

# ANALYSIS FINANCIAL RATIOS ON FINANCIAL DISTRESS OF TRANSPORTATION COMPANY LISTED ON INDONESIAN STOCK EXCHANGE IN 2017-2020 PERIOD

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## ABSTRACT

This study wants to see and analyze how the business and financial conditions of transportation companies affected by the covid-19 pandemic using financial ratios measured by CR, DER, ROA, and TATO, which are strengthened in the use of the Altman Z-Score Method as a detector financial distress. The method of this research using altman z-score to predict financial distress with financial ratios and also the data analyze with logistic regression. The result we can find and analyze the effect of liquidity ratio (CR), leverage ratio (DER), profitability ratio (ROA) and activity ratio (TATO) on financial distress condition in transportation company that listed on the Indonesia Stock Exchange for the study from 2017-2020. This study aims to determine the effect of financial ratios, namely the liquidity ratio as measured by the Current Ratio (CR), the leverage ratio as measured by the Debt Equity Ratio (DER), the profitability ratio as measured by Return On Assets (ROA) and the activity ratio as measured by Total Assets Turnover (TATO) on financial distress conditions in transportation companies listed on the Indonesia Stock Exchange for the study period from 2017-2020. So, based on the results of the logistic regression that has been carried out in this study, Liquidity Ratio measured using the Current Ratio (CR) has a positive effect in predicting financial distress conditions, Leverage ratio as measured by using the Debt Equity Ratio (DER) has no effect in predicting financial distress, Profitability ratio as measured by using Return On Assets (ROA) has no effect in predicting financial distress in transportation companies listed on the Indonesia Stock Exchange, and Activity ratio as measured using Total Assets Turnover (TATO) has a positive effect in predicting financial distress.

**Keywords:** Financial Distress, Altman Z-Score, Liquidity Ratio (CR), Leverage Ratio (DER), Profitability Ratio (ROA), Activity Ratio (TATO), Logistic Regression

## INTRODUCTION

### Research Background

Indonesia is the 4th largest and most populous country in the world consisting of small and large islands. Indonesia itself is a country with a geography in the form of an archipelago and stretches along the equator from Sabang to Merauke with very promising tourism potential and is often in the spotlight of the world. Indonesia's large and wide territory supports various companies to provide transportation services such as land transportation, sea transportation and air transportation. Transportation is really needed by the community for the present and the future because it facilitates human access in carrying out daily activities.

However, the current condition of the Indonesian economy is at the stage of facing challenges such as a global economic slowdown, higher inflation, and a weakening exchange rate. So that it has an impact on the condition of the Indonesian economy and makes the business world no better than in previous years. This is experienced by sea, land, and air transportation companies where the rupiah exchange rate is getting weaker and continues to weaken periodically causing spare parts to become expensive and the company's operational costs to increase as well as a decrease in the number of passengers from all types of transportation, both sea, land, and air (Hafsari and Setiawanta, 2020).

Under these conditions, if companies try to survive in these conditions, the company must suppress operational costs terminate employees, and make offers to creditors regarding the payment of the company's principal debt. However, if the company is not able to allocate resources (assets) for various operational activities appropriately and financial problems are allowed to drag on, this can affect the company's performance because it will pose a high risk so that the company will be able to experience financial problems and bankruptcy. Therefore, many companies experience a phase or condition where the company's cash flows experience negative results for some time and it is difficult to pay their obligations. This condition is called financial distress.

Financial distress is a financial condition pressure where the company is in trouble or crisis or is not healthy that

occurred before the company went bankrupt (Altman, 2014). Financial distress is also a company's financial pressure which causes a company's financial condition to be not well constrained and threatened with bankruptcy to the detriment of investors' returns (Altman et al., 2017). Financial distress occurs when the company fails or is no longer able to meet the debtor's obligations due to lack and insufficient funds to run or continue the business in the company again (Muchlisin Riadi, 2018). Financial distress is a company management error in managing or managing its business operation plan for the long term (Kisman and Krisandi, 2019). Usually, financial distress shows a declining trend in the financial performance of a company. In other words, it begins with financial distress warning where companies experience financial difficulties in generating profits or earnings income, which continues to decline from year to year.

Financial statements are a tool that can be used by a potential investor to obtain information about the financial position, estimate whether it is stable or not and the business results achieved by a company have reached the target or not. Financial statement analysis can provide an early picture of a company's bankruptcy. Financial statement analysis can also be a very useful tool for management to evaluate business performance and as material for consideration by potential investors in making investment decisions. A business activity carried out by a company certainly has a goal to be achieved by the owner or holder of the company. The company's profit that will be obtained is an achievement of a predetermined target. Achieving targets is very important for the company because achieving the targets that have been set or exceeding the targets set is a separate achievement for the company's management.

The impact of the covid-19 pandemic is considered to have distorted all aspects of people's lives where transportation is public transportation that must be present in every community activity. However, an observer of public transportation policy, Bambang Istianto, said that the transportation sector experienced 80 percent distortion during the covid-19 period, and many bus operators went out of business (Mediaindonesia.com, 2021). Thus, train and aircraft operations are also greatly affected and exacerbated by government policies that impose social restrictions or restrictions on interactions between individuals including PPKM, PSBB, Lockdown, and Work From Home (WFH) enforcement, followed by strict health protocols in public transportation facilities, such as swabs and antigen tests as an effort by the government to suppress the transmission of covid-19. Thus making transportation companies experience losses in their business and business activities.

This is, in 2020 transportation companies experienced enormous losses due to the covid-19 pandemic which had an impact on the operation of the transportation business, both land, water, and air. Thus, the company cannot control its company management properly. However, many of

them were able to survive the covid-19 pandemic and could even generate more profits than the previous year.

Thus, the importance of this study wants to see and analyze how the business and financial conditions of transportation companies affected by the covid-19 pandemic using financial ratios measured by CR, DER, ROA, and TATO, which are strengthened in the use of the Altman Z-Score Method as a detector financial distress. With the prediction of the level of bankruptcy on the company's financial condition or financial performance using financial ratios, it is an interesting topic to be studied by many researchers and can also be studied further in the future. I took this topic because there are many transportation companies that have not detected problems that have not been answered in previous research so that the bankruptcy rate of transportation companies has increased dramatically with the addition of the covid-19 pandemic. This research is expected to contribute conceptually, especially regarding financial distress. Then, it can provide input for companies, especially transportation companies, in making decisions to maintain the continuity of their business activities or businesses related to preventive actions to avoid financial distress. And can be used as a consideration in making decisions for potential investors before investing in the company. Based on the description above, the author is interested in researching with the title **"ANALYSIS FINANCIAL RATIOS ON FINANCIAL DISTRESS OF TRANSPORTATION COMPANY LISTED ON INDONESIAN STOCK EXCHANGE IN 2017-2020 PERIOD"**.

### Research Problem

1. How is the effect of the liquidity ratio as measured by the Current Ratio (CR) on financial distress conditions in transportation companies listed on the Indonesia Stock Exchange for the 2017-2020 period?
2. How is the effect of the leverage ratio as measured by the Debt Equity Ratio (DER) on financial distress conditions in transportation companies listed on the Indonesia Stock Exchange for the 2017-2020 period?
3. How is the effect of the profitability ratio as measured by the Return of Asset (ROA) on financial distress conditions in transportation companies listed on the Indonesia Stock Exchange for the 2017-2020 period?
4. How is the effect of the activity ratio as measured by the Total Asset Turnover (TATO) on financial distress conditions in transportation companies listed on the Indonesia Stock Exchange for the 2017-2020 period?

### Research Purposes

1. To find out and analyze the liquidity ratio as measured by the Current Ratio (CR) on financial distress conditiond

at transportation companies listed on the Indonesia Stock Exchange for the 2017-2020 period.

2. To find out and analyze the leverage ratio as measured by the Debt Equity Ratio (DER) on financial distress conditiond at transportation companies listed on the Indonesia Stock Exchange for the 2017-2020 period.

3. To find out and analyze the profitability ratio as measured by the Return of Asset (ROA) on financial distress conditiond at transportation companies listed on the Indonesia Stock Exchange for the 2017-2020 period.

4. To find out and analyze the activity ratio as measured by the Total Asset Turnover (TATO) on financial distress conditiond at transportation companies listed on the Indonesia Stock Exchange for the 2017-2020 period.

### Research Benefits

This research is expected to provide the following benefits:

#### 1. Theoretical Benefits

This research is expected to be able to deepen the knowledge gained to implement and predict real situations or cases that occur by using financial ratios as a prediction of financial distress in transportation companies using the Altman Z-Score method.

#### 2. Policy Benefits

This research is expected to be able to provide policy direction on how to make decisions in analyzing financial statements that involve financial ratios as a prediction of financial distress and find out what strategies are used so that companies can survive.

#### 3. Practical Benefits

##### a. For Company

This research is expected to be a consideration for companies from related parties in analyzing the company's performance to detect early potential for financial distress and corporate bankruptcy.

##### b. For Investor

This research can be expected to provide information to investors as consideration for making decisions in investing their capital into companies in the future.

## FOUNDATION OF THEORY

### Bankruptcy Theory

Bankruptcy is the point where the company experiences a condition of inability to pay an obligation on time because its debt and equity are not sufficient to support the balance sheet. Thus, the company is unable to continue its operational activities if the company's financial condition declines.

According to (Ross, Westerfield, Finance and Edition, 2003), bankruptcy is defined as follows:

#### 1. Business failure

A situation where the business ends up with a credit loss and all of the company's capital is exhausted. This, can stop the company's operations because of its inability to make a profit.

#### 2. Legal bankruptcy

Bankruptcy in which the company is in legal proceedings to liquidate and reorganize the business.

#### 3. Technical insolvency

A condition where the company does not fulfill its obligations at the specified maturity.

#### 4. Accounting insolvency

A company that has negative income and total liabilities are greater than total assets.

According to Fitriani (2011) as cited by (Fadrul and Ridawati, 2020) , Bankruptcy is the failure of a company that runs its operations to generate profits until the company is in a critical period in managing its finances. Furthermore, (Onakoya and Olotu, 2017) say that bankruptcy is when a company does not get sufficient income or profit to cover the costs for the company's needs. This company is said to manifest a negative economic value.

According to (Eugene F. Brigham and Joel F. Houston, 2019) Bankruptcy is usually defined as the company's failure to regulate or run the company's operations to generate profits and is defined as follows:

1. Economic failure, is a condition where the company loses money or the company's income is not able to cover the costs incurred by the company itself, meaning that the profit rate is smaller than the cost of capital or the present value of the company's cash flow is smaller than its liabilities. This failure occurs because it occurs when the actual cash flow of the company is far below the distributed cash flow.

2. Financial failure, is a condition where the company is experiencing difficulty in funds, either cash funds or working capital funds. Some asset and liability management plays a very important role in arrangements to prevent financial failure. Financial failure can also be interpreted as insolvency that distinguishes between the cash flow basis and the stock basis.

The definition of default has several meanings, failure is defined as the company's inability to pay its financial obligations as they fall due and also failure is when the

company is unable to pay their suppliers, shareholders or lenders. Bankruptcy varies from the number of attributes or what attributes are considered. One of the most popular models is the Altman Z-Score method with a five factor multivariate discriminant analysis model.

### Financial Statements

According to (Ikatan Akuntan Indonesia, 2012) states that financial statements are a structured presentation of the financial position and financial performance of an entity. The purpose of a financial statement is to provide information about the financial position, financial performance, and cash flows of an entity that is useful to most users of financial statements in making economic decisions. According to Kasmir (2015) as cited by (Sari, Hasbiyati and Arif, 2020) Financial statements are reports that show the company's financial condition at this time or in a certain period. The purpose of financial statements that show the current condition of the company is the current condition of a company (the company is healthy or not). Usually financial reports are made per period of three months or six months for the company's internal interests. Meanwhile, for a wider report, it is carried out once a year. In addition, the existence of this financial report can find out the current position of the company after analyzing its financial statements.

### Financial Ratios

Company performance is a formal effort carried out by the company to evaluate the efficiency and effectiveness of the company's activities that have been carried out in a certain period of time. According to Fahmi (2014:108) as cited by (Satiaputra and Suherman, 2019) Financial performance is the result that has been achieved by company management in carrying out its function to manage company assets effectively for a certain period. Another definition, financial performance is the company's ability to manage and control its resources. From the above understanding it can be concluded that the financial performance of a company is a formal business that has been run by the company. Based on the analysis obtained, the use of liquidity ratios, leverage, and profitability have a positive effect on the assessment of the company's financial performance. Financial performance and operating performance are things that companies can do to measure the success of a company in generating profits, so that they can see the company's prospects in the future, growth and potential for company development by relying on the company's resources. A company can be said to be successful if it has achieved the standards and initial goals set by the company. Financial performance is analyzed by financial ratio analysis according to (Eugene F. Brigham and Joel F. Houston, 2019), the ratios are as follows:

### Liquidity Ratio

Ratio to find out the size of the company's ability when the need increases. According to (Ross, Westerfield and Jaffe, 2004)

liquidity ratio is a ratio that describes the company's ability to meet short-term obligations. This means that if the company is billed, the company will be able to meet the debt, especially debt that is due. The liquidity ratio that is the focus of this research is the type of ratio of Current Ratio (CR) can be used as a tool to measure the level of security of a company (Kasmir, S.E., 2018). The formula for calculating CR is as follows:

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

### Leverage Ratio

Ratio to determine the size of the company's funding to debt and equity. This ratio shows the company's ability to meet all of its financial obligations if the company is liquidated at that time. That is, how much debt is borne by the company compared to the assets owned by the company in measuring the company's ability to pay all its obligations, both short-term and long-term if the company goes into liquidation. The leverage ratio that is the focus of this research is the Debt To Equity Ratio (DER). This ratio calculates the extent to which the company's assets are financed using debt. This ratio can be calculated by comparing the company's total debt with total equity (Kasmir, S.E., 2018). The formula for calculating DER is as follows:

$$DER = \frac{\text{Total Liabilities}}{\text{Total Equity}}$$

### Profitability Ratio

According to (Weygandt Kimmel Kieso, 2013) the ratio is to determine the size of the company's ability to earn profits, as well as to determine the size of the company in realizing the comparison between profits and assets and between capital in generating these profits. Profitability ratio is a ratio to assess the company's ability to seek profit. And the profitability ratios show the combined effect of liquidity, asset management and debt on operating results. The profitability ratio that is the focus of this research is the Return on Assets (ROA). This ratio reflects how big the return is by utilizing the assets owned by the company to generate profits. So, if ROA increases, it means that the company's sales level will increase and ultimately will increase the profits that can be enjoyed by shareholders (Kasmir, S.E., 2018). The formula for calculating ROA is as follows:

$$ROA = \frac{\text{Net Income}}{\text{Total Assets}}$$

### Activity Ratio

Ratio to determine efficiency measures both in managing assets and in the use of assets in obtaining company loans. According to Munawir (2002:240) in (Rahayu, Suwendra and Yuianthini, 2016), activity ratio, namely the ratio to assess the company's ability to carry out daily activities or the company's ability to sell, collect receivables and use assets owned. The activity ratio that is the focus of this research is the Total Assets Turn Over (TATO). This ratio can be used to measure the ability to turn over all assets owned by the company and measure how many sales are obtained (Kasmir, S.E., 2018). The formula for calculating TATO is as follows:

$$TATO = \frac{\text{Net Sales}}{\text{Total Assets}}$$

### ALTMAN Z-SCORE METHOD

Edward I Altman is a researcher who researched a Z-Score analysis method for the first time, which method is known as Multiple Discriminant Analysis (MDA). The Altman Z-Score method is a financial analysis model to identify or predict a company's financial performance related to the potential for bankruptcy due to the problems that exist in a company. The Altman Z-Score method has varying percentages of accuracy for each sample such as 95% accuracy for one year before bankruptcy, 72% for two years before bankruptcy, 48%, 29%, and 36%, respectively for three, four and five years before the bankruptcy occurred.

In addition, it is also known that companies with very low profitability have the potential to go bankrupt. Until now, the Z-score is still widely used by researchers, practitioners, and academics in accounting and other fields. Altman used his bankruptcy model to become the first Altman (Altman I Edward, 1968), revised, and modified Altman (Altman, Hartzell and Peck, 1998). The development of the Altman model can be seen from the first time it was used to predict the bankruptcy of a public manufacturing company. Then, Altman

revised the bankruptcy model into a model that can be used to predict the probability of bankruptcy models for private and public manufacturing companies. Furthermore, Altman modified his model to be applicable in all companies, such as manufacturing companies, non-manufacturers, and bond issuers. The Altman Z-Score method is a model that calculates bankruptcy in companies that have gone public and large companies. The factors in this model are grouped into 5 standard ratios, namely the ratio of profitability, liquidity, leverage, solvency, and activity. The formula of this Altman Z-Score method (Altman, 2000) is:

$$Z = 1,2 X1 + 1,4 X2 + 3,3 X3 + 0,6 X4 + 1,0 X5$$

Explanation:

Z= Overall Index

X1= Working Capital/Total Assets X2= Retained Earnings/Total Assets

X3= Earnings Before Interest and Taxes/Total Assets X4= Market Value Equity/Book Value of Total Debt X5= Sales/Total Assets

Then, Altman made a revision to the method he developed, in which the revision was made to adjust the bankruptcy prediction not only for publicly traded companies but can be applied to private companies. The method used still uses the first method which only changes from X4 (Market Value of Equity) to Book Value of Equity because private companies do not have equity market prices and also change the magnitude of the coefficient values of all the variables used (Rahayu, Suwendra and Yuianthini, 2016). The following is the revised Altman Z-Score method formula (for non-go public companies) (Altman et al., 2017) is

$$Z = 0,717 X1 + 0,847 X2 + 3,107 X3 + 0,420 X4 + 0,998 X5$$

Explanation:

Z= Overall Index

X1= Working Capital/Total Assets X2= Retained Earnings/Total Assets

X3= Earnings Before Interest and Taxes/Total Assets X4= Book Value of Equity/Book Value of Total Debt X5= Sales/Total Assets

Then, there is a method that was developed again by Altman, namely the Altman Z-Score which was modified because it can be used by all companies, namely companies that go public and non-go public companies in developing countries. In this method, Altman eliminates one of the variables, namely the variable in X5 (Sales/Total Asset). The following is the modified Altman Z-Score method formula (Altman et al., 2017):

$$Z = 6,56 X1 + 3,26 X2 + 6,72 X3 + 1,05 X4$$

Explanation:

Z= Overall Index

X1= Working Capital/Total Assets X2= Retained Earnings/Total Assets

X3= Earnings Before Interest and Taxes/Total Assets

X4= Book Value Equity/Book Value of Total Debt

The following is an explanation of the ratio variables contained in the Altman Z-score method:

#### Working Capital/Total Assets (X1)

This ratio measures the company's liquid assets compared to its size, where working capital is meant as the difference between current assets and current liabilities. If the company has relatively high working capital compared to total assets, then the company has relatively good liquidity (Altman, 2000). Meanwhile, companies that often experience operating losses will see the depreciation of their current assets compared to their total assets. The formula in this ratio is:

$$WCTA = \frac{(\text{Current Assets} - \text{Current Liabilities})}{\text{Total Assets}}$$

#### Retained Earnings/Total Assets (X2)

Retained earnings are considered as the total amount of reinvested earnings or profits that are not distributed to shareholders. Retained Earnings to Total Assets basically measures the level of leverage and cumulative profitability of a company. When this ratio is high, it implies that the company has financed its assets through earnings retention and is not using a lot of debt. This ratio also shows the strength of earnings and the age of the company (Altman, 2000). The formula in this ratio is:

$$RETA = \frac{\text{Retained Earnings}}{\text{Total Assets}}$$

#### Earnings Before Interest and Taxes/Total Assets (X3)

This Earnings Before Interest and Taxes to Total Assets ratio shows profitability, which specifically measures the rate of return the company generates from its assets. In other words, if the ratio is high, it shows the company is able to utilize its assets to generate profits efficiently. This ratio also estimates the cash stock which will be allocated to creditors, government and shareholders. With this, this ratio is very appropriate for investigating corporate bankruptcy because the ultimate existence of a company depends on the strength of earnings (Altman, 2000). The formula in this ratio is:

$$EBITTA = \frac{\text{Earnings Before Interest and Taxes}}{\text{Total Assets}}$$

Earnings before interest and taxes decreased due to the increase in operational costs related to the company's expansion and extraordinary transactions that occurred such as tax amnesty fees and cargo cartel contingent fines. According to Christina, et al (2020) as cited by (Yunus, 2019) stated that profit gains were caused by improving financial and operational performance, and experiencing a decline which was the impact of an increase in the company's operating costs.

#### Market Value Equity/Book Value of Total Liabilities (X4)

This ratio measures how quickly the company's assets will decline when the company becomes bankrupt when the liabilities exceed the assets calculated by the company's market value. The market value of equity is equal to the product of the company's share price with the number of shares outstanding such as common stock and preferred stock. The higher the ratio, the less companies rely on debt and have a higher chance of surviving when there is an economic downturn (Altman, 2000). The formula in this ratio is:

$$MVETL = \frac{\text{Market Value of Equity}}{\text{Total Liabilities}}$$

If a company experiences fluctuations such as a decrease in the value of shares with an increasing capital market value, then it occurs because of changes in the value of the shares that always change every year. According to Hendrayana and Yasa (2015) in (Yunus, 2019) stated that changes in stock prices are influenced by company performance as measured by the company's health level, if the company's performance is good, the company's value will be high. Then, the book value of debt, if it increases every year, it could be due to the increase in bonds payable along with the issuance of Sukuk, growth in third-party trade payables in aviation services, increase in bank debt related to the company's working capital facilities finance fuel and aircraft asset maintenance.

#### Sales/Total Assets (X5)

The ratio of sales to total assets measures the ability of a business to generate sales with the smallest possible assets. This ratio is an asset turnover ratio, namely the company's ability to generate income from its assets. This ratio also measures the company's ability to face competitive conditions. The higher the ratio, the better the company will use its assets to generate sales and profit (Altman, 2000). The formula in this ratio is:

$$STA = \frac{\text{Sales}}{\text{Total Assets}}$$

The company classification is based on the Z value in the first Altman method. The following is a scoring table for Altman Z-Score I:

Z-Score Range	Indicators	Conclusions
Less than 1,81	Bankrupt	Danger zone, because it will be bankrupt
1,81 to 2,99	Grey	Maintain caution, bankruptcy can't be easily predicted
More than 2,99	Safe	No bankruptcy



The criteria used to predict company bankruptcy with this method are companies that have a Z score > 2,99 are classified as healthy companies, while companies that have a Z score < 1,81 are classified as companies that have the potential to go bankrupt. Furthermore, scores between 1,81 – 2,99 are classified as companies in the grey area.

Then, the company classification is based on the Z value in the revised Altman method. The following table shows the revised Altman Z-Score method:

Z-Score	Indicators	Conclusion
Less than 1,23	Bankrupt	Danger zone, because it will be bankrupt
1,23 to 2,90	Grey	Maintain caution, bankruptcy can't be easily predicted
More than 2,90	Safe	No bankruptcy

The criteria used to predict company bankruptcy with this method are companies that have a Z score > 2,90 are classified as healthy companies, while companies that have a Z score < 1,23 are classified as companies that have the potential to go bankrupt. Furthermore, scores between 1,23 – 2,90 are classified as companies in the grey area.

Then, the company classification is based on the Z value in the modified Altman method. The following table shows the modified Altman Z-Score method:

Z-Score	Indicators	Conclusion
Less than 1,10	Bankrupt	Danger zone, because it will be bankrupt
1,10 to 2,60	Grey	Maintain caution, bankruptcy can't be easily predicted
More than 2,60	Safe	No bankruptcy

The criteria used to predict company bankruptcy with this method are companies that have a Z score > 2,60 are classified as healthy companies, while companies that have a Z score < 1,10 are classified as companies that have the potential to go bankrupt. Furthermore, scores between 1,10 – 2,60 are classified as companies in the grey area.

## Explanatory Variables

Variables are divided into two types, namely independent variables, and dependent variables. The dependent variable in this study is Financial Distress on financial performance in the financial statements of transportation company for the 2017-2020 period with Altman Z-score method.

The independent variable is referred to as the output variable or criteria, this variable is a variable that is influenced by the independent variable. The independent variables in this study is the effect of financial ratio such

as liquidity ratio (CR), leverage ratio (DER), profitability ratio (ROA), and activity ratio (TATO).

## Previous Research

No	Authors	Title	Research Method	Result
1	Pratiwi, N., & Lestari, D.	Analisis Kesehatan Finansial Perusahaan di Sektor Jasa Keuangan	Analisis rasio keuangan	Hasil penelitian menunjukkan bahwa perusahaan di sektor jasa keuangan memiliki tingkat kesehatan finansial yang baik.

No	Authors	Title	Research Method	Result
2	Pratiwi, N., & Lestari, D.	Analisis Kesehatan Finansial Perusahaan di Sektor Jasa Keuangan	Analisis rasio keuangan	Hasil penelitian menunjukkan bahwa perusahaan di sektor jasa keuangan memiliki tingkat kesehatan finansial yang baik.

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No	Authors	Title	Research Method	Result
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No	Authors	Title	Research Method	Result
6	Pratiwi, N., & Lestari, D.	Analisis Kesehatan Finansial Perusahaan di Sektor Jasa Keuangan	Analisis rasio keuangan	Hasil penelitian menunjukkan bahwa perusahaan di sektor jasa keuangan memiliki tingkat kesehatan finansial yang baik.

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7	Pratiwi, N., & Lestari, D.	Analisis Kesehatan Finansial Perusahaan di Sektor Jasa Keuangan	Analisis rasio keuangan	Hasil penelitian menunjukkan bahwa perusahaan di sektor jasa keuangan memiliki tingkat kesehatan finansial yang baik.

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## Research Model



## Hypothesis Development

### Liquidity Ratio (CR) on Financial Distress

The Liquidity Ratio shows the ability of a company to meet its financial obligations that must be fulfilled immediately or the company's ability to meet its financial obligations when billed. High liquidity will reflect the company's ability to pay off its debts, which is also high, indicating that the company is in good health.

Based on research from (Jumliana, 2018) current ratio is one type of liquidity used to measure the company's ability to meet current debt with current assets. The higher the current ratio owned by the company, the company is protected from financial difficulties and vice versa. That is, the Current Ratio has a positive effect on financial distress.

Then, based on research by (Dirhansyah Siregar, 2019) if the current ratio is larger and has a positive effect, the smaller the occurrence of financial distress experienced by the company.

**H1: Liquidity Ratio measured by Current Ratio (CR) has a positive effect on financial distress.**

### Leverage Ratio (DER) on Financial Distress

Leverage ratio is the ratio used by the company to measure the company's ability to meet its long-term obligations such as interest payments on debt, if the company cannot make payments on

existing debts that are greater than the assets owned, the greater the possibility of financial distress if it is not addressed properly good.

According to research from (Makkulau, 2020) that there is no influence between the DER variable and financial distress. This is because companies with high DER are not categorized as companies experiencing financial difficulties and vice versa. Thus, the debt proxied by DER is not able to predict the company's financial difficulties, because the company in obtaining sources of funds will

choose a small risk and will improve the management of the company to get high profits.

However, based on research from (Anza, 2020) that the leverage presented can be developed by companies that have risks that have financial difficulties. The amount of DER owned by the company indicates the size of the company's ability to use debt to finance its assets. If a finance company uses more debt, this will pose a risk of difficulty in payment in the future as a result of the debt being greater than the assets owned. If this situation cannot be handled properly, the potential for financial distress will be even greater.

**H2: Leverage Ratio measured by Debt Equity Ratio (DER) has a positive effect on financial distress.**

### Profitability Ratio (ROA) on Financial Distress

The profitability ratio is the ability of the company's management to obtain profits or profits. The greater the profitability obtained, the lower the risk of the company experiencing financial distress. The profitability ratio with the ROA proxy shows the overall current assets used for company operations that can provide profits for the company.

According to research from (Jumliana, 2018) ROA is one type of profitability ratio used to measure how much net income is obtained when measured by the value of its assets. The greater the ROA, the better the company will generate profits so that the company will avoid financial difficulties.

**H3: Profitability Ratio measured by Return On Assets (ROA) has a positive effect on financial distress**

### Activity Ratio (TATO) on Financial Distress

The activity ratio can describe the level of efficiency of the company in utilizing existing resources in the company. The high activity of the company will increase the company's profit, this makes the company in a financially secure position.

According to research from (Ramadhani, 2019) financial difficulties can occur if the company cannot utilize assets effectively to increase sales, the company cannot obtain income and losses that will be experienced from asset depreciation. Thus, TATO has a significant negative effect on financial distress. But, according to research from (Nurvita and Budiarti, 2019) total assets turnover is used to measure the company's effectiveness in using its assets. The higher the total asset turnover ratio, the better and faster the company's ability to earn an income is, and the smaller the risk of the company experiencing financial distress. Thus, it can be concluded that TATO has a

relationship and they have positive effect on financial distress.

#### H4: Activity Ratio measured by Total Asset Turnover (TATO) has a positive effect on financial distress

Based on previous research, the development hypotheses contained in transportation company listed on IDX period of year 2017-2020 are as follows:

1. H1: Liquidity Ratio measured by Current Ratio (CR) has a positive effect on financial distress.
2. H2: Leverage Ratio measured by Debt Equity Ratio (DER) has a positive effect on financial distress.
3. H3: Profitability Ratio measured by Return On Asset (ROA) has a positive effect on financial distress.
4. H4: Activity Ratio measured by Total Asset Turnover (TATO) has a positive effect on financial distress.

## RESEARCH METHOD

### Type of Reseach

In quantitative research, generally the research has a wider scope and more diverse variations than qualitative research. Quantitative research is more systematic, planned, structured, clear from the beginning to the end of the research and is not influenced by the conditions that exist in the field (Siyoto & Sodik, 2015). This type of research is quantitative research, which is a systematic study of a phenomenon by collecting data that can be measured by statistical, mathematical, or computational engineering calculations (Hardani. Ustiawaty, 2017). This study is a quantitative study because this study provides an overview of the company's financial health level during 2017-2020 using calculations in the form of financial ratio analysis contained in the Altman Z-Score method.

### Sampling Technique

In this study using purposive sampling technique, where the technique of determining the sample through certain considerations. This criteria of study based on:

1. Transportation companies that report and publish their financial statements on the Indonesia Stock Exchange for the period 2017-2020
2. A transportation company with an active status or always listed on the Indonesia Stock Exchange during the specified period, namely the 2017- 2020 period
3. Annual data of transportation companies experiencing grey zones in the Altman Z-Score Method

### Data Collection Technique

In this study, to obtain data, researchers used the documentation method, namely collecting data in the form

of financial statements of transportation companies obtained from the Indonesia Stock Exchange website, namely [www.idx.co.id](http://www.idx.co.id) and also using financial reports on the transportation company

website in 2017-2020 which became the object during the research period. And can also use data collection techniques such as literature studies, journals and articles to strengthen the data presented in this study (Uma Sekaran & Roger Bogie, 2016).

### Population and Sample

According to (Sari and Sugiyono, 2016) The population is the total number consisting of objects or subjects that have certain characteristics and qualities determined by the researcher to be studied and then draw conclusions. Based on the above understanding, the population in this study is the financial statements at transportation company, both land, sea and air which are listed on the Indonesia Stock Exchange.

In this study, the criteria of population for transportation company in Indonesia period 2017-2020 as follows :

Table 3.1 Study Population

No.	Bank Code	Name of Transportation Company in Indonesia
1.	AKSI	Maming Enam Sembilan Mineral Tbk
2.	ASSA	Adi Sarana Armada Tbk
3.	BBRM	Pelayanan Nasional Bina Buana Tbk
4.	BIRD	Blue Bird Tbk
5.	BLTA	Berlian Laju Tanker Tbk
6.	BPTR	Batavia Prosperindo Trans Tbk
7.	BULL	Buana Lintas Lautan Tbk
8.	CANI	Capitol Nusantara Indonesia Tbk
9.	CMPP	AirAsia Indonesia Tbk
10.	DEAL	Dewata Freightinternational Tbk
11.	GIAA	Garuda Indonesia (Persero) Tbk
12.	HELI	Jaya Trishindo Tbk
13.	IATA	Indonesia Transport & Infrastructure Tbk
14.	IPCM	Jasa Armada Indonesia Tbk
15.	JAYA	Armada Berjaya Trans Tbk
16.	KJEN	Krida Jaringan Nusantara Tbk
17.	LEAD	Logindo Samudramakmur Tbk
18.	LRNA	Eka Sari Lorena Transport Tbk
19.	MBSS	Mitrabahtera Segara Sejati Tbk
20.	MIRA	Mitra International Resources Tbk
21.	NELY	Pelayaran Nelly Dwi Putri Tbk
22.	PORT	Nusantara Pelabuhan Handal Tbk
23.	PPGL	Prima Globalindo Logistik Tbk
24.	PSSI	Pelita Samudera Shipping Tbk
25.	PTIS	Indo Straits Tbk
26.	PURA	Putra Rajawali Kencana Tbk
27.	RIGS	Rig Tenders Indonesia Tbk
28.	SAFE	Steady Safe Tbk
29.	SAPX	Satria Antarana Prima Tbk
30.	SDMU	Sidomulyo Selaras Tbk
31.	SHIP	Sillo Maritime Perdana
32.	SMDR	Samudera Indonesia Tbk
33.	SOCI	Soechi Lines Tbk

34.	TAMU	Pelayanan Tamarin Samudra Tbk
35.	TAXI	Express Transindo Utama Tbk
36.	TCPI	Transcoal Pasific Tbk
37.	TMAS	Pelayanan Tempuran Emas Tbk
38.	TNCA	Trimuda Nuansa Citra Tbk
39.	TPMA	Trans Power Marine Tbk
40.	TRJA	Transkon Jaya Tbk
41.	TRUK	PT Guna Timur Raya Tbk
42.	WEHA	WEHA Transportasi Indonesia Tbk
43.	WINS	Wintermar Offshore Marine Tbk

Source: [www.idx.co.id](http://www.idx.co.id)

And then, sample as part of the number and characteristics possessed by a population. Sample measurement is done through statistics or based on research estimates in order to determine the size of the sample taken in carrying out research on an object. While the sample is part of the population that researchers want to study. The sample in this study must meet the following criteria:

a. Inclusion Criteria

1. The sample has published periodic financial reports per year ending on December 31 each year which is the research period, namely 2017 to 2020.
2. The sample has an active status on the Indonesia Stock Exchange from 2017 to 2020 which means that during that period the company is always listed on the IDX.
3. The sample uses the rupiah currency so that the criteria for calculating the value of the currency are the same and the dollar currency is converted to rupiah currency.

b. Exclusion Criteria

1. The sample has not published periodic financial reports per year ending on December 31 each year which is the research period, 2017-2020 period.
2. The sample has not an active status on the Indonesian Stock Exchange from 2017 to 2020 which means that during that period the company is always listed on the IDX.
3. The sample does not uses the rupiah currency so that the criteria for calculating the value of the currency are the same and the dollar currency is converted to rupiah currency.
4. Does not include the annual data of a company that is included in the grey zone category of Altman Z-Score.

**Definition Operational**

No.	Variables	Indicators and Measuring	Variables concept	Sources
1.	Current Ratio (CR)	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	This ratio is a comparison between current assets and current liabilities. The current ratio that is too high has a negative effect on the ability to earn profits, because it is less effective and some current assets are idle. This ratio is used for a general measure used for short-term efficiency, the ability of a company to meet debt needs when it matures	(Kasuma, S.E., 2018)
2.	Debt Equity Ratio (DER)	$\frac{\text{Total Liabilities}}{\text{Total Equity}}$	This ratio is used to see how much financial risk a company has. This ratio is a comparison between total liabilities and total	(Kasuma, S.E., 2018)

			equity. The lower this ratio indicates that the better the company's financial condition and vice versa.	
3.	Return On Asset (ROA)	$\frac{\text{Net Income}}{\text{Total Assets}}$	The ratio that shows the results (return) on the use of company assets in creating net income. In other words, this ratio is used to measure how much net profit will be generated from each rupiah of funds embedded in total assets.	(Kasuma, S.E., 2018)
4.	Total Asset Turnover (TATO)	$\frac{\text{Net Sales}}{\text{Total Assets}}$	This 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.	(Kasuma, S.E., 2018)

5.	Working Capital to Total Asset (WCTA)	$\frac{(\text{Current Assets} - \text{Current Liabilities})}{\text{Total Assets}}$	The working capital/total assets ratio, frequently found in studies of corporate problems, is a measure of the net liquid assets of the firm relative to the total capitalization. Working capital is defined as the difference between current assets and current liabilities. Liquidity and size characteristics are explicitly considered. Ordinarily, a firm experiencing consistent operating losses will have shrinking current assets in relation to total assets.	(Altman, 2000)
6.	Retained Earnings to Total Asset (RETA)	$\frac{\text{Retained Earnings}}{\text{Total Assets}}$	Retained earnings is the account that reports the total amount of reinvested earnings and/or losses of a firm over its entire	(Altman, 2000)

			life. The account is also referred to as earned surplus. And then, The age of a firm is implicitly considered in this ratio.	
7.	Earnings Before Interest & Taxes to Total Asset (EBITA)	$\frac{\text{Earnings Before Interest and Taxes}}{\text{Total Assets}}$	This ratio is a measure of the productivity of the company's assets regardless of tax or leverage factors because the company's final existence is based on the strength of the income from its assets. This ratio also seems very suitable for studies related to corporate failure because when total liabilities exceed the fair valuation of the company's assets with a value determined by the strength of asset income, bankruptcy will occur.	(Altman, 2000)

8.	Market Value of Equity to Total Liabilities (MVETL)	$\frac{\text{Market Value of Equity}}{\text{Total Liabilities}}$	This ratio shows the company's ability to finance funding by using sources of funds to increase the profits of shareholders and external parties. A high ratio indicates a high proportion of debt financing compared to equity financing. This measurement shows how much the decline in the value of the company's assets before the liabilities exceed the assets resulting in bankruptcy.	(Altman, 2000)
9.	Sales to Total Asset (S/TA)	$\frac{\text{Sales}}{\text{Total Assets}}$	This ratio is the company's ability to generate income from assets owned. Altman views this ratio as measuring the company's ability to face	(Altman, 2000)

			competitive conditions. The higher the ratio, the better the company utilizes its assets to generate sales.	
10.	Financial Distress (Z-Score)	$Z = 1.2 (X1) + 1.4 (X2) + 3.3 (X3) + 0.6 (X4) + 1.0 (X5)$	The formula predicting of the bankruptcy in the transportation company.	(Altman, 2000)

## Analysis Data Technique

This study uses data analysis techniques by calculating financial distress based on financial statement data at transportation company both land, sea and air obtained on the Indonesia Stock Exchange or the official website of company with measurement by financial ratios such liquidity ratio (CR), leverage ratio (DER), profitability ratio (ROA) and activity ratio (TATO) on financial distress using the Altman Z-Score method to predict bankruptcy. In order for this study to obtain more robust data, it can be tested with the following tests:

### 1. Descriptive Statistic Test

The descriptive method according to (Sari and Sugiyono, 2016) is a data analysis technique to explain or describe and describe data in general or generalization, by calculating the maximum value, minimum value, and average value. This study uses financial ratio data such as CR, DER, ROA, and TATOs on transportation companies listed on the Indonesia Stock Exchange for the 2017-2020 period.

### 2. Classic Assumption Test

This study only uses the multicollinearity test because it is based on (Imam Ghozali, 2018) that hypothesis testing using logistic regression analysis does not use the normality test, heteroscedasticity test, and autocorrelation test because before hypothesis testing is carried out, the first step that must be done is to assess the feasibility of the regression model. and assess model fit. The function of assessing the feasibility of the

regression model and the fit model is a substitute for the classical assumption test.

### Multicollinearity Test

The multicollinearity test aims to test whether the regression model found a correlation between the independent variables. A good regression model should not correlate with the independent variables. If the independent variables are correlated with each other, then this variable is not orthogonal. Orthogonal variables are independent variables whose correlation value between independent variables is equal to zero. To detect the presence or absence of multicollinearity in the regression model, the standard error value of the independent variable is less than one, the beta coefficient value is also smaller than one. Next is the tolerance value of the four independent variables, all > 0.100. Likewise with the value of VIF

< 10.00 (Imam Ghozali, 2018).

### 3. Logistic Regression Test

#### a. Accessing Model Fit

#### 1. Feasibility Test of Regression Model (Goodness of Fit Test)

According to (Imam Ghozali, 2018), this test can be seen from the output value of Hosmer and Lemenshow's Goodness of Fit Test with the following hypothesis:

Ho = The hypothesized model fits the data

H1 = The hypothesized model does not fit the data

Hosmer and Lemenshow's Goodness of Fit Test testing this null hypothesis indicates that the empirical data fit the model. It means that there is no difference between the model and the data so the model can be said to be fit. If the statistical value is equal to or from 0.05 then the null hypothesis is rejected, there is a significant difference between the model and the observed value. With that, the model cannot predict the value of the observations and vice versa.

#### 2. Overall Model Fit Test (-2Log Likelihood Value)

Based on (Imam Ghozali, 2018) chi-square (X<sup>2</sup>) statistical test was used based on the likelihood function of the regression model estimation. The likelihood of the regression model is the probability that the hypothesized model describes the input data. The likelihood was transformed into -2Log Likelihood to test the null hypothesis and the alternative hypothesis. The use of the X<sup>2</sup> value to assess the overall model against the data can be done by comparing the initial -2 Log Likelihood value (the result of block number 0) with the final -2Log Likelihood value (the result of block number 1). The Chi-square value

is obtained from  $-2\text{Log Likelihood } 1 - -2\text{Log Likelihood } 0$ , if there is a decrease, it indicates that the regression model used is good.

### 3. Omnibus Test of Model Coefficients

According to (Imam Ghazali, 2018) this test is a test conducted to test whether the independent variables can have a simultaneous effect on the dependent variable. This can be seen from the significant value greater than 0.05, the independent variable simultaneously has no effect on the dependent variable and vice versa.

### 4. Coefficients Determinant Test ( $R^2$ )

Based on (Imam Ghazali, 2018) Cox and Snell's  $R$  Square is a measure that tries to imitate the size of  $R^2$  in multiple regression which is based on the Likelihood estimation technique with a maximum value of less than 1 (one) making it difficult to interpret. Nagelkerke's  $R$  Square is a modification of the Cox and Snell coefficients to ensure that the value varies from 0 (zero) to 1 (one). This is done by dividing the value of Cox and Snell's  $R^2$  by its maximum value.

### 5. Classification Table

According to (Imam Ghazali, 2018) The table is used to calculate the true and false estimation values. In the column are the two predicted values of the dependent variable in terms of "Non-Financial Distress" (1) and "Financial Distress" (0), while the row shows the actual value of the dependent variable. In a perfect model, all cases will be on the diagonal with a 100% forecasting accuracy.

### b. Hypothesis Test

#### 1. Wald Test

In this logistic regression analysis, a partial test was carried out with the Wald test used to test whether there was an effect of the independent variable on the dependent variable partially. The level of significance that must be considered is the significance value  $< 0.05$  then it is accepted (significant regression coefficient), which means that the independent variable affects the dependent variable. Then, if the significance value is  $> 0.05$  the hypothesis is rejected (regression coefficient is not significant), which means that the independent variable does not affect the dependent variable.

In this test, we will use the following logistic regression analysis equation:

$$\ln \frac{FD}{1-FD} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_n x_n$$

Information:

$$\ln \frac{FD}{1-FD} = \text{Financial Distress}$$

$\beta_0$  = Constant

$\beta_1$  = Coefficient CR

$\beta_2$  = Coefficient DER

$\beta_3$  = Coefficient ROA

$\beta_4$  = Coefficient TATO  $X_n$  = Independent Variable Information:

CR = Current Ratio

DER = Debt To Equity Ratio

ROA = Return On Assets

TATO = Total Asset Turnover

## RESEARCH RESULT AND DISCUSSION

### General Discription of Research Object

The objects in this study are all transportation companies in Indonesia from 2017-2020 period. The total number of transportation companies in Indonesia is 43 companies during 2017-2020. So, with a period of 4 years, the amount of data obtained is 115 research data that must be sought. The data used is an annual report that presents Current Assets, Current Liabilities, Total Assets, Total Liabilities, Total Equity, Net Income, Net Sales, Working Capital, Retained Earnings, Earning Before Interest and Taxes, Market Value Of Equity. Then, the research method used in this study is Logistic Regression Analysis with Altman Z-Score Method as a detector of financial distress.

### Instrument and Data Quality Test

#### Statistic Descriptive Test

Descriptive statistical analysis is used to explain the quality of research data as reflected in the mean and standard deviation, if the mean value is greater than the standard deviation, the data quality can be said to be good. Descriptive statistics can be seen in Table 4.1 as follows:

Table 4.1 Statistic Descriptive

	N	Minimum	Maximum	Mean	Std. Deviation
Current Ratio	115	.03483	6.72341	1.2545912	1.39292236
Debt Equity Ratio	115	.08105	82.37547	2.1817079	7.92982621

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Financial Distress	94	81.7	81.7	81.7
	Non-Financial Distress	21	18.3	18.3	100.0
	Total	115	100.0	100.0	

Table 4.2 indicates that there are categories of companies

that are affected by financial distress and companies that are not affected by financial distress. There are 94 sample data for the category of companies affected by financial distress. Then, the category of companies that are not

affected by financial distress there is 21 sample data. The percentage result for companies affected by financial distress is 81.7%. Then, the percentage of companies that are not affected by financial distress is 18.3%.

### Classic Assumption Test

#### Multicollinearity Test

This test aims to test whether the regression model found a correlation between the independent variables. A good regression model does not correlate with the independent variables. We can see in Table 4.3, to ascertain whether there is a correlation between the independent variables or not.

Table 4.3 Multicollinearity Test

Model	Total Asset Turnover	Current Ratio	Debt Equity Ratio	Return On Asset
1 Correlations	1.000	-.035	-.282	-.121

Covariances	Current Ratio	-.035	1.000	.097	-.317
	Debt Equity Ratio	-.282	.097	1.000	.132
	Return On Asset	-.121	-.317	.132	1.000
	Total Asset Turnover	.006	-6.496E-5	-9.181E-5	-.002
	Current Ratio	-6.496E-5	.001	9.077E-6	-.002
	Debt Equity Ratio	-9.181E-5	9.077E-6	1.632E-5	.000
	Return On Asset	-.002	-.002	.000	.054

With the results we see, the results of the correlation between the independent variables show that only the Return On Assets (ROA) variable has a fairly high correlation with the Current Ratio (CR) variable with a correlation level of -0.317 or about 31%. Because this correlation is still very far below 0.95 or 95%, it can be said that there is no serious multicollinearity.

Table 4.4 Multicollinearity Test

Model		Coefficients <sup>a</sup>					Collinearity Statistics	
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.		
		B	Std. Error				Beta	Tolerance
1	(Constant)	.071	.057		1.235	.220		
	Current Ratio	.143	.023	.513	6.154	.000	.879	1.138
	Debt Equity Ratio	-.003	.004	-.060	-.726	.469	.895	1.111
	Return On Asset	.105	.232	.038	.450	.653	.865	1.156
	Total Asset Turnover	.187	.080	.190	2.329	.022	.912	1.097

Referring to the results of the multicollinearity test that has been carried out, the requirement that there is no

multicollinearity can also be seen from the tolerance value whether it is more than

0.100 and the Variance Inflation Factor (VIF) value is less than 10.00.

With that, we can see in Table 4.4 that in this study, the tolerance value for CR is 0.879 more than 0.100 and the VIF value for CR is 1.138 less than 10.00. Then, the tolerance value on the DER is 0.895 more than 0.100 and the VIF value on the DER is

1.118 less than 10.00. Then, the tolerance value on ROA is 0.865 and the VIF value on ROA is 1.156. Then, the tolerance value for TATO is 0.912 and the VIF value for TATO is 1.097. So, it can be concluded that this research does not have multicollinearity between independent variables in the regression model.

### Regression Logistic Analysis

This study uses independent variables with 2 categories so the test uses logistic regression. In this study, the dependent variable consisted of 2, namely "Financial Distress" marked with code 0 and "Non-Financial Distress" marked with code 1.

The data processing application used in this research is IBM SPSS Statistics version 26 with 115 processed data. The completeness of the data used in this study can be seen in Table 4.5 as follows:

Table 4.5 Case Processing Summary

Case Processing Summary			
Unweighted Cases <sup>a</sup>		N	Percent
Selected Cases	Included in Analysis	115	100.0
	Missing Cases	0	.0
	Total	115	100.0
Unselected Cases		0	.0
Total		115	100.0

From Table 4.5, it can be seen that there is no missing data because the output above the value of missing cases = 0, so the amount of data used in the complete study is 115 data.

### Assessing Model Fit

Assessing the feasibility of the model used, it is necessary to test the following hypotheses:

Ho = The hypothesized model fits the data

H1 = The hypothesized model does not fit the data

Based on this hypothesis, so that the model fits with the data, the null hypothesis should not be rejected, so that in logistic regression it is necessary to analyze the value of -2Log Likelihood in block number 0 and block number 1, Hosmer and Lemeshow's Test and Omnibus Test of Model Coefficients. In addition, tests were also conducted to assess the variability of the dependent variable explained by independent variability by analyzing the

values of Cox and Snell's R Square and Nagelkerke's R Square.

### 1. Feasibility Model Regression Test (Goodness of Fit Test)

Hosmer and Lemenshow Test tested the null hypothesis that the data fit the model and there was no difference between the model and the data so that the model could be linked to fit. Where the null hypothesis is accepted when the sig value > (0.05 or 5%).

**Table 4.6 Hosmer and Lemenshow Test**

Step	Chi-square	df	Sig.
1	13.889	8	.085

Based on the results of the Hosmer and Lemenshow Test above, it can be seen that the Chi-Square Hosmer and Lemenshow value is  $13.889 < \text{Chi-square table is } 15.507$  with a sig value of  $0.085 > (0.05 \text{ or } 5\%)$  so that it accepts  $H_0$ . It can be concluded that there is no difference between the model and the data so the model is said to be fit and feasible to use.

### 2. Overall Model Fit Test (-2Log Likelihood Values)

This test is conducted to see a better model for predicting the financial distress of a company that uses - 2Log Likelihood.

**Table 4.7 -2Log Likelihood Block Number 0**

Iteration History <sup>a,b,c</sup>			
Iteration		-2 Log likelihood	Coefficients
			Constant
Step 0	1	110.271	-1.270
	2	109.329	-1.484
	3	109.325	-1.499
	4	109.325	-1.499

**Table 4.8 -2Log Likelihood Block Number 1**

Iteration		-2 Log likelihood	Coefficients				
			Constant	Current Ratio	Debt Equity Ratio	Return On Asset	Total Asset Turnover
Step 1	1	82.926	-2.282	.571	-.012	.418	.750
	2	75.914	-3.147	.782	-.028	1.635	1.196
	3	74.724	-3.427	.844	-.068	2.828	1.422
	4	74.087	-3.394	.817	-.197	2.856	1.696
	5	74.032	-3.367	.805	-.248	2.868	1.773
	6	74.031	-3.362	.804	-.252	2.870	1.774
	7	74.031	-3.362	.804	-.252	2.870	1.774

From the results of this research test in Table 4.8 above, it can be seen that -2Log Likelihood Block Number 0 is 109.325. After including the independent variable, the value of -2Log Likelihood indicates a decrease. The value of

-2Log Likelihood Block Number 1 becomes 74.031. It can be concluded that  $H_0$  is accepted after adding the independent variable. So, if there is a decrease, it can be concluded that the regression model can be used to predict the company's financial distress.

### 3. Omnibus Test of Model Coefficients

This test is conducted to test whether the independent variable has a simultaneous effect on the dependent variable. If the significant value is greater than (0.05 or 5%) then the independent variable simultaneously does not affect the dependent variable, if the significant value is less than (0.05 or 5%) then the independent variable simultaneously affects the dependent variable.

**Table 4.9 Omnibus Test of Model Coefficients**

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	35.294	4	.000
	Block	35.294	4	.000
	Model	35.294	4	.000

Based on the results of the research test in Table 4.10 above, it shows a significant value of  $0.000 < 0.05$ , so indicating that the data in this study is feasible to use.

### 4. Coefficient of Determinant Test ( $R^2$ )

The coefficient of determination shows how much the variability of the dependent variable in this study, namely financial distress, can be explained by the independent variables, namely the liquidity ratio (CR), leverage ratio (DER), profitability ratio (ROA) and activity ratio (TATO). The coefficient of determination in this study is indicated by the value of Nagelkerke R Square. Nagelkerke R Square is a modification of the Cox and Snell coefficients to ensure the value varies from zero to one. This is done by dividing the Cox and Snell values that can be interpreted according to the R-Square value in multiple linear regression.

The value of Cox and Snell's R Square & Nagelkerke's R Square shows how much variability of the dependent variable can be explained by the independent variable. Cox and Snell's R Square is a measure that tries to imitate the size of R square in multiple regression which is based on the likelihood estimation technique with a maximum value of less than 1 so it is difficult to interpret. In logistic regression, to be interpreted as  $R^2$ , Nagelkerke R Square is used. Nagelkerke R Square is a modification of the Cox and Snell R Square values to ensure that the value varies from 0 to 1.

**Table 4.10 Cox and Snell's R Square & Nagelkerke's R Square**

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	74.031 <sup>a</sup>	.264	.431

Based on the test in Table 4.10 above, it can be seen that the value of Cox and Snell's R Square is 0.264 and Nagellkerke's R Square is 0.481. It can be said that according to the Cox and Snell R Square value of 26.4%, variations in financial distress conditions can be predicted using the ratios of CR, DER, ROA, and TATO. Meanwhile, according to the Nagelkerke R Square value of 43.1% variations in financial distress conditions can be predicted using the ratios of CR, DER, ROA, and TATO. This shows that the variability of the dependent variable (financial difficulties) is influenced by the variability of the independent variables (CR, DER, ROA, and TATO) of 48.1%. While the remaining 56.9% is explained by other variables that are not included in this study.

## 5. Classification Table

Further explanation regarding the results of the logistic regression on the classification results shows the predictive power of the regression model to predict the probability of receiving the liquidity ratio (CR), leverage ratio (DER), profitability ratio (ROA), and activity ratio (TATO) with an explanation of financial distress. The results of this classification are used to clarify the description or regression of the logistic model with research data, which shows the predicted results with the research results.

Table 4.11 Classification Table

Step	Observed		Predicted		
			Dummy Z-Score		Percentage Correct
	Dummy Z-Score	Financial Distress	Financial Distress	Non-Financial Distress	
1			92	2	97.9
		Non-Financial Distress	10	11	52.4
Overall Percentage					89.6

Based on the output results in Table 4.11, the regression model used can guess from the original data of 89.6% correctly and the remaining 10.4% is a wrong guess. The ability to predict accurately in the "Non-Financial Distress" category is 52.4% while the "Financial Distress" category is 97.9%. With this, the 115 data samples used are 10 + 11 = 22 data samples that do not experience financial distress (Non-Financial Distress). The sample that does not experience financial distress is 11 data samples and the sample that should not have financial distress but has financial distress has 10 data samples. Then, there are 92 + 10 = 102 data samples experiencing financial distress. The sample experiencing financial distress did not collect 92 data samples and should have 10 data samples.

## Hypothesis Testing (Wald Test)

Wald's test contained in the logistic regression analysis was used to test that there was no significant effect of each independent variable on the dependent variable. Processing and calculating data using SPSS 26 for windows program. The results of hypothesis testing are described in Table 4.12 as follows:

Table 4.12 Wald Test

Variables in the Equation						
Step	Current Ratio	B	S.E.	Wald	df	Sig.
1 <sup>a</sup>		.804	.245	10.815	1	.001

  

Debt Equity Ratio	-.252	.245	1.060	1	.303	.777
Return On Asset	2.870	3.086	.865	1	.352	17.641
Total Asset Turnover	1.774	.760	5.449	1	.020	5.893
Constant	-3.362	.667	25.447	1	.000	.035

From the calculation results as shown in Table 4.12, the equations of the logistics model in this study can be stated as follows:

$$\ln \frac{FD}{1 - FD} = -3.362 + 0.804 CR - 0.252 DER + 2.870 ROA + 1.774 TATO$$

In more detail, the effect of each independent variable on the dependent variable will be described as follows:

### 1. Liquidity Ratio (CR)

Based on the test results in Table 4.12, the coefficient value of the CR variable is 0.804 and the significance value is 0.001. Because the significance value is smaller than the required significance value, namely  $0.001 < 0.05$ , the CR variable is declared to have a positive significant effect on the financial distress condition of a company. This shows that there is a rejection of  $H_0$  and acceptance of  $H_a$ . Thus, the first hypothesis in this study which states that the liquidity ratio (CR) has a positive significant effect on financial distress is accepted.

### 2. Leverage Ratio (DER)

Based on the test results in Table 4.12, the coefficient value of the DER variable is -0.252 and the significance value is 0.303. Because the significance value is greater than the required significance value, namely  $0.303 > 0.05$ , the DER variable is declared to have no significant effect on the financial distress condition of a company. This shows that there is acceptance of  $H_0$  and rejection of  $H_a$ . Thus, the second hypothesis in this study which states that the leverage ratio (DER) has a positive effect on financial distress is rejected.

### 3. Profitability Ratio (ROA)

Based on the test results in Table 4.12, the coefficient value of the ROA variable is 2.870 and the significance value is 0.352. Because the significance value is smaller than the required significance value, namely  $0.352 > 0.05$ , the ROA variable is declared to have no significant effect on the financial distress condition of a company. This shows that there is acceptance of  $H_0$  and rejection of  $H_a$ . Thus, the third hypothesis in this study which states that the

profitability ratio (ROA) has a positive effect on financial distress is rejected. Due to the absence of a significant effect but the positive coefficient on financial distress where the level of significance obtained is greater than 0.05.

#### 4. Activity Ratio (TATO)

Based on the test results in Table 4.12, the coefficient value of the TATO variable is 1.774 and the significance value is 0.020. Because the significance value is greater than the required significance value of  $0.020 < 0.05$ , the TATO variable is declared to have a positive significant effect on the financial distress condition of a company. This shows that there is a rejection of  $H_0$  and acceptance of  $H_a$ . Thus, the fourth hypothesis in this study which states that the activity ratio (TATO) has a positive significant effect on financial distress is accepted.

Overall, the results of hypothesis testing are presented in Table 4.13 as follows:

Table 4.13 Summary of Hypothesis Testing Results

Code	Hypothesis	Results
H1	Liquidity Ratio (CR) has a positive effect on financial distress	Accepted
H2	Leverage Ratio (DER) has a positive effect on financial distress	Rejected
H3	Profitability Ratio (ROA) has a positive effect on financial distress	Rejected
H4	Activity Ratio (TATO) has a positive effect on financial distress	Accepted

## Discussion

This study aims to examine the ability of the liquidity ratio (CR), leverage ratio (DER), profitability ratio (ROA), and activity ratio (TATO) in predicting the financial distress status of transportation companies in Indonesia.

### 1. The Effect of Liquidity Ratio (CR) on Financial Distress

Based on the results of data analysis, it can be seen that the liquidity ratio as measured by the current ratio has a positive influence in predicting financial distress. Thus, the first hypothesis in this study is accepted. Due to the coefficient of the CR variable of 0.804 and its significance value of  $0.001 < 0.05$ . With this, indeed, the higher the company's ability to pay off its debts, the more protected or healthier the company will be and avoid financial distress. The results of this study support research from (Jumliana, 2018) and research from (Dirhansyah Siregar, 2019) where the Current Ratio results obtained have a positive effect on financial distress.

### 2. The Effect of Leverage Ratio (DER) on Financial Distress

Based on the results of data analysis, it can be seen that the leverage ratio as measured by the debt equity ratio has no effect in predicting financial distress. Thus, the second hypothesis in this study is rejected. Due to the coefficient of the DER variable of -

0.252 and its significance value of  $0.303 > 0.05$ . The results of this study support research from (Makkulau, 2020) where the DER results obtained do not affect financial distress.

### 3. The Effect of Profitability Ratio (ROA) on Financial Distress

Based on the results of data analysis, it can be seen that the profitability ratio as measured by return on assets has no effect in predicting financial distress. Thus, the third hypothesis in this study is rejected. Because the coefficient of the ROA variable is 2.870 and the significance value is  $0.352 > 0.05$ . The results of this study not support research from (Jumliana, 2018) where the ROA results obtained have a positive effect on financial distress.

### 4. The Effect of Activity Ratio (TATO) on Financial Distress

Based on the results of data analysis, it can be seen that the activity ratio as measured by total assets turnover has positive effect in predicting financial distress. Thus, the fourth hypothesis in this study is accepted. With this, the higher the TATO, the faster the turnover of assets and profit. In a sense, the company can be considered efficient in using all of its assets in generating sales. The results of this study support research from (Nurvita and Budiarti, 2019) where the TATO results obtained have positive effect in predicting financial distress.

## CONCLUSION AND SUGGESTION

### Conclusion

This study aims to determine the effect of financial ratios, namely the liquidity ratio as measured by the Current Ratio (CR), the leverage ratio as measured by the Debt Equity Ratio (DER), the profitability ratio as measured by Return On Assets (ROA) and the activity ratio as measured by Total Assets Turnover (TATO) on financial distress conditions in transportation companies listed on the Indonesia Stock Exchange for the study period from 2017-2020. So, based on the results of the logistic regression that has been carried out in this study, the following conclusions can be drawn:

1. Liquidity Ratio measured using the Current Ratio (CR) has a positive effect in predicting financial distress conditions in transportation companies listed on the Indonesia Stock Exchange.
2. Leverage ratio as measured by using the Debt Equity Ratio (DER) has no effect in predicting financial distress conditions in transportation companies listed on the Indonesia Stock Exchange.

3. Profitability ratio as measured by using Return On Assets (ROA) has no effect but the positive coefficient in predicting financial distress conditions in transportation companies listed on the Indonesia Stock Exchange.

4. Activity ratio as measured using Total Assets Turnover (TATO) has positive effect in predicting financial distress conditions in transportation companies listed on the Indonesia Stock Exchange.

### Suggestion

1. For companies, pay more attention to their financial statements to know how to overcome them so that the company's management does not fall into financial distress.

2. For investors, this research can be used as a basis for making the right decisions whether the company is in a state of financial difficulty or to be clearer when investing in a company.

3. For further researchers, it is possible to develop research samples not only on transportation companies but also on other companies listed on the Indonesia Stock Exchange.

4. For further researchers, they can use or add other financial ratios that may affect financial distress.

5. For further researchers, they can add their research period so that more and more samples will be studied.

### Limitations

1. This study only uses financial ratios to predict the company's financial distress. So, there may be other factors that have not been used that can affect the results of this study to predict the condition of financial distress in this study.

2. The period in this study was only four years and only obtained 115 annual data which were processed to be used as research objects.

3. This study only takes a sample of transportation companies listed on the Indonesia Stock Exchange.

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