

FINANCIAL RATIOS AS A PREDICTION TOOL FOR FINANCIAL DISTRESS: STUDY ON MANUFACTURING COMPANIES LISTED IN INDONESIA STOCK EXCHANGE FOR THE 2018-2019 PERIOD

Wieta Chairunesia¹

Accounting Study Program, Faculty of Economics and Business, Universitas Mercu Buana
Jl. Raya Meruya Selatan, Kembangan, West Jakarta

IJMSSSR 2021
VOLUME 3
ISSUE 4 JULY - AUGUST

ISSN: 2582 - 0265

Abstract: The prolonged impact of the COVID-19 pandemic has made various industries experience economic pressure. If this situation continues, bankruptcy can be predicted in the automotive industry which is included in the manufacturing sector. Before reaching bankruptcy, the company will usually experience financial difficulties, which are known as financial distress. Therefore, the prediction of the possibility of financial distress is expected to assist the company in anticipating further financial difficulties that may lead to bankruptcy. In predicting the occurrence of financial distress, it can be done by evaluating the company's financial performance, namely by using financial ratios including the ratio of Profitability, Liquidity, Leverage, and Activity. Therefore, this study aims to analyze financial ratios in predicting financial distress. The sampling technique used was purposive sampling. The research was conducted on manufacturing companies listed on the Indonesia Stock Exchange with a research period of 2 (two) years (2018-2019). The model estimation used is logistic regression analysis. The independent variables in this study are Profitability, Liquidity, Leverage, and Activity. The results of the hypothesis test show that the profitability ratio proxied by ROA has a significant effect on the probability of the company experiencing financial distress. So that it can be used as a tool to predict the occurrence of financial distress. While the liquidity ratio proxied by CR, solvency ratio proxied by DER, and activity ratio proxied by TATO has no significant effect on the probability of the company experiencing financial distress.

Keywords: Profitability, Liquidity, Solvency, Activity, Financial Distress

INTRODUCTION

Background

The prolonged impact of the COVID-19 pandemic has made various industries experience economic pressure, including the automotive sector industry. Global car transactions in 2020 are predicted to decline by 15.5 million units from last year. In the United States, three major car manufacturers such as General Motor Company, Ford Motor Company, and Fiat Chrysler Automobiles voluntarily stopped production at their various factories starting March 20 (Katadata, 2020).

Director of the Maritime Industry, Transportation and Defense Equipment (IMATAP) Ministry of Industry, Putu Juli Ardika, said the national automotive industry was also affected by the Covid-19 pandemic. Meanwhile, the impact will be in the form of a decrease in demand for motor vehicles in Indonesia. He explained the data, the number of sales of four-wheeled vehicles or more in January 2020 was 80.4 thousand units, a decrease of 1.1% from the previous period. Then, in February 2020 sales amounted to 79.5 thousand units or decreased by 3.1% from the previous period (Media Indonesia, 2020).

If this situation continues, bankruptcy can be predicted in the automotive industry. Before reaching bankruptcy, the company will usually experience financial difficulties, which are known as financial distress. Financial distress is defined as the stage of decline in financial conditions that occur before bankruptcy or liquidation (Platt & Platt, 2002).

In predicting the occurrence of financial distress, it can be done by evaluating the company's financial performance, namely by using financial ratios including the ratio of Profitability, Liquidity, Leverage, and Activity.

Objectives of The Study

Based on the description of the background, the purpose of this study is to obtain empirical evidence of the effect of profitability, liquidity, solvency, and activity ratios on the probability of companies experiencing financial distress.

LITERATURE REVIEW

Signaling Theory

According to Brigham and Houston (2014: 184) signal theory explains the steps taken by management to provide information to external parties as potential investors about the company's prospects. Thus, information from management can be used as a guide by external parties in assessing the company's prospects in the future.

Information provided by management can be in the form of good news or bad news. The good news provided can be in the form of information regarding company earnings announcements, increased sales, and dividend distribution. Meanwhile, bad news can be in the form of information about the losses suffered by the company, an increase in the amount of debt, a decrease in sales, which can cause the risk of bankruptcy. theory, Therefore, Signal Theory is considered appropriate in helping management to manage the company's financial information by taking quick action in solving problems, especially bad news that occurs, especially the possibility of financial distress.

Definition of Financial Distress

Platt & Platt (2002) defines financial distress as a stage of decline in financial conditions that occur before bankruptcy or liquidation. Before the company is declared bankrupt or bankrupt, the company will experience several conditions in the form of financial difficulties or financial distress that are marked by several conditions, such as experiencing the company's inability to meet its obligations both short-term and long-term obligations, sacrifices using large company assets but sales generated is not optimal so that losses occur even losses continuously experienced.

If the condition of the company continues to suffer losses, it cannot be denied if creditors and shareholders will resign to cooperate with the company which indicates the company is entering the financial distress phase. But actually, companies that experience financial distress can be rehabilitated for the benefit of bondholders, shareholders, and the public (Dewi&Mulya, 2017).

According to Rayenda in Andre &Taqwa (2014), financial distress occurs because the company is unable to manage and maintain the stability of the company's financial performance that starts from the failure to promote the products it makes which causes a decrease in sales so that with declining revenue from the least sales allows the company to experience operating losses and net loss for the current year. Furthermore, the losses incurred will result in a capital deficiency due to a decrease in the value of the retained earnings used to make dividend payments, so that the total equity as a whole will experience a deficiency.

Profitability Ratio

Kasmir (2017: 196) defines profitability ratios as ratios used to assess a company's ability to seek profits. This ratio is used to see how much profit or profit is gained by the company to meet the company's survival. Profitability ratios according to Hery (2018: 193) consist of return on assets, Return on Equity, Gross profit margin, operating profit margin, Operating margin net profit (net profit margin). Good performance will be shown through the success of management in generating maximum profits for the company. By obtaining high profits, the possibility of the company experiencing financial distress will be smaller.

Liquidity Ratio

According to Fahmi (2012:93), if a company experiences problems in liquidity, the company can start entering a period of financial difficulty, and if these conditions are not resolved quickly, it could result in business bankruptcy.

The higher the liquidity ratio the company has, the more it will avoid financial distress, but if the ratio is lower, the company has the potential to experience financial distress.

Solvability Ratio

Solvency ratios or often referred to as leverage ratios are used to measure a company's ability to meet its long-term obligations to finance a company. Leverage Ratios are ratios intended to measure the extent to which a company's assets are financed with debt, including Debt to total assets ratio, Net worth to debt ratio, and others (Noviandri, 2014). If the use of obligations is too high, it will have an impact on the condition of the company which can lead to financial distress.

Activity Ratio

Activity ratio is the ratio used to measure the company's ability to manage its assets effectively and efficiently. Total Asset Turnover (TATO) is a ratio used to measure the turnover of all assets owned by the company, then also measures how many sales are obtained from each rupiah against assets (Kasmir, 2017: 185). Total Asset Turn Over shows the efficiency level of the use of the company's overall assets in generating a certain sales volume, which shows a positive result. The higher level of effectiveness of resource utilization, the lower the possibility of financial distress.

Previous Research

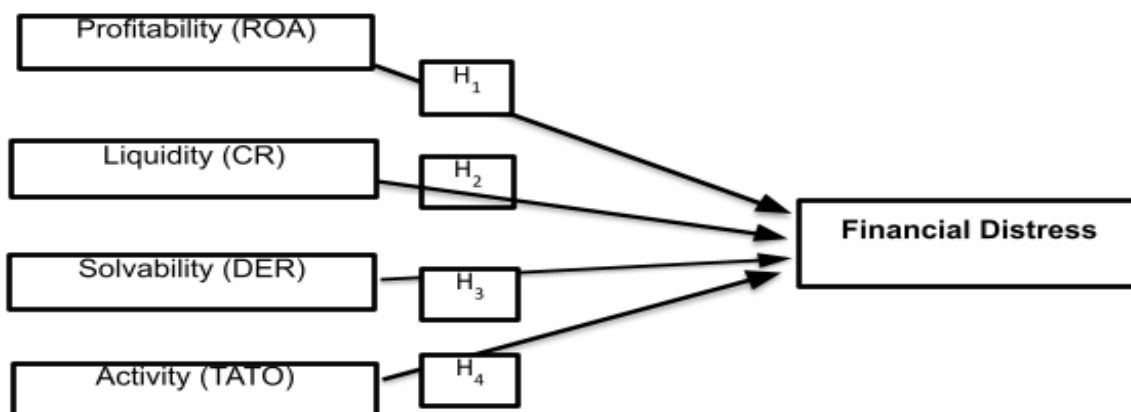
The research conducted by Muflihah (2017) with the title Financial Distress Analysis of Manufacturing Companies in Indonesia With Logistics Regression shows the result that The variables that affect the company's financial distress are the Debt ratio and Return on assets, while the variables that do not affect the company's financial distress are Sales growth and Current ratio.

Dirman (2020) in her research entitled Financial distress: The Impacts of Profitability, Liquidity, Leverage, Firm Size, and Free Cash Flow shows the result that The profitability variable has a positive effect on financial distress; Liquidity, leverage, and free cash flow variables do not affect financial distress; and the firm size variable has a negative effect on financial distress.

In another research by Mahaningrum & Merkusiwati (2020) with the title Analysis of the Effect of Current Ratio, Debt To Total Asset Ratio, Total Asset Turnover, and Sales Growth Ratio Against Financial Distress Conditions shows that Liquidity ratios had no effect on financial distress, leverage ratios had a positive effect on financial distress, profitability ratios had a negative effect on financial distress, activity ratios had no effect on financial distress and growth ratios did not affect financial distress.

Theoretical Framework

Based on the description previously stated and the literature review, the related variables in this study can be formulated through a framework of thought as follows:



Research Hypothesis

Based on the study of theory and the study of previous studies, a temporary hypothesis can be taken, namely:

- H1: The profitability ratio has a significant effect on the probability that a company experiences financial distress.
- H2: Liquidity has a significant effect on the probability the company experienced Financial Distress.
- H3: Solvability has a significant effect on the probability the company experienced Financial Distress.
- H4: Activity has a significant effect on the probability the company experienced Financial Distress.

RESEARCH METHOD

Type of Research

This type of research is causal research. This study will analyze the financial profitability ratios using the Return Of Assets proxy, liquidity using the Current Ratio proxy, solvency proxied by the Debt to Equity Ratio, activity ratios proxied by Total Asset Turnover in predicting financial distress conditions which are proxied by the company's financial performance. shows a negative operating profit.

Variable Research and Operationalization

Financial Distress

Platt & Platt (2002) defines financial distress as a stage of decline in financial conditions that occur before bankruptcy or liquidation. Before the company is declared bankrupt or bankrupt, the company will experience several conditions in the form of financial difficulties or financial distress that are marked by several conditions, such as experiencing the company's inability to meet its obligations both short-term and long-term obligations, sacrifices using large company assets but sales generated is not optimal so that losses occur even losses continuously experienced.

Profitability

Kasmir (2017: 196) defines profitability ratios as ratios used to assess a company's ability to seek profits. Profitability in this study was measured using ROA (Return On Assets) (Yustika, 2015) with the formula:

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

Liquidity

According to Sujarweni (2017: 60), Liquidity ratios are used to measure a company's ability to meet its short-term

financial obligations in the form of short-term debts. This ratio is shown from the size of the current assets. The liquidity ratio in this study is measured by the Current Ratio (Yustika, 2015) with the following formula:

$$\text{Current Ratio} = \frac{\text{Total Current Assets}}{\text{Total Current Liabilities}}$$

Solvability

Solvency Ratios or Leverage are ratios that are intended to measure how far the owner's capital can cover debts to outside parties (Kasmir, 2017:164). In this study, solvency is proxied by the Debt to total equity ratio (Ardian et al., 2017) with the following formula:

$$\text{Debt to Equity Ratio} = \frac{\text{Total Debt}}{\text{Total Equity}}$$

Activity

to Kasmir (2017:172), the activity ratio is a ratio used to measure the effectiveness of the company is using its assets. Activity ratios include the Receivable Turn Over ratio, Working Capital Turn Over ratio, Fixed Asset Turn Over ratio and Total Asset Turn Over (Kasmir, 2017: 185). In this study, the activity ratio is proxied by Total Asset Turn Over (Yudiawati&Indriani, 2016) with the following formula:

$$\text{Total Asset Turnover Ratio} = \frac{\text{Net Sales}}{\text{Total Assets}}$$

Population and Research Samples

The population in this study uses manufacturing companies listed on the Indonesia Stock Exchange (IDX) in 2018-2019.

Sampling is done by purposive sampling which is part of the non-probability sampling method. For members of the population who do not qualify, no research sample is chosen. Sampling-based on the following criteria:

1. Manufacturing companies listed on the Indonesia Stock Exchange in 2018-2019, which are in financial distress and non-financial distress companies. Companies that experience financial distress are companies that experience negative operating profits in one reporting period.
2. Manufacturing companies that consistently report Financial Statements on the IDX in 2018-2019.

No	Criteria	Total
1	total Manufacturing Companies listed on the IDX until 2019	182
2	total Manufacturing Companies that IPO on the IDX in 2018-2019	(23)
3	total companies have the potential to be delisted because they have not issued audited financial statements.	(4)
4	number of manufacturing company data that can be used for research	155
5	the amount of data used according to the research period is 155x2	310

Data Collection Technique

Data collection methods in this research were carried out in several ways as follows:

1. Documentation, namely the collection of available data on the research object.
2. Literature Study, namely from the literature related to the problems in writing this research.

Data Analysis Method

Data analysis was performed using binary logistic regression analysis to see the effect of the independent variables on the dependent variable, which includes the following analysis:

1. Descriptive Statistics Test
2. Binary Logistic Regression Test.

In this test, according to Ghozali (2018: 332) the steps to determine the regression are as follows: a. Assessing the Fit Model

b. Hypothesis Test (Wald's Test)

So the regression model will be obtained as follows:

$$\text{Ln} \frac{p}{1-p} = \beta_0 + \beta_1X_1 + \beta_2X_2 + \dots + \beta_nX_n$$

$\text{Ln} \frac{p}{1-p}$ = The probability of a company experiencing financial distress

β_0 = Constant

$\beta_{1,2,..n}$ = Coefficient of independent variable regression

$X_{1,2,..n}$ = Independent Variable

RESULTS AND DISCUSSION

Results

Goodness Fit Model Test

Table 1 Hosmer and Lemeshow Test

Step	Chi-square	Df	Sig.
1	2.086	8	.978

The table shows that the significance value of the Hosmer and Lemeshow Test is .978 > the significance level of .05, in other words, the model can be accepted because the empirical data fit the model, so hypothesis testing can be carried out.

The table below shows the Cox & Snell R Square value of .548 and the value of Nagelkerke R Square of .905 which indicates that the variability of the dependent variable of financial distress can be explained by the variability of the independent variables of profitability (ROA), liquidity (CR), leverage (DER). , and activity (TATO) is 90.5%, and 9.5% is explained by other variables not examined in this study.

Table 2 Coefficient of Determination Test Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	41.739 ^a	.548	.905

a. Estimation terminated at iteration number 11 because parameter estimates changed by less than .001.

See the accuracy of this research model can be seen in the following classification table:

Tabel 3 Classification Table

	Observed	Predicted		Percentage Correct
		Financial_Distress 0	1	
Step 1	Financial_Distress 0	251	2	99.2
	1	5	49	90.7
Overall Percentage				97.7

a. The cut value is .500

From the table, it can be seen that the observed sample shows that 253 companies do not experience Financial Distress (code 0). The prediction results show 2 companies that are predicted incorrectly and 251 companies that are predicted correctly in this research model. So that there are 99.2% (251:252=0.992) correct predictions for companies that do not experience Financial Distress.

In addition, the number of samples based on observations of a sample of companies experiencing Financial Distress (code 1) is 54 companies. Prediction results show that 5 companies are predicted incorrectly and 49 or 90.7% (49:54 = 0.907) which are correctly predicted to companies experiencing Financial Distress.

Hypothesis Test

Table 4 Hypothesis Test (Wald's Test) Variables in the Equation

	B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1 ^a ROA	-2.245	.503	19.925	1	.000	.106
CR	.000	.002	.003	1	.955	1.000
DR	.000	.000	1.490	1	.222	1.000
TATO	-.008	.037	.045	1	.832	.992
Constant	-1.909	.634	9.053	1	.003	.148

a. Variable(s) entered on step 1: ROA, CR, DR, TATO.

Based on the table, the regression formula for this study is as follows:

$$\ln \frac{p}{1-p} = -1.909 - 2.245ROA + 0.000CR + 0.00DER - 0.008TATO$$

The figures resulting from these tests can be explained as follows:

- a. In the profitability variable, which is proxied by ROA, the P-value has a significance value of .000 < .05 significance level, meaning that H0 is rejected. The regression coefficient value of -1.909 indicates the direction of the negative relationship. Thus it can be concluded that profitability has a significant negative effect on the probability of the company experiencing Financial Distress.
- b. The P-value of the significance of the liquidity variable proxied by CR shows a significant value of .955 > .05 significance level, meaning that H0 is accepted. The regression coefficient value of .000 indicates the direction of the positive relationship. So it can be concluded that liquidity has no significant effect on the probability of the company experiencing Financial Distress.
- c. The solvency variable proxied by DER shows a P-value of the significance of .222 > .05 level of significance, then H0 is accepted. The regression coefficient value of .000 indicates the direction of the positive relationship. So it can be concluded that solvency has no significant effect on the probability of the company experiencing Financial Distress.
- d. The activity variable proxied by TATO showed a significant P-value of .832 > .05 significance level. The regression coefficient value of -.008 indicates the direction of the negative relationship. Thus, it can be

concluded that activity does not have a significant effect on the probability of the company experiencing Financial Distress.

Based on the results above, there is 1 variable that has a significant effect on the probability of a company experiencing Financial Distress, namely profitability as proxied by ROA.

Then the model formed is:

$$\pi_i = \frac{\exp(-1.909 - 2.245X_{1i})}{1 + \exp(-1.909 - 2.245X_{1i})}$$

Where :

X_{1i} = ROA

$i = 1, 2, \dots, n$

From Table 7 we can also interpret the Exp (B) or the odds ratio as follows:

- If ROA (profitability) increases by 1, the probability of Financial Distress will be .106 times.
- If CR (liquidity) increases by 1, the probability of Financial Distress will be 1 time.
- If DER (solvability) increases by 1, the probability of Financial Distress will be 1 time.
- If the TATO (activity) increases by 1, the probability of Financial Distress will be .992 times.

Discussion

- According to Carolina et al., (2017), a company that has a high level of ROA indicates that company can generate profits, which can be used for various things, both to fund the company's activities and pay its obligations. In other words, the higher the ROA ratio, the lower the possibility of financial distress. The results of this study indicate that ROA has a significant effect on the probability of a company experiencing financial distress. The results of this study are in line with research by Muflihah (2017), Carolina et al. (2017), Agustini&Wirawati (2019), Mahaningrum&Merkusiwati (2020), and Dirman (2020) although the regression coefficients differ in direction. Thus, it is certain that the company's ROA can be a measure of the probability of financial distress.
- According to Sujarweni (2017: 60) the liquidity ratio is used to measure the company's ability to meet its short-term financial obligations in the form of short-term debts. The current ratio is used to measure the company's ability to meet its short-term obligations. The higher the liquidity ratio owned by the company, the more protected from financial distress conditions, but if the ratio is lower the company has the potential to experience financial distress. Contrary to the test results in this study, it shows that liquidity has no significant effect on the probability of a company experiencing Financial Distress. It can be seen that the sample companies that are predicted to experience Financial Distress also have a higher CR value than the other sample companies that are predicted not to experience Financial Distress. The results of this study are in line with the research of Mahaningrum&Merkusiwati (2020), Dirman (2020) but contradict the research of Yustika (2015).
- According to Kasmir (2017:151), the leverage ratio or solvency ratio is the ratio used to measure the extent to which the company's assets are financed with debt. If the use of obligations is too high, it will have an impact on the state of the company which can lead to financial distress. However, the results of this study contradict the statement, DER does not have a significant effect on the probability of a company experiencing financial distress. If viewed from the sample data, not all companies with high liabilities are predicted to experience financial distress. Other factors must also be considered, such as the number of assets owned and the profit generated in the current period. That is, even though the company has large liabilities, but it can be overcome by the number of assets or profits generated, then the probability of the company experiencing financial distress is small. The results of this study are in line with research conducted by Dirman (2020), Carolina et al. (2017) but contrary to the results of research by Mahaningrum&Merkusiwati (2020), Agustini&Wirawati (2019), Muflihah (2017), Yudiawati&Indriani (2016) and Yustika (2015).

- d. According to Kasmir (2017:172), activity is the ratio used to measure the effectiveness of the company is using its assets. The higher the level of effectiveness of resource utilization, the possibility of financial distress will decrease. In this study, the activity ratio was measured using TATO. The results of this study indicate that TATO has no significant effect on the probability of a company experiencing financial distress. When viewed from the sample data, companies that have a large net sales value do not guarantee that the company will experience a profit. Meanwhile, in this study, the indicator of a company experiencing financial distress is by looking at its operating profit. The results of this study are in line with the research of Mahaningrum&Merkusiwati (2020) while contradicting the results of the research of Yudiawati&Indriani (2016) which states that it affects the probability of companies experiencing financial distress.

CONCLUSION

- a. Profitability ratio proxied by ROA has a significant effect on the probability of the company experiencing Financial Distress.
- b. The Liquidity Ratio as proxied by CR has no significant effect on the probability of the company experiencing Financial Distress.
- c. Solvency ratio proxied by DER has no significant effect on the probability of the company experiencing Financial Distress.
- d. The activity ratio proxied by TATO has no significant effect on the probability of a company experiencing Financial Distress.

References

1. Agustini, N. W., &Wirawati, N. G. P. (2019).PengaruhRasioKeuanganPada Financial Distress Perusahaan Ritel Yang Terdaftar di Bursa Efek Indonesia (BEI). E-JurnalAkuntansiUniversitasUdayana, 26(1), 251–280. <https://doi.org/10.24843/eja.2019.v26.i01.p10>
2. Andre, O., &Taqwa, S. (2014). PengaruhProfitabilitas ,Likuiditas , dan Leverage DalamMemprediksi Financial Distress (StudiEmpirisPada Perusahaan Aneka Industri yang Terdaftar di BEI Tahun 2006-2010). Jurnal WRA, 2(1), 293–312.
3. Ardian, A. V., Andini, R., &Raharjo, K. (2017). PENGARUH RASIO LIKUIDITAS, RASIO LEVERAGE, RASIO AKTIFITAS DAN RASIO PROFITABILITAS TERHADAP FINANCIAL DISTRESS. Journal Of Accounting, 3(3).
4. Carolina, V., Marpaung, E. I., &Pratama, D. (2017).AnalisisRasioKeuanganuntukMemprediksiKondisi Financial Distress (StudiEmpirispada Perusahaan Manufaktur yang Terdaftar di Bursa Efek Indonesia Periode 2014-2015). JurnalAkuntansiMaranatha, 9(2), 137–145.
5. Dewi, A., &Mulya, H. (2017). RJOAS,1(61), January 2017. Russian Journal of Agricultural and Socio-Economic Sciences, 1(January), 29–38. <https://doi.org/DOI> <https://doi.org/10.18551/rjoas.2017-01.04>
6. Dirman, A. (2020). Financial distress: The Impact of Institutional Ownership, Independent Commissioners, Managerial Ownership, and Audit Committee. International Journal of Management Studies and Social Science Research, 2(4), 202–210.
7. Dirman, A. (2020). Financial distress: The Impacts of Profitability, Liquidity, Leverage, Firm Size, and Free Cash Flow. International Journal of Business, Economics, and Law, 22(1), 17–25.
8. Fahmi, I. (2012). *Analisis Kinerja Keuangan*. Alfabeta.
9. Ghozali, I. (2018). Aplikasi Analisis Multivariate Dengan Program IBM SPSS 25 (9th ed.). BadanPenerbitUniversitasDiponegoro.
10. Kasmir.(2017). AnalisisLaporanKeuangan.Raja GrafindoPersada.
11. Liana, D., &Sutrisno.(2014). AnalisisRasioKeuanganUntukMemprediksiKondisi Financial Distress Perusahaan Manufaktur Jakarta.JurnalStudiManajemen Dan Bisnis, 1(1), 52–62.
12. Mahaningrum, A. A. I. A., &Merkusiwati, N. K. L. A. (2020).PengaruhRasioKeuanganpada Financial Distress. E-JurnalAkuntansiUniversitasUdayana, 30(8), 1969–1984. <https://doi.org/10.24843/eja.2020.v30.i08.p06>
13. Muflihah, I. Z. (2017).Analisis Financial Distress Perusahaan Manufaktur Di Indonesia denganRegresiLogistik.MajalahEkonomi, XXII(2), 254–269.
14. Murhadi, W. R. (2015). AnalisisLaporanKeuangan, ProyeksidanValuasiSaham. SalembaEmpat.
15. Noviantri, T. (2014).Peranananalisisrasiokeuangandalammemprediksikondisi.JurnalIlmuManajemen, 2(4), 1655–1665.

16. Platt, H. D., & Platt, M. B. (2002). Predicting Corporate Financial Distress : Reflections on Choice-Based Sample Bias. JOURNAL OF ECONOMICS AND FINANCE, 26(2), 184–199. <https://doi.org/10.1007/BF02755985>
17. Sujarweni, V. W. (2017). Analisis Laporan Keuangan : Teori, Aplikasi, & Hasil Penelitian. Pustaka Baru Press.
18. Yudiawati, R., & Indriani, A. (2016). ANALISIS PENGARUH CURRENT RATIO , DEBT TO TOTAL ASSET RATIO , TOTAL ASSET TURNOVER , DAN SALES GROWTH RATIO TERHADAP KONDISI FINANCIAL DISTRESS (Studi Kasus Pada Perusahaan Manufaktur yang Terdaftar di BEI Tahun 2012-2014). Diponegoro Journal of Management, 5(2), 1–13.
19. Yustika, Y. (2015). PENGARUH LIKUIDITAS, LEVERAGE, PROFITABILITAS, OPERATING CAPACITY DAN BIAYA AGENSI MANAJERIAL TERHADAP FINANCIAL DISTRESS (Studi Empiris pada Perusahaan Manufaktur yang Terdaftar di Bursa Efek Indonesia Tahun 2011-2013). Jom FEKON, 2(2), 1–15.
20. <https://katadata.co.id/marthathertina/indepth/5ea9525dca7e4/babak-belur-industri-otomotif-dihantam-pandemi-corona>
21. <https://mediaindonesia.com/ekonomi/302222/dampak-covid-19-permintaan-sindustri-otomotif-nasional-anjlok>