Does Firm Size Have a Moderating Effect On Financial Distress? Evidence: Infrastructure Sector in Indonesia Stock Exchange

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Article Info

ABSTRACT

This study aims to gather more systematic and complete information about factors that affect financial distress. This study's testing is based on secondary data, with a purposive sample of 41 samples collected overall. With the use of the eviews 12 software package, the data analysis in this study employs logistic regression and moderated regression analysis. The study's findings demonstrate the importance of leverage and liquidity, but not the importance of profitability or firm size. However, the business size has no effect on the profitability variable; only the liquidity and leverage variables are affected. The variables related to liquidity and leverage yielded the most significant findings.

INTRODUCTION

The economic boom that followed the end of the Covid-19 pandemic posed a new challenge to economic actors. This challenge refers to a situation that is very closely linked to the capital market, which means the company will accumulate and raise capital, and provide additional options for investors to invest their ownership. (Hamitaputri, 2022). As for the purpose of investing funds is to add corporate capital so that the company can its goals. But in reality, financial problems force long-running to shut down.

The inability of an organization to prevent a financial disaster is one of the things that ultimately leads to bankruptcy. When a company is in trouble paying its debt, it is said to be in financial trouble (financial distress). (Wijaya & Agatha, 2022). As for the factors that trigger the emergence of financial difficulties in a company, according to Jauch & Glueck (2004) there are three sources which trigger financial distress, among others: general factors, external factors of the company, and internal problems of a company. Social, technological, corporate, and political aspects in general are some of the elements that are frequently present in a society and can cause financial instability. However, the internal causes of financial difficulties are those that originate within the organization; these include previous inappropriate actions and policies as well as management's inability to generate the necessary resources on time.

Recently, the infrastructure sector listed on the Indonesian Stock Exchange has attracted the attention of investors, which on November 17, 2023 IHSG experienced a 2.47% boost. (Rahmawati,
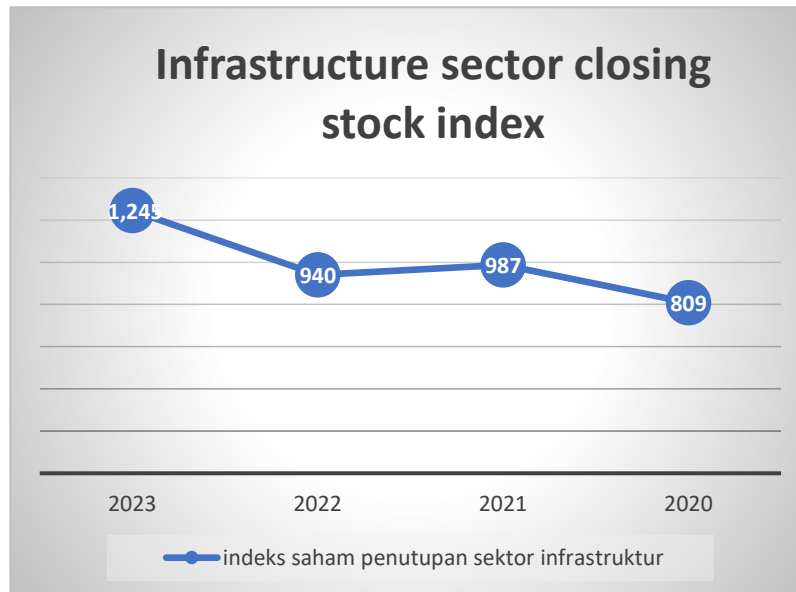
2023). This rising combined stock price index is triggered by an increase in the index in the infrastructure sector by 9.42%. The upward and downward trends of the index can also be seen from historical data. Here's a trend chart on the infrastructure stock index.

Figure 1 Growth Trends in Infrastructure Sector Stock Index Period 2020-2023

Source: data processed by researchers (2024)

Based on the graph presented above, it can be seen that the share price index has increased in the infrastructure sector, where in 2020 it was recorded that the closing share price was 809, then in 2021 the closing share price index was 987, which indicates an increase in the closing share price index from the previous year, Furthermore, in 2022 the closing stock price index will be 940, which indicates a decline in the stock price index from the previous year. Furthermore, in 2023 it was recorded that the closing stock price index was 1,245, which means there was a significant increase compared to the previous year. Through the observations presented using the graph above, which has a tendency for the closing stock price index trend in the infrastructure sector to increase, investors have the assumption that issuers in the infrastructure sector have good economic growth prospects (Ridhasyah et al., 2023).

However, in reality, the increasing closing price index in the infrastructure sector is not always in line with good prospects in the future, because there are still issuers in the infrastructure sector who are experiencing poor prospects, who are facing losses due to ongoing business operations. Continuous losses can indicate that the company is experiencing financial distress. The following are five issuers that will experience losses throughout 2023

Table 1 List of Infrastructure Sector Issuers Who Experienced Losses in Q3 2023

Stock code	Year	Loss
ACST	2023	151.200.000.000
WIKA	2023	5.840.000.000.000
WSKT	2023	2.830.000.000.000
SSIA	2023	23.700.000.000
IDPR	2023	15.000.000.000

Source: data processed by researchers (2024)

Based on the table above, it can be seen that the biggest loss was experienced by PT Wijaya Karya, amounting to 5.84 trillion, where this loss increased 209x compared to the previous year which was only 27.96 billion (Tonce, 2023). The second highest loss position was occupied by PT Waskita Karya amounting to 2.83 trillion, even though compared to last year WSKT still made a profit of 452.2 million, the loss experienced by WSKT in that year was due to the cost of goods sold which had

increased to 9.3 trillion. (Nityakanti, 2023). Then in third place with a loss of 151.2 billion was occupied by PT Acset Indonusa, but the loss suffered by ASCT was smaller compared to the previous year of 226.9 billion. Furthermore, in fourth position, PT Surya Semesta Internusa recorded a loss of 23.7 billion, where there was a decrease in profit, which originally recorded a profit of 70.8 billion in 2022, now it has decreased by 133.5%. Then the loss position in fifth place was occupied by PT Indonesia Pondasi Raya with a loss of 15 billion. Apart from the table of losses for infrastructure sector companies in 2023, to estimate the company's prospects, historical data from two to five years is also needed which shows the development of the company's prospects for generating profits. The following is a graph of changes in EBIT and net profit for infrastructure sector companies in 2020-2023.

Figure 2 Change EBIT and Net Profit
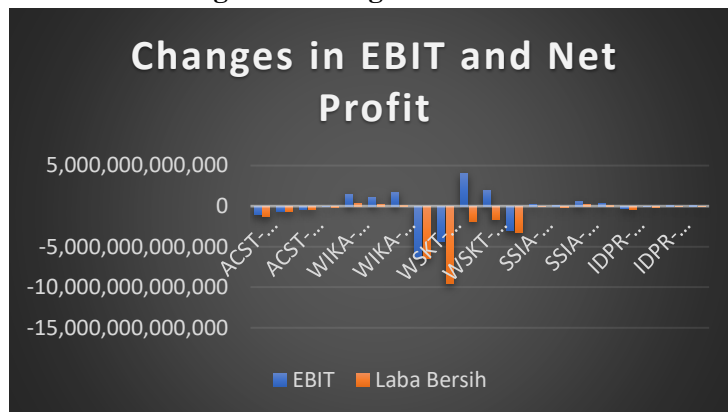
Source: data processed by researchers (2024).

Based on the information presented in the graph above, it is known that ACST in 2020 had an ebit value of -1.082 trillion and a net profit value of -1.332 trillion, which means it experienced a loss, in 2021 ACST also experienced a loss with an ebit value of -614.3 billion as well as a profit value net -693.6 billion, in 2022 ACST will also still experience losses with an ebit value of -464.5 billion and a net profit value of -451.6 billion, and in 2023 ACST will also apparently still experience a loss of 151.2 billion. In contrast to WIKA, which in 2020 experienced a profit with a net profit of 322.3 billion, in 2021 it also still made a profit with a net profit of 214.4 billion, in 2022 it also still made a profit with a net profit of 12.5 billion. However, in 2023 WIKA will be forced to experience losses of a fantastic amount of 6.4 trillion. WSKT in 2020 experienced huge losses, worth 9.4 trillion. Then in 2021 WSKT still experienced losses, but the value was not as big as the previous year, the value of WSKT's losses in 2021 was -1.8 trillion. In 2022 WSKT will still experience losses with a nominal value of 1.6 trillion. Furthermore, in 2023 WSKT experienced an increase in losses compared to the previous year with a nominal value of 3.2 trillion. In 2020 SSIA experienced a loss of 77.2 billion. Then in 2021 SSIA will still experience losses of -191.1 billion. However, in 2022 SSIA will make a profit of 207.9 billion and in 2023 SSIA will still get a net profit of 19.1 billion. IDPR in 2020 experienced a loss of 382.1 billion. Furthermore, in 2021 IDPR will still experience losses with a nominal value of 144 billion. Then in 2022 IDPR's losses decreased to 1.2 billion, but IDPR's losses increased again in 2023 to 13.5 billion.

Based on the explanation above, the increasing condition of the infrastructure sector index does not mean that all issuers in the infrastructure sector have good prospects, because in reality there are still several issuers in the infrastructure sector that are in financial distress with losses. which is experienced continuously. Aside from the rationale for the aforementioned results, a number of things might impact financial hardship itself.

The primary element that might trigger a financial crisis is liquidity. Liquidity, as defined by Bukhari & Rozalinda (2022), is the capacity of an organization to satisfy its immediate financial commitments. Consequently, a corporation has to have more current assets than current liabilities in order to continue being liquid. Excessive debt might lead to financial troubles for a corporation (Wijaya

& Agatha, 2022). Cinantya and Merkusiwati's study indicates that liquidity has a substantial impact on financial hardship (2021). Research, however, indicates that financial troubles are not much impacted by liquidity (Lela et al., 2021).

Leverage is the second element that might affect financial trouble. Leverage itself, in the words of Junior & Wijaya (2022), is the accomplishment of commitments made by the business to settle short- and long-term debt. While study by Danica & Wijaya (2022) indicates that leverage has a minor influence on financial hardship, research by Angriani et al. (2023) demonstrates that leverage has a considerable effect on financial distress.

The third factor influencing financial stress is profitability. According to Sudaryanti & Dinar, a profitability ratio is used to evaluate a company's capacity to turn a profit (2019). Stated differently, this ratio demonstrates the efficacy of management. One may say that a company with a high profitability ratio has enough cash on hand to pay for its overhead. A high profit margin suggests that there won't be any financial problems for the company. Sari Mujiani & Jum'atul's research indicates that profitability has a substantial impact on financial distress (2020). On the other hand, research (Noviyana et al., 2024) indicates that financial troubles are not much impacted by profitability.

The fourth factor that might affect financial troubles is firm size. Firm size is defined by Fajarsari et al. (2023) as a statistic that indicates the total amount of assets that a business has. One may estimate a company's size using a variety of proxies, such as market capitalization, revenue, and assets. Cinantya & Merkusiwati's study indicates that firm size is not a significant factor in financial troubles (2021). Meanwhile, organizational size has a big impact on financial challenges, according to study by Danica and Wijaya (2022). Firm size is the moderating variable in this study. Organizational scale has the ability to mitigate the impact of liquidity on financial distress, according to research by Sari Mujiani & Jum'atul (2020). Lela et al.'s research from 2021 demonstrates that a company's size can lessen the impact of debt on financial issues. Moreover, studies indicate that business size may minimize the impact of profitability on financial troubles (Sari Mujiani & Jum'atul, 2020).

Researchers are interested in taking the title "Does Firm Size Have a Moderating Effect on Financial Distress? Evidence: Infrastructure Sector in Indonesia Stock Exchange" based on the phenomena as described and the inconsistencies in the research results mentioned above.

LITERATURE REVIEW

Agency Theory

Agency theory, as proposed by Jensen & Meckling (1976), describes the circumstances in which one party (the agent) performs certain responsibilities for another party (the principal). When a principle gives an agent assignments and decision-making authority on their behalf, an agency relationship is established. The possible conflict of interest between the principal and the agent is the primary issue in the context of agency relationships. Although principals want to make sure that agents act in their best interests, agents are often driven to pursue their own objectives.

Furthermore, according to Jensen & Meckling (1976), agency relationships arise when one or more parties (the major party or employer) hire various parties (agents) to do certain duties and give the agent the ability to make decisions. Potential conflicts between agents may arise from knowledge gaps between owners and managers, particularly when one party has access to information while the other does not. Managers employ a variety of techniques to elicit further information from investors, making them question the company's viability and discouraged from purchasing shares. The effect may lead to a drop in the company's share price, which would then make it harder for the business to get credit as outside parties (investors) might become less trusting of it.

Signaling Theory

A concept in economic and financial theory, signaling theory was first proposed by Spence

(1973). This aims to explain how people or businesses utilize unique signals or signs to communicate information about themselves to other parties. Signal theory assumes that there is an inequality of information between the party giving the signal (sender) and the party receiving the signal (receiver). Providing signals aims to reduce uncertainty and increase the level of trust between the parties involved.

Furthermore, Ross's Signal Theory (1977) clarifies the motivation or causes behind business decisions to provide certain information to foreign entities (third parties). This hypothesis is based on the idea that those in management or other corporate positions have a more comprehensive awareness of the state of the organization than outsiders. In this situation, the company tries to utilize the information it has to communicate messages related to the performance that has been achieved to external parties. The third party's response to the message will be considered a positive or negative indicator, so that the market can evaluate the company's quality and help the company design policies to improve its operational efficiency. The necessity for businesses to provide financial information to external parties is explained by signal theory. The rationale is that, in contrast to outside parties (investors), enterprises possess a more comprehensive awareness of their current state and future possibilities. Consequently, information is required to bridge the knowledge gap between the company and external parties.

Financial Distress

According to the opinion outlined by Altman (1984) financial distress is when a business faces significant financial challenges that can endanger its ability to continue operating, so the business is said to be in financial difficulty. A business may have difficulty meeting its financial commitments, including debt payments and other responsibilities, when the business is in financial distress. Of course, many factors are involved, such as changes in the company's environmental conditions, ineffective management, or economic constraints, which can cause this condition.

According to Platt & Platt (2002), financial distress is when financial conditions become worse before bankruptcy or liquidation occurs. Due to the inability to fulfill its obligations, a corporation will first experience financial difficulties and eventually be declared bankrupt. Research conducted by Lukman & Liga (2021) states that financial distress can be interpreted as a company that is unable to fulfill predetermined financial commitments that are said to be in a financial crisis or financial difficulty. A corporation is bound to experience financial difficulties which, among other things, are characterized by the emergence of negative returns that the company must endure continuously before it can be declared bankrupt. As a result, businesses do not have the financial means to meet their commitments.

Liquidity

The liquidity ratio of a corporation indicates how well it can pay off its short-term debt. The capacity of a company to settle short-term debt, which is often described as a duration of up to one year even if it is a necessary component of the regular operational cycle of the firm, is known as liquidity, according to Bukhari & Rozalinda (2022). Liquidity is therefore crucial for firms. Liquidity may be used to find the impact of a company's inability to meet its short-term obligations. An entity's liquidity shows how much of its current assets can be used to pay down its current liabilities. Liquid firms often run smoothly and are resilient to economic setbacks. To be able to continue operating, a firm has to have greater current assets than current liabilities (Sudaryanti & Dinar, 2019).

There are several advantages to calculating liquidity ratios for various stakeholders in a business (Brigham & Houston, 2019). Several ratios that can be used to measure liquidity ratios include:

1. Current ratio

When evaluating a company's ability to settle short-term debt that is due immediately after being fully collected, the current ratio is used (Brigham & Houston, 2019). In other words, the amount of current assets available to cover future short-term liabilities. The current ratio can be calculated using the following formula:

$$current\ ratio\ (CR) = \frac{current\ asset}{current\ liability}$$

2. Quick ratio

Without accounting for the value of inventory, the quick ratio illustrates how successfully a company can use its current assets to pay down debt or short-term commitments (Brigham & Houston, 2019). To determine the quick ratio value, use the following formula.

$$QR = \frac{current\ asset - inventory}{current\ liabilities}$$

Apart from that, research conducted by Cinantya and Merkusiwati (2021) shows that liquidity has a big impact on financial difficulties. The first hypothesis is stated as follows, taking into account the evidence presented in the research findings:

H1: Liquidity has a role that has a significant impact on financial distress Leverage

Leverage

Leverage ratios reveal an organization's ability to satisfy both short- and long-term obligations. Ratio analysis is required, according Sudaryanti & Dinar (2019), if a business is liquidated or dissolved on a specific date, in order to evaluate the company's capacity to settle its short- and long-term debt. This ratio indicates the percentage of a corporation's assets that are funded by debt. Bukhari and Rozalinda (2022) state that there are two methods available for determining the leverage ratio.

1. Debt to Asset Ratio (DAR)

By dividing all debt by total assets, a business can determine its debt ratio (Bukhari & Rozalinda, 2022). If the calculation of this ratio produces high results, it is proven that the majority of business funding comes from external sources (debt). Conversely, a low ratio indicates that debt accounts for a small portion of total cash, thus indicating that the company will probably be able to meet its debt payments (Muhayat et al., 2022). The following formula is used to determine the debt ratio:

$$Debt\ to\ asset\ ratio = \frac{total\ debt}{total\ aset}$$

2. Debt to Equity Ratio (DER)

The debt to equity ratio is the ratio used to compare debt to equity. A company's debt-to-capital ratio is evaluated using this ratio (Bukhari & Rozalinda, 2022). The following formula is used to determine the debt to equity ratio:

$$DER = \frac{total\ debt}{total\ equity}$$

Leverage has a significant impact on financial hardship, according to research by Angriani et al. (2023). The second hypothesis was put out as follows in light of the findings of the empirical study:

H2: Leverage has a role that has a significant impact on financial distress

Profitability

According to Noviyana et al. (2024) defines that a ratio called profitability is used to assess a company's capacity to make money from the various policies and choices it makes. A company's capacity to make money from its activities is measured by financial measures, which also include profitability ratios (Brigham & Houston, 2019). This provides an overview of how effectively a business is controlling expenses and increasing revenue. Sales revenue and net profit are two commonly used components of profitability measures. According to Angriani et al. (2023) profitability ratios can be calculated in several ways, including:

1. Net Profit Margin (NPM)

The ratio that shows how much net profit is generated from each completed sale is called the net profit margin of an entity. The formula for calculating the net profit margin ratio is as follows:

$$Net\ Profit\ Margin = \frac{Net\ profit}{Revenue}$$

2. Return On Asset (ROA)

The capacity of an entity to make money from every rupiah of assets it uses is projected using the return on assets ratio. The return on assets ratio can be formulated as follows:

$$Return\ On\ Asset = \frac{Net\ profit}{Total\ Aset}$$

3. Return On Equity (ROE)

The ratio known as return on equity or ROE is intended to characterize how well a person does using only his own capital from any profits earned. The return on equity ratio calculation can be formulated as follows.

$$Return\ On\ Equity = \frac{Net\ Profit}{Total\ Equity}$$

Aside from that, research by Sari Mujiani & Jum'atul (2020) demonstrates that profitability has a big role in influencing distressed finances. Here is how the third hypothesis is put out in light of this actual data:

H3: Profitability has a role that has a significant impact on financial distress
Firm size

The total amount of assets a business owns after taking into account all sales, income, tax liabilities, and other variables that determine the size of a business. Company size is an important consideration for every potential investor when formulating an investment plan (Lawita & Binangkit, 2022). The size of a company and its classification into large and small companies can be determined by looking at total assets, stock market value, average sales level and sales quantity.

According to what Saputra et al. (2022) In general, there are three categories of company size, namely large, medium and small. The level of development and growth of a company can be assessed by looking at its total assets, if a higher total asset value indicates profitable prospects for the company in the longer term (Hidayat & Arfiansyah, 2023). Business productivity is also influenced by overall asset size. The amount of corporate tax will vary depending on the income earned by the business with significant assets. The risk a company takes in controlling its tax burden increases as the size of the company increases. The measurement of company size itself can be formulated as follows.

$$Firm\ Size\ = Ln \times Total\ Aset$$

Company size has a big impact on financial troubles, according to studies (Danica & Wijaya, 2022). These results led to the development of the fourth hypothesis in the following manner:

H4: Firm size has a significant impact on financial distress

Additionally, studies done by Sari Mujiani & Jum'atul (2020) demonstrate that the impact of liquidity on financial hardship may be mitigated by enterprise size. In light of this, the following is how the fifth hypothesis is stated:

H5 : Firm size is able to moderate the relationship between liquidity and financial distress

The study by Lela et al. (2021) then demonstrates that firm size can mitigate the impact of debt on financial hardship. The sixth hypothesis is developed as follows based on the empirical study that has been conducted:

H6: Firm size is able to moderate the relationship between leverage and financial distress

Furthermore, research conducted (Sari Mujiani & Jum'atul, 2020) shows that the influence of profitability on financial distress can be moderated by company size. Based on these findings, the seventh hypothesis is formulated as follows:

H7: Firm size is able to moderate the relationship between profitability and financial distress

RESEARCH AND METHODOLOGY

This study aims to investigate in-depth how liquidity, leverage, profitability, and firm size function as moderating variables on financial distress. The data gathered is derived from third parties, the Indonesian Stock Exchange, or secondary data. Panel data, which blends cross-sectional and time series data types, is the classification given to this study data. The research population was 69 companies involved in the infrastructure industry. A non-probability sampling strategy, which falls under the category of purposive sampling and is shown in table 2 below, was used in sample selection in this investigation.
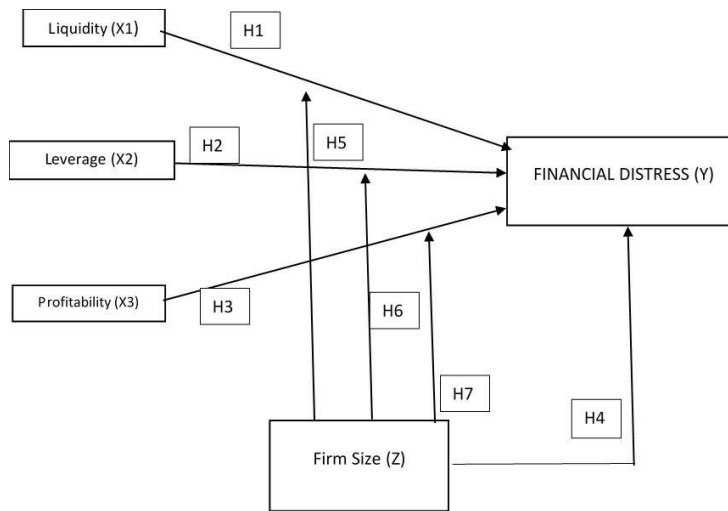
Table 2 Sample collection criteria

No	Criteria	Amount
1.	Infrastructure sector companies listed on the IDX	69
2.	Companies in the infrastructure sector that do not publish complete financial reports in the 2020-2023 period	(7)
3.	Companies whose financial reports do not present currency in rupiah	(5)
4.	Infrastructure sector companies registered in the 2021 period and above	(16)
	Total sample of companies	41 company
	Total observations	164

Source: data processed by researchers (2024)

Study sample of 41 organizations with 164 data points observed was obtained based on the presentation in Table 2. A spring rate model proxy is utilized in this study to quantify the dependent variable, which is categorized as a dummy variable, using two quantitative methods: logistic regression and descriptive analysis. The included dependent variable's value must meet a requirement of "0" in the non-distress category if the S value is more than 0.862, and a condition of "1" if the S value is less than 0.862. The current ratio proxy is used for liquidity. The debt to asset ratio proxy is used for the independent variable measurement of leverage, the net profit margin proxy is used for profitability, the natural logarithm multiplied by total assets is used for the moderation variable of firm size and so on. Utilizing the eviews 12 software, the data analysis method in this study employs an interaction test, often known as MRA (Moderated Regression Analysis). Apart from that, testing on this research data ignores classical assumption tests. In accordance with the statement put forward by Gujarati (2003) that logistic regression is a non-linear model so that testing the classical assumptions inherent in linear regression can be ignored. Apart from that, the following is a description of the research model design that tests the variables liquidity, leverage, profitability and company size as moderating variables in financial distress.

Figure 3. Research model

Source: data processed (2024)

Table 3 Measurement Variables

No	Variable	Proxy
1	**Financial Distress**	FD = 1,03X1+ 3,07X2 + 0,66X3 +0,4X4 Explanation: $X1 = \dfrac{current\ aset - current\ liabilities}{total\ aset}$ $X2 = \dfrac{EBIT}{Total\ aset}$ $X3 = \dfrac{EBT}{Current\ liabilities}$ $X4 = \dfrac{Sales}{Total\ aset}$ (Wijaya & Junior, 2022)
2	**Liquidity**	$current\ ratio\ (CR) = \dfrac{current\ asset}{current\ liability}$ (Brigham & Houston, 2019)
3	**Leverage**	$Debt\ to\ asset\ ratio = \dfrac{total\ debt}{total\ aset}$ (Bukhari and Rozalinda, 2022)
4	**Profitability**	$Net\ Profit\ Margin = \dfrac{Net\ profit}{Revenue}$ (Angriani et al., 2023)
5	**Firm size**	$Firm\ Size = Ln \times Total\ Aset$ (Danica & Wijaya, 2022)

Source: data processed (2024)

RESULT AND DISCUSSION

Result

Descriptive statistical analysis

Testing descriptive statistical analysis in the context of logistic regression testing is to provide an initial description of the distribution and characteristics of the data to be analyzed. This descriptive analysis helps in understanding data variability, identifying potential outliers or extreme data, as well as preparing data for more in-depth logistic regression analysis (Gujarati & Porter, 2013). Details of the

results of descriptive statistical analysis can be seen in table 3 below.

Table 4 Results of descriptive statistical analysis

	FD	CR	DAR	NPM	FS
Mean	0.817073	10.52355	25.25569	-0.265763	2908.049
Median	1.000000	1.155000	0.530000	0.050000	2926.000
Maximum	1.000000	1026.010	3461.980	0.550000	3326.000
Minimum	0.000000	0.002000	0.003000	-27.25000	2191.000
Std. Dev.	0.387791	85.96894	271.4296	2.292905	228.2816
Skewness	-1.640289	10.75968	12.49690	-10.35465	-0.510550
Kurtosis	3.690547	123.0557	158.6477	119.4422	3.185566
Observations	164	164	164	164	164

Source: data processed by researchers (2024)

The financial distress variable has a minimum value of 0 and a maximum value of 1, as can be seen from the test results. Since the standard deviation value of 0.387 is less than the average value of 0.817, the data distribution appears to be proceeding as planned. With a maximum value of 1026 and a minimum value of 0.002, the current ratio may be used to represent the liquidity variable. It is evident that there is a disturbance in the data distribution when the standard deviation value of 85.96 is greater than the average value of 10.52.Aside from that, the highest and minimum values of the leverage variable that DAR is attempting to approach are 3461 and 0.003, respectively. NPM's representation of the profitability variable spans from a minimum of -27.25 to a maximum of 0.55. The moderating variable firm size ranges from 2191 at the least to 3326 at the highest. The data distribution is operating as it should because the standard deviation number of 228.06 is less than the average value of 2908.

Table 5 Descriptive statistics of financial distress

Dep. Value	Count	Percent	Cumulative Count	Cumulative Percent
0	30	18.29	30	18.29
1	134	81.71	164	100.00

Source: data processed by researchers (2024)

Table 5 above indicates that the dependent variable in this study is based on a nominal scale; 30 data points are classed as non-distressed enterprises, with a percentage value of 18.29%. The amount of data on the dependent variable is given a value of 0. Meanwhile, the amount of data on the dependent variable given the value 1 is 134, which is classified as a company experiencing distress, with a percentage value of 81.79.

Assessment of model feasibility (model fit)

Model fit testing in logistic regression aims to evaluate the extent to which the logistic regression model that has been built fits the existing data. The main goal is to ensure that the model has a good ability to explain data variability and predict observed events. According to Gujarati & Porter (2013) testing model fit is one way to validate the model, namely ensuring that the model built can be generalized to a wider population and is not overfitting. The following assessment of the feasibility of the model is shown in the table below.

Table 6 Model fit test

LR statistic	Prob(LR statistic)	Explanation
42.82178	0,000000	Model fit

Source: data processed by researchers (2024)

The LR statistical probability value is 0.000, as can be shown from the test results in Table 6. When the LR statistical probability value is less than 0.05, the model is deemed fit. This is the criterion used to assess the model's viability. These findings show that the data suit the study model.

Assessment of the feasibility of the Hosmer-Lemeshow regression model

One common technique for determining if a logistic regression model is appropriate is to test the Hosmer-Lemeshow regression model. This test's primary goal is to determine how well the constructed logistic regression model fits the observed data. Gujarati & Porter (2013) state that the Hosmer-Lemeshow test is used to assess how well the frequency of occurrences seen in the data and the probability forecast outcomes from the logistic regression model match up. The Hosmer model test results are shown in the table below.

Table 7 Hosmer Lemeshow Test

H-L Statistic	Prob. Chi-Square	Explanation
12.5064	0.2157	Model accepted

Source: data processed by researchers (2024)

Table 7 displays the test results, and it can be seen that the chisquare prob value is 0.2157. According to the Hosmer-Lemeshow feasibility testing criteria, the model is considered acceptable because the chisquare prob value must be greater than 0.05. These results indicate that there is acceptance of this research model.

Logistic regression analysis via MRA interaction test

In the context of logistic regression, moderated regression analysis, or MRA, is used to assess how the relationship between independent and dependent variables is influenced by interactions between one or more moderating factors. Gujarati & Porter (2013) state that the primary goal of logistic regression testing using MRA is to determine and test if the moderator variable has a moderating effect on the connection between the independent and dependent variables. This is how you build a logistic regression model using MRA.

$$Ln\left(\frac{p}{1-p}\right) = \alpha + \beta 1.CR + \beta 2.DAR + \beta 3NPM + \beta 4.FS + \beta 5.CR*FS + \beta 6.DAR*FS + B7.NPM*FS + \varepsilon$$

Explanation :

1. $Ln\left(\frac{p}{1-p}\right)$= Financial Distress
2. α = Constant
3. $\beta 1 - \beta 7$= Regression coefficient
4. CR = Current Ratio
5. DAR = Debt to aset ratio
6. NPM = Net profit margin
7. FS = Firm size
8. ε = Error

Mc-fadden coefficient of determination test

Gujarati & Porter (2013) state that McFadden's R-squared is used to calculate the percentage of the dependent variable's variability that the logistic regression model's independent variables can account for.

Table 8 Mc-fadden result

	McFadden R-squared 0.274336

Source: data processed by researchers (2024)

Based on the results above, it is known that the mc-fadden value is 0.274, which means that other factors outside the scope of this research contribute 72,6% to financial distress, while the variables liquidity, leverage, profitability and business size contribute 27,4%.

Hypothesis testing

Table 9 MRA logistic regression hypothesis test

Variable	Coefficient	significance	Explanation
CR	2.750464	0.0408	accepted
DAR	-17.46177	0.0054	accepted
NPM	9.590640	0.5699	rejected
FS	-0.004171	0.1463	rejected
CR*FS	-0.111990	0.0406	accepted
DAR*FS	0.797589	0.0054	accepted
NPM*FS	-0.386134	0.5331	rejected

Source: data processed by researchers (2024)

The test findings in Table 9 demonstrate the significant impact of the liquidity variable, which is proxied by CR, on financial difficulties, hence corroborating the first hypothesis. The liquidity variable has a significance value of 0.048.The second hypothesis is approved as the leverage variable evaluated by DAR has a considerable impact on financial issues, as indicated by the significance value of 0.0054. The third hypothesis is rejected as the profitability variable as calculated by NPM has a significant value of 0.569, indicating that it has no discernible impact on financial troubles.The fourth hypothesis is rejected since the firm size variable has no discernible impact on financial troubles, as indicated by a significance value of 0.146.

According to the interaction variable between firm size and liquidity, which likewise shows a significant value of 0.04, the impact of liquidity on financial distress can be tempered by company size, which supports the fifth hypothesis. Beyond that, the interaction variable's substantial value of 0.0054 on business size suggests that firm size might moderate the impact of leverage on financial hardship. The sixth hypothesis is supported by this information. As a result of business size's inability to moderate the relationship between profitability and financial troubles, the seventh hypothesis is not supported, as indicated by the interaction factor between profitability and company, which has a significant value of 0.5331.

Discussion
The role of liquidity on financial distress

Based on the results of testing the role of liquidity in financial distress, the results show that liquidity has a significant role in financial distress, so the first hypothesis is accepted. Liquidity can be interpreted as fulfilling short-term obligations, if management has effective company cash management, then management can fulfill short-term obligations for its employees such as salary payments. Apart from that, management's ability to manage liquidity assets can have an impact on creditors' trust, because when creditors know that management has high liquidity, creditors will have confidence in lending their funds to the company. Through effective liquidity management, management is able to maintain financial health in the company. The results in this research are similar to research conducted (Cinantya & Merkusiwati, 2021) which found a significant role of liquidity in financial distress.

The role of leverage on financial distress.

The results of the study examining the link between leverage and financial difficulties support

the acceptance of the second hypothesis, since leverage plays a significant and significant role in financial troubles. High loan utilization rate will raise interest costs for the business; if this isn't offset by more revenue, the business will run into problems. Moreover, lending money, particularly to banks, has interest rate sensitivity if a firm with high leverage circumstances is unquestionably dependent on outside funding sources.An increase in interest rates will mean more borrowing costs for the business and more strain on cash flow, which will put it in a tough financial position. This study's findings are consistent with those of Angriani et al. (2023) investigation.

The role of profitability on financial distress

The third hypothesis is disproved as the findings of the study examining the relationship between profitability and financial difficulty indicate that there is little relationship between the two. Even if their profitability may be low, companies with strong assets or collateral may obtain external funding with ease. As a result, creditors are willing to lend money to these companies despite their low profitability. On the other hand, companies that have high profitability are not always free from financial difficulties. If the company has a leverage value that exceeds its level of profitability, the company will fall into financial difficulties. This finding contradicts research (Sari Mujiani & Jum'atul, 2020).

The role of firm size on financial distress

The fourth hypothesis is disproved as it may be disregarded, according to studies looking at the link between firm size and financial trouble. Larger businesses typically use a wider range of assets for business purposes to reduce their dependence on a single source of income and lower the risk of experiencing financial difficulties. This research contradicts the findings (Danica & Wijaya, 2022).

The role of liquidity on financial distress is moderated by firm size

The study findings supporting the fifth hypothesis indicate that the impact of firm size on the relationship between liquidity and financial hardship can be moderated. In general, businesses with large assets have easier access to outside capital, helping them avoid financial problems and overcome poor liquidity. Furthermore, large companies usually have efficient management and have an accurate system for preparing appropriate budgets and cash projections, so that they can ensure liquidity needs and the availability of funds in the future. These findings are similar to research (Sari Mujiani & Jum'atul, 2020).

The role of leverage on financial distress is moderated by firm size

Upon examining the correlation between financial difficulty and leverage, which is influenced by the size of the firm, the sixth hypothesis is deemed valid. The findings of the study demonstrate that the size of the organization might affect leverage. Large asset capacity usually makes it easier for companies to seek external sources of finance. This allows large companies to be more flexible in managing their debt to reduce the risk of financial difficulties. Moreover, large companies definitely have a good reputation with external parties such as creditors and investors, this can help companies get financial support to face financial difficulties. These findings strengthen the research conducted (Lela et al., 2021).

The role of profitability on financial distress is moderated by firm size

The findings show that company size cannot moderate the impact of profitability on financial distress, as determined by testing the relationship between profitability and financial distress. so the seventh hypothesis is rejected. Business continuity in companies that have very large assets does not always experience continuous profits, there are times when the profits obtained are low, thereby limiting internal resources to fulfill their obligations. Large companies may have good access to external funding, but if profitability continues to decline then external funding sources will only increase the debt burden and ultimately the fundamental problem will not be resolved. The findings in this research contradict research conducted by (Sari Mujiani & Jum'atul, 2020).

CONCLUSION

The study comes to several significant conclusions, some of which are as follows: the impact of firm size, liquidity, leverage, and profitability on financial distress is significant; the impact of company size on financial distress is not significant; the impact of liquidity on financial distress can be moderated based on company size; the impact of leverage on financial distress can be moderated by company size; and the impact of profitability on financial distress cannot be moderated by company size. Considering that this study only employed a small number of factors. It is also hoped that more variables that are still pertinent to the issue of financial distress maybe included by future studies.

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