	International Business Bank	BBSI
12	Bank Jtrust Indonesia	BCIC
13	Bank Danamon Indonesia	BDMN
14	Regional Development Bank Banten	BEKS
15	Bank Ganesha	BGTG
16	Bank Ina Perdana	BINA
17	West Java Regional Development Bank	BJBR
18	Regional Development Bank of East Java	BJTM
19	Bank QNB Indonesia	BKSW
20	Bank Maspion Indonesia	BMAS
21	Bank Mandiri	BMRI
22	Bank Bumi Arta	BNBA
23	Bank CIMB Niaga	BNGA
24	Bank Maybank Indonesia	BNII
25	Bank Permata	BNLI
26	Bank syariah	BRIS
27	Bank Sinarmas	BSIM
28	Bank of India Indonesia	BSWD
29	National Pension Savings Bank	BTPN
30	Sharia Pension Savings Bank	BTPS
31	Bank Victoria International	BVIC
32	Bank Oke Indonesia	DNAR
33	Bank Artha Graha International	INPC
34	Bank Mayapada International	MAYA
35	China Construction Bank	MCOR
36	Bank Mega	MEGA
37	Bank OCBC NISP	NISP
38	Bank Nationalnobu	NOBU
39	Bank Pan Indonesia	PNBN

40	Bank Panin Dubai Syariah	PNBS
Insurance Sub-Sector		

Source: Source The Financials Sector includes companies (IDX)
https://www.cekdollarmu.eu.org/2021/01/Daftar%20Perusahaan
%20Sektor%20Keuangan%20di%20BEI.html

A. The population: of this study is all banking sub-sector in The Financial Sector includes listed on the IDX from 2018 to 2021, totaling 40 companies. The sample that was determined based on the purposive sampling method was 46 companies. While the comprehension of the sample according to (Alex Casteel&Nancy L.Bridier, 2021)"The sample is essential for the number and attributes moved by the population

B. The sampling methodology: is a method of investigation (Alex Casteel&Nancy L.Bridier, , 2021) essentially, there are two types of sampling techniques: Probability Sampling and Non-Probability Sampling. While non-likelihood examining or purposive inspecting is the sampling approach used in this investigation. According to (Alex Casteel&Nancy L.Bridier, , 2021) "purposive sampling is a method for selecting samples based on specific rules".The goal of employing this purposive sampling strategy is to get the information that the analyst need; after that, the expert takes the following measures when obtaining this sample:

1. Banking subsector of finance sector in IDX in the 2018-2021 period.
2. Banking subsector of finance sector that report their financial statements successively during the study period.
3. Banking subsector of finance sector that distribute dividends during the study period.

Based on the sampling results obtained 40 banking subsector of finance sector companies that meet the sampling criteria. The analysis in this study will be carried out over 4 periods, starting from the 2018-2021 period so that the data from the sample amounts to 40 companies.

3.5. Types, Sources, and Techniques of Data Collection
3.5.1. Data Type

Analysts used quantitative data types in this analysis, particularly monetary reports downloaded from the IDX. "According to Wikipedia, quantitative data is "information in the form of numbers or quantitative data that has been scored (scoring)" (Sugiyono, 2020)

Quantitative data can be defined as data in the form of numbers or scores, which is often collected using a data collection instrument whose responses are expressed as a range of scores. Quantitative data, on the other hand, is information that tends to be studied using statistical procedures.

3.5.2. Data source

Analysts used secondary data in this study. The information is in the form of financial reports from consumer goods companies listed in the IDX for the years 2018 through 2021. The information to be gathered comes from the accounting report's budget summary, benefit and misfortune, and capital changes. The data comes from the company's financial statements, which are available on the Stock Exchanges' official website.

3.5.3. Data collection technique

Because the primary goal of the study is to collect data, data collection procedures are the most important step in the process. The data collection strategy used in this study is the documentation method, which entails seeking for and gathering information related to the research problem in order to obtain the correct data. The documentation process is finished by gathering consumer goods companies' yearly financial reports in IDX for the 2018-2021 period. The professionals obtained sample fiscal reports from the stock exchanges in order to compile them for this review. The following is a link to IDX stock trades: https://www.idx.co.id/en-us Indonesia =from that point onward, the specialist analyzes the data in the budget summaries and significant notes connected with the issue to be examined.

3.6. Operational definition of Research
1. Current Ratio(X1)

Current Ratio (CR) is a ratio that delivers a harsh proportion of the level of an organization's liquidity, according to (Samira Anggraeini& Krisnando , 2020) The Company's ability to meet temporary commitments that are due shortly by utilizing current resources that are readily available.

Operational Definition: The Current Ratio in this study is the current ratio of 46 Banking subsector of finance sector companies during the 2018-20121period.

$$CR = \frac{Current\ Assets}{Current\ Liabilities}$$

Where:

Current Assets or Current Assets are company assets that can be used or cashed in the near term of less than one year.

Current Liabilities are company debts that must be met within one year.

2. Return on Assets (ROA) (X2)

Return on assets able to measure the company's ability to generate profits in the past and then projected in the future. Assets or assets in question are all company assets obtained from own capital or from foreign capital which have been converted by the company into company assets that are used for the survival of the company.

States "Return on assets reflects how much return is generated on every rupiah of money invested in assets". (Frank Emmert-Streib&Matthias Dehmer, 2019)

Operational Definition: The Return on Assets in this study is the current ratio of 46 Banking subsector of finance sector companies during the 2018-20121period.

$$Return\ on\ Assets = \frac{Net\ profit}{Total\ Assets}$$

3. Debt to Assets Ratio (DAR) (X3)

Debt to Assets Ratio is a measurement of how much debt is used to finance assets... The higher the ratio, the greater the risk faced by the company. DAR is calculated by dividing total debt (liability) by total assets. This

ratio is used to measure how much assets are financed with debt. The higher the ratio, the greater the assets financed with debt and it is more risky for the company (Samira Anggraeini& Krisnando , 2020) states that "Debt to Assets Ratio, which is a ratio that calculates what part of the total funding needs are financed with debt ."

Operational Definition: The Debt to Assets Ratio in this study is the current ratio of 46 Banking subsector of finance sector   companies during the 2018-20121period.

$$DAR = \frac{Total\ Liabilities}{Total\ Assets}$$

4. Total Asset Turnover (TATO) (X4)

Total Asset Turnover (TATO) is a ratio used to measure the turnover of all assets owned by the company and measure how much sales are obtained from each rupiah of assets. Meanwhile, , Total Asset Turnover measures asset activity and the company's ability to generate sales through the use of these assets. This ratio also measures how efficiently these assets have been used to generate income. Meanwhile, according to (Sugiyono, 2020)this ratio shows total asset turnover measured by sales volume, in other words how far the ability of all assets to create sales.

Operational Definition: The Total Asset Turnover in this study is the current ratio of 46 Banking subsector of finance sector   companies during the 2018-20121period.

$$Total\ Asset\ Turn\ Over = \frac{Sales}{Total\ Assets}$$

5. Working capital to total assets (WCTA) (Y)

Working capital to total assets is working capital to assets that can affect the size of the company's profit activity, sufficient working capital for the company to provide good performance as well as for the company to get the profit to be achieved. (Mas Intan Purba, Abdullah Sani Sitorus, Anita Rinanda, Ispeando Malau, Qanladystio Danantho, 2020)

Operational Definition: The Working capital to total assets in this study is the current ratio of 46 Banking subsector of finance sector   companies during the 2018-20121period.

$$Working\ capital\ to\ total\ assets = \frac{Current\ Assets - Current\ Liabilities}{Total\ Assets}$$

3.7 Data Analysis Techniques
3.7.1 Classical Assumption Test
1. Normality Test

The normality test is used to determine if the variables in the model are regularly distributed or not, according to (Samira Anggraeini& Krisnando , 2020, p. 10) a normal data distribution is a sign of a strong regression model. The Probability Plot Test (P-Plot) and the Kolmogorov Smirnov Test were used in this study to determine the ordinariness of the data.

1. If the probability value is> 0.05 (greater than 5%), then the data can be said to be normally distributed.

2. If the probability value is <0.05 (less than 5%), it can be said that the data is not normally distributed.

2. Multicollinearity Test

The multicollinearity test is used to examine whether a regression model has a correlation between the independent variables, according to (Samira Anggraeini& Krisnando , 2020, p. 11)). A multicollinearity problem has been observed if the correlation value is more than 0.80. Multicollinearity describes a significant relationship between two or more independent variables in a regression model.

The resistance and change expansion factor (VIF) readings can be seen to determine if there is a connection between the factors, according to (Nanda Rizki Amalia, 2021). The resilience esteem has a limit of 0.10, which is equivalent to a VIF esteem of 10".

3. Heteroscedasticity Test

The heteroscedasticity test is used to examine if there is an inequality of variations between the residuals of one observation and the residuals of another in a regression model, according to (Samira Anggraeini& Krisnando , 2020, p. 12) . It is a decent regression equation if there is no heteroscedasticity in it. The Harvey Test method can detect the presence or absence of heteroscedasticity since the regression coefficient value of the independent variable is not significant for the dependent variable.

Examine the dissipate plot diagram strategy between the expected qualities of the reliant variable, specifically ZPRED and the leftover SPRESID, to evaluate if there is heteroscedasticity. There is no heteroscedasticity at that point if there is no sure example and it does not spread above and below zero on the y-pivot. A good model is one that is free of heteroscedasticity ((Waled Khaled&Jinguan Lin, 2019).

4. Autocorrelation Test

According to (Samira Anggraeini& Krisnando , 2020, p. 13) the autocorrelation test is used to see if there is a link between confounding error in period t and confounding error in period t-1 in the liner regression model (previous). There are no autocorrelation issues in a decent regression model. A good regression model has no autocorrelation problems. Autocorrelation test is a test carried out to test whether there is an influence between the confounding variables in each independent variable. In this study, the autocorrelation test used the Breusch-Godfrey test (LM Test).

The Breusch-Godfrey test is used to evaluate the validity of some of the modeling assumptions that come with applying regression-like models to observed data series. It specifically checks for the presence of serial correlation, which is not included in a proposed model structure and, if present, would result in incorrect conclusions from other tests or sub-optimal estimates of model parameters. The regression models to which the test can be applied include cases in which lagged values of dependent variables are used as independent variables in the model's representation for subsequent observations. This is a common structure in econometric models. The Durbin-Watson Test, on the other hand, is only capable of detecting first-order auto regression, the **Breusch-Godfrey** (**BG**) **Test** can detect autocorrelation up to any predesignated order p. It also supports a broader class of repressors (e.g. models of the form $y_i = ax_i + by_{i-1} + c$).

The test is carried out as follows:

Step 1: Run OLS regression to calculate an estimate of the model

$$y = \beta_0 + \beta_1 x_1 + \cdots + \beta_k x_k + \varepsilon$$ and find the residuals $e_1, e_2, \ldots, e_n$

Step 2: Using these sample residuals $e_1, e_2, \ldots, e_n$, run an OLS regression for the model

$$e_i = \alpha_0 + \alpha_1 x_{i1} + \cdots + \alpha_k x_{ik} + \rho_1 e_{i-1} + \cdots + \rho_p e_{i-p} + \delta_i$$

Step 3: We now test the null hypothesis

$$\rho_1 = \rho_2 = \cdots = \rho_p = 0$$

Based on this null hypothesis, If the sample size is sufficiently large, then

$$LM = nR^2 \sim \chi^2(p)$$

Where n is the original sample size and R^2 is the value calculated in step 2. If p-value $< \alpha$, then the null hypothesis is rejected, and so at least one of the p_j is significantly different from zero.

The test statistic nR^2 is sometimes called the **LM** (**Lagrange multiplier**) **statistic**. There is an F test version of the Breusch-Godfrey test that uses a modified version of this statistics LM^*.

$$LM^* = \frac{n - p - k - 1}{p} \cdot \frac{R^2}{1 - R^2} \sim F(p, n - p - k - 1)$$

Where k = the number of independent variables. Note that df_{Res} from the regression in step 2 is equal to $n - p - k - 1$.

If $p = 1$, the BG test tests for first-order auto regression and is also called **Durbin's M test**.

Commonly used estimates for p are $.75 \times n^{1/3}$ or $4 \times (n/100)^{2/9}$. (real-statistics, 2022)

3.7.2 Multiple linear regression

In this review, specialists utilized Multiple Linear Regression examination. Multiple linear regression is an insightful procedure used to decide the impact between the autonomous variable and the reliant variable which shows a one-way relationship. Coming up next is the model in this review:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Information:

Y	= Working capital to total assets
α	= Constant
B1- β4	= Regression Coefficient
X1	= Current Ratio
X2	= Return on Assets
X3	= Debt to Assets Ratio
X4	= Total Asset Turnover
e	= Standard error

3.7.3 Hypothesis testing
1. Partial Test (t Test)

The t test is utilized to test whether or not there is a to some extent critical impact of the free factor (X) on the reliant variable (Y).

According to (Samira Anggraeini& Krisnando , 2020, p. 14) the purpose of this t statistical test is to see how each independent variable affects the dependent variable. By comparing the t count with the t table and the significance value with the significance level in this study, namely = 5% = 0.05, we can establish whether the hypothesis is accepted or rejected. The independent variable has an influence on the dependent variable if t count> t table; however, if t count t table, the independent variable has no influence on the dependent variable. The t table is 1.988268 because the number of observations is (n = 90), the number of independent variables is (k = 4), and the degree of freedom (DF) = nk-1 is 90-4-1 = 85 with a significance level of 0.05. From the clarification above, it tends to be reasoned that assuming Ho is acknowledged, it very well may be deciphered that the impact of the autonomous variable (X) somewhat on the reliant variable (Y) is viewed as irrelevant, going against the norm on the off chance that Ho is dismissed, it tends to be deciphered that the impact of the free factor (X) is somewhat on the variable. Subordinate is considered to have a critical impact.

2. Simultaneous Test (F Test)

The F test was led to decide the impact of every free factor (X) together on the reliant variable (Y). According to (Frank Emmert-Streib&Matthias Dehmer, 2019)The F test aims to decide if the free factors (autonomous) together affect the reliant variable (subordinate). The methods that can be utilized are as per the following:

In this review, an importance level of 0.05 was utilized with levels of opportunity (n - k), where n: the quantity of perceptions and k: the quantity of factors.

Choice models:

The model fit test is rejected if > 0.05

The model fit test is accepted if < 0.05

3. Coefficient of Determination (R^2)

The coefficient of assurance R^2 is used to evaluate how much the change of the dependent variable (Y) can be clarified by the free factor, according (Frank Emmert-Streib&Matthias Dehmer, 2019) t. The coefficient of assurance has a value of zero to one. The low R^2 value indicates that the free factors' ability to explain the range of the dependent variable is quite limited. A value close to one indicates that the free variables provide nearly all of the information needed to predict the dependent factor