# FINANCIAL DISTRESS DETERMINANT ANALYSIS OF SMES ON THE INDONESIA STOCK EXCHANGE

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## ABSTRACT

*National movement of class increases for SMEs since 2017 in Indonesia, where SMEs can start to be listed in the Indonesian capital market showing data that has increased in number every year and increased contribution to Indonesia's GDP. The study aims to analyze the influence of internal corporate and macroeconomic variables on financial distress. This quantitative research used sixteen SMEs on the IDX selected using purposive sampling during the period 2017 - 2020. Data processing uses logistic regression with SPSS applications. The results showed that operating income to total assets showed a negative and significant influence between operating income to total assets and the occurrence of financial distress in SMEs listed on the IDX. The study was conducted by adding macroeconomic variables to fill the literature gap from previous studies. However, macroeconomic variables did not have a significant influence on the financial distress of SMEs on the IDX. To avoid financial distress, SMEs can make efficiencies on costs to increase operating income and maintain their level of liquidity stability, leverage, and managerial capabilities in line with the increasing assets of the company.*

**Keywords:** *Financial Distress, Internal Corporate Factor, Logistic Regression*, *Macroeconomic Factor, SMEs*

## 1.0 INTRODUCTION

Micro Small and Medium Enterprises or MSMEs have a very important role for the economic growth of a country. According to data from the Central Statistics Agency until the end of 2020, there are 64 million MSMEs, which means that 99.9% of the total businesses operating in Indonesia are MSMEs. Based on Figure 1, the contribution of SMEs to GDP increased annually during the period 2017-2019 but experienced a significant decrease in 2020. This is due to the COVID-19 pandemic which has a negative impact on the global economy.

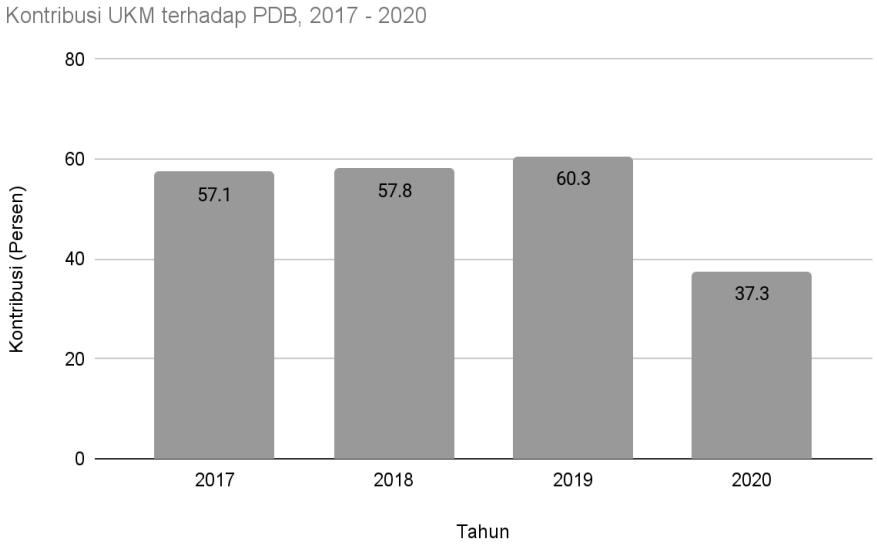


Figure 1 *Contribution of SMEs to GDP, 2017 - 2020*
Source: Lokadata processed from the Ministry of Cooperatives and Small and Medium Enterprises

One of the factors of failure and reorganization of a company is caused by *financial distress*. In Watson and Everett research (1993), UMKM tends to be closer to *financial distress*. *Financial distress* is a condition when a company's operating cash flow is insufficient to meet current obligations (Ross et al., 2010). *Financial distress* usually occurs because the total cost is greater than the company's revenue, resulting in losses. The cause starts from the inability to carry out its obligations, such as short-term obligations, liquidity obligations and solvency obligations. Difficulty in paying liquidity obligations will lead to the emergence of *insolvency* problems that are divided into two methods. *Stock-based insolvency* refers to the negative equity conditions of the company's balance sheet or commonly known as *negative net worth*. *Flow-based insolvency* refers to when cash flow conditions or operating cash flow fail to meet the company's current obligations (Fahmi, 2013).

Various methods can be used to *predict financial distress*. Like Altman's bankruptcy prediction model (1983), which is a method of predicting the financial health of a company and the likelihood of bankruptcy. This model combines liquidity, profitability, solvency, and activity. In addition, to predict *financial distress* this study uses logistic regression. Al-khatib and Al-Horani (2015) predicts *financial distress* in public companies showing that logistic regression and discriminant analysis can predict *financial distress*. Many *financial distress* studies using logistics regression methods, including Kristanti et al. (2019) which researches financial *distress* predictions in SMEs by integrating capital structures, financial performance, and non-financial. The results of his research showed that the ratio of operating income to total assets became the determining factor for Indonesian SMEs to avoid *financial distress*. However, macroeconomic factors are not used as variables that become a gap in research in the study. Yazdanfar and Öhman (2020) determined *financial distress* in SMEs from Sweden, finding that *firm financial distress* was influenced by the performance of company-specific characteristics, *financial leverage,* and *lagged financial distress*.

Research on *financial distress* has been very much, but only a few discuss *financial distress* in Small and Medium Scale Issuers registered on Bursa Efek INdonesia (IDX). SMEs are defined as individual businesses, households, or small business entities. According to POJK Number 53/POJK.04/2017, SMEs are classified based on total assets up to Rp 250 billion. Based on data from the Indonesia Stock Exchange, SMEs listed on the IDX increased in the period 2017 - 2020 by as many as 44 companies. Here are the increased numbers of SMEs that conducted IPOs in 2017 - 2020.

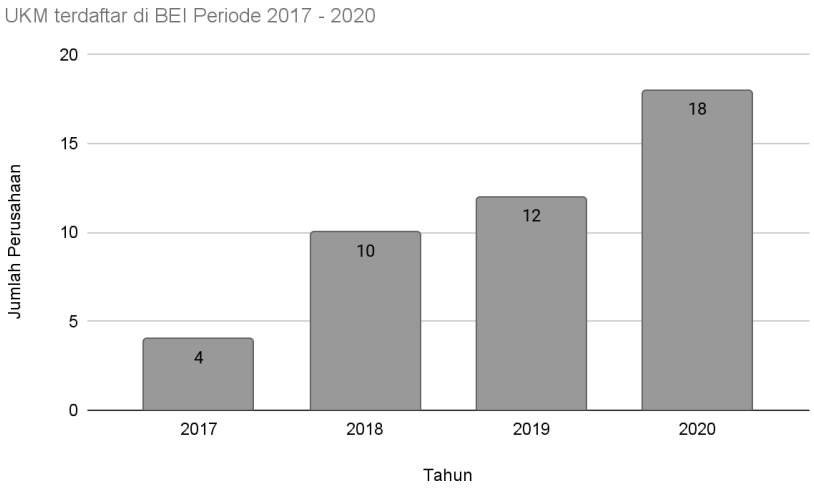


Figure 2 *SMEs listed on idX for the period 2017 - 2020*
Source: Indonesia Stock Exchange

Economic crises in a country can affect financial conditions in SMEs which further causes *financial distress* (Yazdanfar & Öhman, 2020). SMEs also experienced deteriorating financial conditions after the crisis, rather than those experienced by large companies (Hanedar & Hanedar, 2016). Based on data on the financial statements of SMEs listed on the IDX for the period 2017 to 2020 in Figure 3, there is a considerable percentage of the number of SMEs identified as experiencing *financial distress,* which is an average of 59.38%.

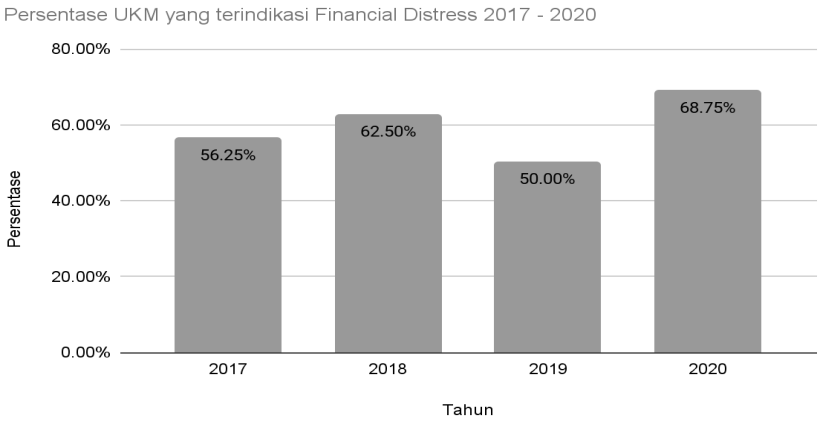


Figure 3 *The percentage of SMEs registered on the IDX for the period 2017 - 2020 is indicated to experience financial distress*
Source: author processed

Financial distress is influenced by operating income compared to total assets, and *retained earnings* compared to the total assets of an SME, as measured by *the leverage ratio,* comparison of short-term debt and total assets, comparison of *current assets* and *current debt,* comparison of *net working capital* and *total assets*, comparison of *retained earnings* and *total assets* and non-financial factors such as the presence or absence of women in the *Board of Directors*, the number of *directors*, the age of the company, and the size of the company (Kristanti et al., 2019). *Financial distress* of an SME in Bangladesh is also triggered by *Adequacy Rate, Depreciation Rates, Sales Trends, Expenses, Financial Planning, Management Capability, and Indebtedness* caused by Fund Management and *Credit Crunch*, Poor Accounting System, Financial Control Factors, Productivity and Profitability Factors, and Management Success Factors (Jahur & Quadir, 2012). In addition, research conducted by Sunarjanto & Roida (2014) proves that *firm characteristics* also have the ability as a driver of *financial distress* of an MSME.

This research is aimed at examining *the triggers of financial distress* that occur in SMEs listed on the IDX. Considering that there is POJK Number 53 / POJK.04 / 2017 with the mission of SMEs to go public. The results of this study are expected to provide in-depth knowledge about *the financial distress* that occurs in SMEs in Indonesia so that SMEs that are rife in Indonesia can take precautions against the occurrence of *financial distress* that can lead to failure and reorganization in their companies. As well as for investors in the Indonesian capital market can help in analyzing the condition of SME companies registered in the Indonesian capital market. The problem that will be raised in this study is knowing the factors that contribute to *financial distress* in SMEs registered on the IDX for the period 2017 - 2020. The selected period is based on the least *financial distress* research on SMEs with that period, and research extensions conducted by (Kristanti et al., 2019).

## 2.0 THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

Predicting *financial distress* is a major issue in financial research that attracts a lot of interest from researchers in literature (Mselmi et al., 2017). Gamayuni (2011) defines *financial distress* as the situation that initiates bankruptcy due to financial or liquidity problems, Filipe et al. (2016) means that if a company has a status of failing to meet obligations, under curator's supervision, bankruptcy, in liquidation, or does not have updated status information and disappears from the sample with negative equity, and Mselmi et al. (2017) refers to the situation where the company's cash flow is insufficient to meet contractually required payments.

Financial statements based on Subramanyam et al. (2014) is an overview of a company's performance that contains a record of a company's financial information in a certain accounting period. Financial ratio is an analysis of the financial condition of the company, which can provide information about the performance of the company's management in a company (Fahmi, 2013).

There is substantial literature on financial distress used in reviewing existing findings. In this section we discuss the literature used in research.

Companies with high liquidity can liquidate their assets when they need costs for investments or projects (Thim et al., 2011). Research conducted by Al-khatib and Al-Horani (2015) shows that *the Current Ratio* which is a liquidity ratio is a significant variable to *financial distress* in open companies in Jordan. High levels of liquidity can reduce the risk of possible *financial distress* (Mselmi et al., 2017). *Financial distress* is inversely proportional to liquid assets (Butler et al., 2005).

**H1: *Current Ratio* negatively affects *Financial Distress***

The profitability ratio of a company has a negative relationship with *financial distress* (Thim et al., 2011). *Operating Income to Total Asset* measures the actual productivity of a company's assets and the overall effectiveness of management, regardless of taxes and leverage factors *(*Rim & Roy, 2014). *Operating Income to Total Assets* negatively affects the likelihood of bankruptcy in a company (Cultrera & Brédart, 2016). So, it can be said that, if a company can effectively manage its operational costs, it will increase profitability and reduce the risk of *financial distress*.

**H2: *Operating Income to Total Assets* negatively affects *Financial Distress***

Research conducted by Abdullah (2014) shows that companies that fail have a higher level of *leverage (short-term liabilities to total assets*). Bankruptcy occurs when the remaining assets cannot cover the total debt, where financial leverage presents a potential negative effect on business profits and asset valuations that raise fears of bankruptcy. Filipe (2016) also explained that the probability of *distress* having a positive relationship with *leverage* (*current*

*liabilities to total assets*), signaling the importance of *leverage* can indicate that SMEs rely more on short-term loans than cash holdings to finance their operational needs.
**H3: *Short Term Liabilities to Total Assets* positively affect *Financial Distress***

According to Cultrera and Brédart's (2016), the younger an SME is, the more likely it is to go bankrupt. Young companies have a high probability of failure compared to mature companies (Abdullah et al., 2014). Young companies have a high probability of failure because older companies have a lot of experience with various issues related to information processing and how to overcome them. The age of the company significantly affects financial difficulties and may reflect the need for special protections provided to very young companies (Bhattacharjee, 2014).
**H4: *Age* negatively affects *Financial Distress***

According to Alfaro et al. (2019) shows that the larger the company, the more likely it is to cause *financial distress*. Companies that have a large size, will face higher levels *of financial distress* (Thim et al., 2011). The larger the scale of a company, increasing *its financial distress* status (Muigai & Muriithi, 2017). Large companies have a larger management pattern so that the risk they bear is also greater, making management more careful in acting.
**H5: *Size* has a positive effect on *Financial Distress***

Macroeconomic factors as measured by inflation, have an important role in *financial distress* (Khoja et al., 2019). According to Bhattacharjee and Han research (2014) states that instability of macroeconomic conditions will increase *financial distress* in a company. Inflation can be particularly affecting small businesses because they do not have the same power in financial liquidity as large companies that have larger financial reserves.
**H6: Inflation has a positive effect on *Financial Distress*.**

*BI 7 Days Reverse Repo Rate is* used as an interest rate because it quickly affects the real sector (Bank Indonesia). Li et al. (2020) in their research stated that macroeconomic factors including interest rates, can significantly affect the risk of *financial distress* in a company. Instability of interest rates has a negative effect on the financial condition of the company (Bhattacharjee & Han, 2014).
**H7: BI7DRR has a positive effect on *Financial Distress*.**

This research is a modification of Kristanti et al. (2019) by eliminating the variable ratio of *Total Debt to Total Assets*, the presence or absence of women in the *Board of Directors*, the number of *directors*, and the ratio of *Net Working Capital to Total Assets*, because in the reference journal these variables have no significant effect on *Financial Distress.* . The study also added macroeconomic variables, namely Inflation and *BI 7 Days Reverse Repo Rate*, in accordance with the advice given in the study. The selection of macroeconomic variables in the form of Inflation and BI 7 Days Reverse Repo Rate is the result of the elimination of several macroeconomic variables by trying to analyze the correlation between macro variables that do not have a high correlation to avoid multicollinearity problems at the time of processing regression models.

## 3.0 RESEARCH METHODS

This research is quantitative research with descriptive analysis. By using secondary annual financial statement data from SMEs listed on the Indonesia Stock Exchange conducted by purposive sampling techniques. The managed data is taken from the financial statements of Small and Medium-Scale Issuers on the Indonesia Stock Exchange (IDX) in the period 2017-2020 collected from the IDX website, the company's official website, and other official institutions.

To overcome the bias in sampling, sample collection is carried out with the following criteria: (1) The Company is listed on the IDX before and until 2017. (2) The Company is included in the criteria of Small and Medium Scale Issuers listed in POJK Number 53 / POJK 04/2017, namely Issuers with Small-Scale Assets have total assets up to Rp50 billion and Medium-Scale Assets up to Rp250 billion. (3) The company is not included in the *financial* and *insurance* industry. (4) Have complete financial statements during 2017 - 2020. (5) Financial statements in the form of Rupiah currency. Therefore we obtained 16 companies that were used as samples

The model used for this study is logistical regression as follows:

$$Ln\ \frac{p}{1-p} = B_0 + B_1 CR_i + B_2\ OITA_i + B_3\ STA_i\ +\ B_4 SIZE_i +\ B_5\ AGE_i\ +\ B_6 INF_i + B_7 RR_i$$

The indicator of each variable can be seen in Table 1.

**Table 1 Operationalization Variabel**

| Variable | Indicators |
|---|---|
| Financial Distress | *Dummy Variable*<br>*FD (EPS negatif) = 1*<br>*Non FD (EPS positif) = 0* |
| Current Ratio (CR) | $\frac{Current\ Asset}{Current\ Debt}$ |
| Operating Income to Total Asset (OITA) | $\frac{Operating\ Income}{Total\ Asset}$ |
| Short Term Liabilities to Total Asset (STA) | $\frac{Short\ Term\ Liabilities}{Total\ Asset}$ |
| Firm Age (AGE) | *Company Age in year* |
| Firm Size (SIZE) | $log\ Total\ Asset$ |
| Inflasi (INF) | *Annual Inflation* |
| BI7DRR (RR) | *Annual BI7DRR* |

*Source: author processed.*

## 4.0 RESULTS, DISCUSSIONS, AND MANAGERIAL IMPLICATIONS.

Based on descriptive data, the average group of SMEs listed on the IDX has a current *asset* ratio of 30.9011 times to its *current liabilities*. Then, *the comparison of operating income* is -0.3234 times compared to its total assets. While in *short term liabilities* have a ratio of 18.1792 times to the total assets. SMEs listed on the IDX have a company size of 10.9037, with an age of 26.9375, inflation of 0.0275, and BI7DRR of 4.74. *Mean* from EPS that produces a negative value shows that most of the companies sampled are experiencing *financial distress,* this is in line with *the FD mean* which shows more than half of SMEs, namely 0.5938, experiencing *financial distress*.

**Table 2** *The Test of Model Results.*

| | | |
|---|---|---|
| *Omnibus Test of Model* | *Chi-Square* 28.265 | Sig 0.000* |
| *Hosmer and Lemeshow Test* | *Chi-Square* 7.794 | Sig 0.454 |
| *Nagelkerke R Square* | 0.482 | |

**with level of significance 0.05.*

Table 2 shows that based on the Omnibus Test has a significant model. As for the Hosmer and Lemeshow test, it shows that the logistic regression model tested is suitable which means that the data in this model can be said to be feasible. And, with *R Square* shows that the contribution of variable *current ratio, operating income to total assets, short term liability to total assets,* company age, company size, and inflation to the occurrence of *financial distress* in SMEs is 48.2%.

**Table 3 Classification Table**

| *Observed* | | FD (EPS *Negative*) | | *Percentage Correct* |
|---|---|---|---|---|
| | | 0 | 1 | |
| FD (*EPS Negative*) | 0 | 17 | 9 | 65.4 |
| | 1 | 5 | 33 | 86.8 |
| *Overall Percentage* | | | | 78.1 |

Source: author processed

Table 3 calculates the correct and false estimated values. In the perfect model all cases show actual observations i.e., companies that experience *financial distress* (value of 1) and those that do not experience *financial distress* (value of 0), with 100% forecasting accuracy. In the table above, the prediction of SMEs experiencing *financial distress* is 86.8%, while those who do not experience *financial distress* are 65.4%. Estimates show that the accuracy rate in this model is 78.1%.

$$Ln\ \frac{p}{1-p} = 11.913 + 0.68\ CR_i - 6.993\ OITA_i - 0.003\ STA_i - 0.998\ SIZE_i + 0.011\ AGE_i - 23.915 INF_i - 0.198 RR_i$$

**Table 4 Classification Table (Wald Test)**

| | B | Sig. |
|---|---|---|
| CR | 0.68 | 0.105 |
| OITA | -6.984 | 0.025* |
| STA | -0.003 | 0.932 |
| AGE | 0.012 | 0.746 |
| SIZE | -1.049 | 0.265 |
| INF | -13.599 | 0.786 |
| RR | -0.198 | 0.651 |

| | B | Sig. |
|---|---|---|
| Constant | 11.913 | 0.262 |

**with a significance level of 0.05.*

Based on Table 4, variable *current ratio and short-term liability to total assets* have no significant effect on *financial distress*. Contrary with the research of Thim (2011), Mselmi (2017), Cultrera (2016) and Abdullah (2014), which stated that companies experiencing *financial distress* are companies that experience low liquidity ratios, because *the current ratio* is too high so it can be concluded that sample companies are not effective in using their current assets. This means that SMEs listed on the IDX still have good liquidity, where based on data, the average amount of current assets is still 30 times the number of current liabilities. Contrary with research Abdullah (2014) and Filipe (2016) which states that the probability of *financial distress* will increase if the leverage ratio increases. This means that SMEs listed on the IDX still use a fairly good amount of short-term loans when compared to the assets owned, so changes to short-term loans will not have too much effect on the company's finances.

While *the operating income to total assets* has a significantly negative effect, this shows that if *the operating to total assets* in an SME increases, it will reduce the probability of *financial distress* in an SME.ini in line with research conducted by Thim (2011), Cultrera (2016), Mselmi (2017), Kristanti et al. (2019) and Abdullah (2014), which stated That a higher profitability ratio will provide higher profits so that it will reduce the probability of *financial distress*. When viewed based on data, average profitability is at a negative level during the study period, so low profitability will increase the probability of *financial distress.*

Variable *size* and *age* have no significant effect on *financial distress*. Contrary to research conducted by Thim (2011), Cultrera (2016) and Muigai (2017) which found evidence that the size of the company has a significant effect on *financial distress*. But this research is in line with Yazdanfar (2020), which showed that the size of the company has no effect on *financial distress* in Swedish SMEs. The lack of a relationship between size and *financial distress* can be related to environmental conditions in Indonesia, such as the legal system, regulations, bankruptcy, and taxation system. This can also be caused because the size of SMEs listed on the IDX is generally still included in the group of small companies so that the size of the company does not have an influence on *financial distress* conditions. It was not aligned with research by Abdullah (2014) and Cultrera (2019) which showed the negative significance of the company's age variable to *financial distress*. This can be attributed to the good management of the resources and capabilities of the company. A young company does not mean less experienced in managing the company, but the quality of good company management determines how to work well for the company.

Variable inflation and BI 7 Days Repo Rate have no significant effect on *financial distress*. Contrary with Li's (2020), which states that macroeconomic factors cause the risk of *financial distress*. This is related to the efficiency of production and operational costs carried out by SMEs, so that inflation indicators do not affect the financial governance of the company. This shows that SMEs listed on the IDX are not too affected by changes in interest rates, SMEs are seen to still use relatively safe sources of funding, because the number of assets is still small, SMEs cannot take high-risk sources of funding.

## 5.0 CONCLUSIONS, SUGGESTIONS, AND LIMITATIONS

Economic growth in Indonesia is strongly influenced by SMEs, so that SMEs do not experience *financial distress.* Efforts that must be done are not easy, while according to the results of this study, it shows that only profitability variables projected with *operating income to total assets* have a significant negative influence on *financial distress*. That is, assuming a fixed total asset,

if *operating income* in SMEs increases, it will reduce the possibility of *financial distress* in these SMEs. Conversely, assuming a fixed *operating income*, if SMEs make the efficiency of total assets, it can reduce the occurrence of *financial distress* in these SMEs. Considering that SMEs on the IDX include having the most minimum number of assets, in *avoiding financial distress*, the company should be able to maintain that *the operating income trend* can always be positive, through increasing sales and efficiency of the company's operating costs. If the company experiences a decrease in *operating income* this can indicate *financial distress,* then the company's management can begin to take measures to mitigate the company's finances. Meanwhile, when viewed from liquidity variables projected with *current ratio* and leverage projected with *short term liabilities to total assets*, it shows that the company is not effective in using its current assets but uses short-term loans quite well. Then, when viewed from the size and age of the company, it shows that although the sample company is generally small and young, but it does not significantly affect the occurrence of financial distress, because many things affect more, such as cost efficiency, *the current ratio* value is very high so that the size of the company becomes less affecting.

When viewed from macroeconomic variables as measured by inflation and BI 7 days reverse repo rate, it can be concluded that the occurrence of *financial distress* in sample companies is not influenced by variables outside the company because sample companies generally use sources of funds from short-term loans, not high-risk funding so that neither inflation nor interest rates affect *financial distress*.

This study has a high model accuracy rate at 78.1% in *predicting financial distress* but has limitations, subsequent studies can use a longer research period to provide better results. This research also still uses one measuring instrument on each measurement ratio, in future studies can try to use several other measuring instruments for *firm characteristic variables* so that the identification of measuring instruments that specifically affect financial distress in SMEs on the IDX, as conducted in khoja research (2019) which uses *quick ratio* as a proxy for liquidity variables or uses *total debt to total capital* as a proxy for leverage variables as conducted in Muigai 's(2017). In this study macroeconomic variables have no influence on *the financial distress* of SMEs listed on the IDX, but further research can use dummy variables of state conditions for example by using whether state conditions such as pandemics or crises can cause *financial distress* to an SME, as done in (Yazdanfar & Ohman 2020).

To avoid *financial distress*, SMEs can make efficiencies on costs including COGS and operational costs to increase *operating income*. SMEs must also begin to maintain their level of liquidity stability, leverage, and managerial capabilities in line with the increasing assets of the company.

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