

Financial Distress Analysis Using Altman Z-Score, Ohlson, And Fulmer Methods

Empirical Study Of Aviation Sector Companies Listed On The IDX
In The Period Of 2018 To 2021

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ABSTRACT

Financial Distress is a condition where a company is unable to meet its current obligations that have matured such as trade debts, short-term bank debts, tax debts, etc. Usually, companies that are indicated to be experiencing *financial distress* have minimal income, causing the company to be unable to finance its operational costs, therefore, supervision of the financial condition, both from the balance sheet and profit and loss reports, must be carried out by the company to minimize the potential for bankruptcy in the company. The purpose of compiling this thesis is to find out how the *Financial Distress analysis* is in Indonesian aviation sector companies listed on the Indonesia Stock Exchange (IDX) for the period 2018 to 2021 using the Altman Z-Score, Ohlson, and Fulmer methods. This study uses secondary data on the companies PT. Air Asia Indonesia Tbk, PT. Garuda Indonesia Tbk, and PT. Jaya Trishindo Tbk with quantitative descriptive analysis techniques. The final results of this study indicate that there are 2 Indonesian Aviation Sector companies that experienced *Financial Distress* from 2018 to 2021 which were calculated using the Altman Z-Score and Fulmer methods. There is one company, namely PT. Jaya Trishindo Tbk which has no potential to experience *Financial Distress* in 2019 and 201, but has the potential to experience *Financial Distress* in 2018 and 2020 calculated using the Altman Z-Score method. And the three companies did not experience *Financial Distress* when calculated using the Ohlson method.

Keywords : *Financial Distress* , Altman Z- Score , Ohlson, and Fulmer.

INTRODUCTION

Along with the development of economic changes, various airlines have emerged in Indonesia that provide flight and cargo services where many companies compete fiercely for optimal performance. Financial management is important for the progress and development of a company. Therefore, every company needs a good strategy and planning in running its business in order to survive and grow.

However, in 2020, an unexpected pandemic occurred, namely the *Coronavirus Disease 2019* pandemic or better known as Covid-19. *Coronavirus Disease 2019* or Covid-19 has been a hot topic throughout the world since 2019, Covid-19 is a new pneumonia outbreak that then spread rapidly to more than 190 countries and territories, this outbreak started in Wuhan, Hubei Province. The spread of this virus has caused serious and widespread impacts socially and economically. Since this virus broke out, the number of deaths has increased and spread throughout the world, people's income and welfare have also decreased so that the government has issued new policies, one of which is Government Regulation of the Republic of Indonesia Number 21 of 2020 Article 4 Paragraph (1) concerning Large-Scale Social Restrictions or commonly referred to as PSBB in the Framework of Accelerating Handling of *Corona Virus Disease 2019* (Covid-19), at least for the implementation of PSBB, namely:

- a) School and workplace holidays;

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- b) Restrictions on religious activities; and/or;
- c) Restrictions on activities in public places or facilities.

This Large-Scale Social Restriction is intended to prevent and reduce the spread of the Covid-19 virus outbreak, which in early 2020

This outbreak is spreading and causing a high death rate in the world, including Indonesia.

One of the impacts of the Large-Scale Social Restrictions Regulation is the government's ban on foreign tourist visits to Indonesia. In the economic sector, the Covid-19 virus has paralyzed various sectors, including the transportation and logistics sector of the Airline Industry, which has caused it to be temporarily closed until there are restrictions on passengers on international and domestic flight routes carried out by the Airline Industry owned by private and government (Soehardi et al, 2020).

According to the International Labor Organization (2020), the *Covid-19 pandemic* has had an impact on the number of global unemployed which continues to increase with a number between 5.3 million and 25.7 million in 2020. CNN (2020) stated that the *Covid-19 pandemic* had a negative impact on reducing the income of airline industry companies with a nominal value of 207,000,000,000 rupiah, because it was caused by international and domestic flight routes being temporarily closed due to this pandemic factor.

Financial distress is a condition where a company has the potential for bankruptcy caused by several conditions that cause the company to experience pressure, especially from the financial side. Based on research on the arrangement of financial ratio comparisons in signaling *financial distress* using multi-measurement techniques conducted by Sumeth Tuvaratagool (2013), it shows that we can find out the signal of a company's bankruptcy through financial report information. There are several analyses that are considered quite accurate and easy in predicting financial distress, namely the Altman Z-Score model analysis, the Springate model, and the Zmijewski model, Yoseph (2012).

In a study conducted by Widenda (2016), it was stated that the *financial distress analysis* conducted using the Altman method, the Springate method, and the Zmijewski method on companies in Indonesia showed that the three methods had the same level of accuracy when used to predict financial distress, namely 87.5% for the Altman and Springate methods, and 75% for the Zmijewski method.

In addition, considering the importance of analysis to determine the poor condition of a company, a study was developed that produced a model to predict a company's financial distress. Fitzpatrick (1931) in his research used financial ratio analysis as an indication of company failure. Using univariate analysis of 13 financial ratios, the results of the study showed that there was a relationship between financial ratios and company failure. Beaver (1966) in his research also used univariate analysis in his prediction model and found a relationship between financial ratios and predictions of company failure. The Ohlson (O-Score) model (1980) in his research developed a logit model (*multiple logistic regression*) to build a bankruptcy probability model in predicting bankruptcy. Ohlson in his research claimed that the results of his research were a very important model discovery. This important discovery is shown from his research model which considers the perspective of when the company publishes financial reports to the public. This aims to control whether the company goes bankrupt before or after the date of issuance of the financial statements. Research by Wong & Campbell (2010) which in its research uses trading companies in China. The Ohlson model provides an applicable measurement in predicting company delisting even in the Chinese stock market. Meanwhile, research by Khorasgani Amir (2011), in his research, predicted default on companies included in small and medium-sized companies in the UK in 2000-2008.

The Ohlson model is a bankruptcy analysis model discovered by James Ohlson in 1980. Ohlson was inspired by previous studies that also conducted studies on bankruptcy. Unlike other models, Ohlson uses *logistic regression* in his calculations, because Ohlson tries to overcome the weaknesses in using the *multiple discriminant analysis model* or commonly known as the Altman Z-Score bankruptcy analysis model created by Altman.

The model built by Ohlson has 9 variables, consisting of several financial ratios. The financial ratio variables used in the Ohlson model are log (total assets / GNP price level index), total debt / total assets, working capital / total assets, current liabilities / current assets, dummy values of debt and total assets, net income / total assets, operating cash flow / total debt, dummy values of the company's net income for 2 consecutive years, (net income year - net income year-1) / (net income year + net income year-1). Ohlson stated that this model has an optimal *cut off point* at a value of 0.38. Ohlson chose this cut off because with this, the number of errors can be minimized.

Fulmer Model is a model created by Fulmer in 1984, this model is one of the prediction models that uses 9 financial ratio variables that are related to financial distress. including; RETA (*Retained Earning to Total Assets*), SATA (*Sales to Total Assets*), EBTE (*Earning Before Taxes to Total Equity*), CFOTL (*Cash Flow From Operation to Total Liabilities*), TLTA (*Total Liabilities to Total Assets*), CLTA (*Current Liabilities to Total Asset*), Log FA (*Log Fixed Asset*), WCTL (*Working Capital to Total Liabilities*), and Log EBITI (*Log Earning Before Interest and Taxes to Interest Expense*).

Financial reports are one of the important things to provide information to investors regarding the level of profit or loss obtained by the company, a company, whether it is a *public company* or not yet *public*, must present financial reports that will later be used as a consideration for decision making in the future. However, the company's financial reports are not always in good condition, when the company's cash flow indicates that the company cannot meet its obligations or meet the payment schedule, then the company is experiencing financial difficulties or *financial distress* . According to Mastuti et al. (2011) companies are required to conduct an analysis of bankruptcy so that the company can be aware of the potential bankruptcy that will be experienced by a company.

From the description above, it is known that the Indonesian Airline Industry is one of the sectors affected by losses over the past 3 years plus the impact of the Covid-19 pandemic, where the pandemic that occurred caused economic growth to weaken and affected many things, one of which was the decline in passenger and cargo flows in the Indonesian Airline Industry in 2019-2021.

THEORETICAL FRAMEWORK OF THINKING AND HYPOTHESIS FORMULATION

Financial Distress is a condition where a company is unable to meet its current obligations that have matured such as trade debts, short-term bank debts, tax debts, etc. According to Platt and Platt (2002), before bankruptcy or liquidation occurs, there is a stage where the company experiences a decline in the condition of the financial report and this is called *financial distress* . Usually, companies that are indicated to be experiencing *financial distress* have minimal income, causing the company to be unable to finance its operational costs, therefore supervision of the financial condition, both from the balance sheet and profit and loss reports, must be carried out by the company to minimize the potential for bankruptcy in the company. *Financial distress analysis* is one of the techniques used to supervise financial reports, especially to analyze the occurrence of financial difficulties or potential bankruptcy in the company.

The Altman Z-Score model is one of the most famous bankruptcy prediction models or *financial distress* . Brigham and Weston (2005) explained that the Altman Z-Score is a bankruptcy prediction model developed by Edward Altman. The Altman model is a discriminant used to predict corporate bankruptcy known as the Z-Score. The Altman Z-Score bankruptcy prediction model is a method for predicting the *financial health* of a company and the potential for the company to go bankrupt which can be used in public and non-public companies. The Altman model formula was revised in 1983 and revised again in 1995 by Edward I. Altman. So the modified Altman Z-Score model formula is as follows (Yuliana, 2018):

$$\text{Z-Score} = 6.56 X_1 + 3.26 X_2 + 6.72 X_3 + 1.05 X_4$$

Explanation :

Z = Bankruptcy Index
 X1 = Net working capital / total assets
 X2 = Retained earnings / total assets
 X3 = Earnings before interest and taxes / total assets
 X4 = Market value of equity / book value to total liabilities

Information :

Net Working Capital: Current assets – current liabilities

Market Value: Share price x number of shares outstanding

Table 1. Results of Altman Z-Score Method Calculation

Hasil	Keterangan
$Z > 2.60$	Zona Aman
$1.10 < Z < 2.60$	Zona Abu-abu
$Z < 1.10$	Zona Distress

Source: Processed Data

Characteristics of the Altman Z-Score Model:

1. Using EBIT (*Earnings Before Interest and Tax*) which shows gross profit against total assets, so that the company will know how much profit the company earns from its main activities.
2. This Altman Z-Score model can be used by companies that have and have not *gone public* .
3. Does not use the current ratio, so it cannot be used to measure the company's ability to meet its short-term obligations.
4. Does not use the ratio of sales to total assets, so it cannot describe the company's effectiveness in using its total assets to generate revenue.

Ohlson Model

The Ohlson bankruptcy method uses leverage, liquidity, and profitability financial ratios to predict financial distress in a company. In the *financial distress analysis* using the Ohlson model, the smaller the O-Score value of a company, the smaller the possibility of the company experiencing potential bankruptcy. The Ohlson method assessment criteria if $O < 0.38$ then it is in the safe zone, but if $O > 0.38$ then it enters the distress zone . *The formula* used in this study is as follows:

$$O = -1.32 - 0.407X1 + 6.03X2 - 1.43X3 + 0.0757X4 - 2.37X5 - 1.83X6 + 0.285X7 - 1.72X8 - 0.521X9.....(5)$$

Which one:

O : Bankruptcy Index

X1 : Firm Size

X2 : Total Liabilities/Total Assets

X3 : Working Capital/Total Assets

X4: Current Liabilities/Current Assets

X5 : 1 if total liabilities > total assets; 0 otherwise

X6 : Net Income/Total Assets

X7 : Operating Cash Flow/Total Liabilities

X8 : 1 if net profit is negative; 0 otherwise

X9 : $(NIt - NIt-1) / (NIt + NIt-1)$

Table 2. Results of Ohlson Method Calculations

Hasil	Keterangan
$O < 0,038$	Zona Aman
$O > 0,038$	Zona Distress

Source: Processed Data

Characteristics of Ohlson Model:

1. Ohlson used logistic analysis to develop a predictive model. bankruptcy with nine Indicator independent

2. The ratio used is the ratio leverage , liquidity and profitability
3. Use leverage ratio , so that show position obligation to total assets .
4. Use current ratio , so that companies can measure ability company in fulfilling obligations term in short .
5. Do not use ratio book value of equity so that the company does not know his ability to pay obligation from equity market value .
6. The Ohlson method uses the profitability ratio so that know ability company to get profit from earnings related to sales , assets , and equity on a cost basis measurement certain .

Fulmer Model

Fulmer 1984 used the *step-wise multiple discriminate analysis method* to evaluate 40 financial ratios applied to a sample of 60 companies. Fulmer found that 30 companies had failed and the remaining 30 were successful. The Fulmer model can be developed by Rajasekar, et al (2014) described with the following formula:

$$H = 5.528 (V1) + 0.212 (V2) + 0.073 (V3) + 1.270 (V4) - 0.120 (V5) + 2.335 (V6) + 0.575 (V7) + 1.083 (V8) + 0.894 (V9) - 6.075$$

Where :

H : Overall index

V1 : Retained earnings to total assets

V2 : Sales to total assets

V3 : Profit before tax to total equity

V4 : Cash flow to total liabilities

V5 : total liabilities to total assets

V6 : Total current liabilities to total assets

V7 : Log total tangible assets

V8 : Working capital to total liabilities

V9 : Log of earnings before interest and taxes to interest expense

Table 3. Fulmer Method Calculation Results

Hasil	Keterangan
H > 0	Zona Aman
H < 0	Zona Distress

Source: Processed Data

Characteristics of the Fulmer Model:

1. The Fulmer H-Score method uses the asset turnover ratio, so that companies can find out how efficiently a company uses its assets to generate sales.
2. The Fulmer H-Score method does not use the cash to total assets ratio, so the company knows the cash capacity to pay current liabilities.
3. Using the liquidity ratio so that the company can know the ability of its assets to pay off or pay its short-term liabilities.

Every company has a policy in carrying out its activities, including one of them is the Indonesian Airline Industry Company listed on the Indonesia Stock Exchange. Each period the company makes a financial report which will later be used by various interested parties to make various decisions. Therefore, it is necessary to conduct a *financial distress analysis* to predict the bankruptcy of the company to assess the company's performance in the present and in the future. For this reason, a *financial distress analysis is used* using the Altman Z-Score, Ohlson , and Fulmer methods . From the results, it will be seen how the financial condition of the Indonesian Airline Industry company listed on the Indonesia Stock Exchange for the period 2018 to 2021 in order to find out earlier how the company's financial condition is.

METHOD

Financial Distress Method or Model

Altman Z-Score Model

The Altman Z-Score model is one of the most famous bankruptcy prediction models or *financial distress*. Brigham and Weston (2005) explained that the Altman Z-Score is a bankruptcy prediction model developed by Edward Altman. The Altman model is a discriminant used to predict corporate bankruptcy known as the Z-Score. The Altman Z-Score bankruptcy prediction model is a method for predicting the *financial health* of a company and the potential for the company to go bankrupt which can be used in public and non-public companies. The Altman model formula was revised in 1983 and revised again in 1995 by Edward I. Altman. So the modified Altman Z-Score model formula is as follows (Yuliana, 2018):

$$Z\text{-Score} = 6.56 X1 + 3.26 X2 + 6.72 X3 + 1.05$$

Explanation :

Z = Bankruptcy Index

X1 = Net working capital / total assets

X2 = Retained earnings / total assets

X3 = Earnings before interest and taxes / total assets

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Information :

Net Working Capital: Current assets – current liabilities

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Table 2.1 Results of Altman Z-Score Method Calculation

Hasil	Keterangan
Z > 2.60	Zona Aman
1.10 < Z < 2.60	Zona Abu-abu
Z < 1.10	Zona Distress

Source: Processed Data

Ohlson Model

The Ohlson bankruptcy method uses leverage, liquidity, and profitability financial ratios to predict financial distress in a company. In the *financial distress analysis* using the Ohlson model, the smaller the O-Score value of a company, the smaller the possibility of the company experiencing potential bankruptcy. The Ohlson method assessment criteria if $O < 0, 0.38$ then it is in the safe zone, but if $O > 0, 0.38$ then it enters the distress zone. The formula used in this study is as follows:

$$O = -1.32 - 0.407X1 + 6.03X2 - 1.43X3 + 0.0757X4 - 2.37X5 - 1.83X6 + 0.285X7 - 1.72X8 - 0.521X9 \dots (5)$$

Which one:

O : Bankruptcy Index

X1 : Firm Size

X2 : Total Liabilities/Total Assets

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X4: Current Liabilities/Current Assets

X5 : 1 if total liabilities > total assets; 0 otherwise

X6 : Net Income/Total Assets

X7 : Operating Cash Flow/Total Liabilities

X8 : 1 if net profit is negative; 0 otherwise

X9 : $(NIt - NIt-1) / (NIt + NIt-1)$

Table 4. Results of Ohlson Method Calculations

Hasil	Keterangan
O < 0,038	Zona Aman
O > 0,038	Zona Distress

Source: Processed Data

Fulmer Model

Fulmer 1984 used the *step-wise multiple discriminate analysis method* to evaluate 40 financial ratios applied to a sample of 60 companies. Fulmer found that 30 companies had failed and the remaining 30 were successful. The Fulmer model can be developed by Rajasekar, et al (2014) described with the following formula:

$$H = 5.528 (V1) + 0.212 (V2) + 0.073 (V3) + 1.270 (V4) - 0.120 (V5) + 2.335 (V6) + 0.575 (V7) + 1.083 (V8) + 0.894 (V9) - 6.075$$

Where :

H : Overall index

V1 : Retained earnings to total assets

V2 : Sales to total assets

V3 : Profit before tax to total equity

V4 : Cash flow to total liabilities

V5 : total liabilities to total assets

V6 : Total current liabilities to total assets

V7 : Log total tangible assets

V8 : Working capital to total liabilities

V9 : Log of earnings before interest and taxes to interest expense

Table 5. Fulmer Method Calculation Results

Hasil	Keterangan
H > 0	Zona Aman
H < 0	Zona Distress

Source: Processed Data

Sample Withdrawal

Sugiono (2015) explains that a sample is part of the number of characteristics possessed by the population. If the population is large and it is not possible for researchers to study all of the population, then researchers can use samples taken from the population. The samples in this study were the Airline Industry Companies Listed on the Indonesia Stock Exchange, namely, Air Asia Indonesia Tbk., Garuda Indonesia (Persero) Tbk., and Jaya Trishindo Tbk.

Table 6. List of Company Research Samples

Kode	Nama Perusahaan	Sub Industri	Nama Sub Industri
CMPP	AirAsia Indonesia Tbk.	K111	Airlines
GIAA	Garuda Indonesia (Persero) Tbk.	K111	Airlines
HELI	Jaya Trishindo Tbk.	K111	Airlines

Source: Processed Data

The sampling technique used in this study was *Purposive Sampling*. According to Sugiono (2015) *Purposive Sampling* is a sample collection technique with certain considerations. In other words, sample selection is based on certain characteristics in a population that has a dominant relationship so that it can be used to achieve research objectives. Sample selection using *Purposive Sampling* is a sample that has the following criteria:

1. Airline Industry Companies Listed on the Indonesia Stock Exchange for the 2018 to 2021 Period
2. Airline Industry Companies that publish complete financial reports for the period 2018 to 2021
3. Airline Industry Companies that experienced the impact of the Covid-19 Pandemic, marked by a decline in stock prices or stagnant stock price movements during the period 2018 to 2021 .

Analysis Method

The following are the results of *financial distress analysis* in Indonesian aviation sector companies listed on the Indonesia Stock Exchange (IDX) for the period 2018 to 2021, namely, PT. Air Asia Indonesia Tbk. (CMPP), PT. Garuda Indonesia Tbk. (GIAA), and PT. Jaya Trishindo Tbk. (HELI) using the Altman Z-Score, Ohlson, and Fulmer methods:

1. Altman Z-Score Method

The following are the results of *financial distress analysis* using the Altman Z-Score method:

Table 7. Results of Financial Distress Analysis Using the Altman Z-Score Method

No	Nama Perusahaan	Kode	Tahun	Z-Score	Keterangan
1	PT. Air Asia Indonesia Tbk	CMPP	2018	-7,89	Zona Distress
			2019	-9,70	Zona Distress
			2020	-12,99	Zona Distress
			2021	-17,51	Zona Distress
2	PT. Garuda Indonesia Tbk	GIAA	2018	-0,86	Zona Distress
			2019	-0,42	Zona Distress
			2020	-4,04	Zona Distress
			2021	-12,13	Zona Distress
3	PT. Jaya Trishindo Tbk	HELI	2018	1,45	Zona Abu-abu
			2019	4,55	Zona Aman
			2020	1,95	Zona Abu-abu
			2021	2,82	Zona Aman

Source: Processed data, 2023

From the results of the *Financial Distress calculation* using the Altman Z-Score method on Indonesian aviation sector companies listed on the Indonesia Stock Exchange (IDX) for the period 2018 to 2021, namely, in 2018 PT. Air Asia Indonesia Tbk. was in the distress zone ($Z < 1.10$), meaning that in 2018 PT. Air Asia Indonesia Tbk. experienced financial difficulties. PT. Garuda Indonesia Tbk. was in the distress zone ($Z < 1.10$), meaning that in 2018 PT. Garuda Indonesia Tbk. experienced financial difficulties. PT. Jaya Trishindo Tbk. was in the gray zone ($1.10 < Z < 2.60$), meaning that there was no *Financial Distress*, but PT. Jaya Trishindo Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress*.

In 2019, PT. Air Asia Indonesia Tbk. was in the distress zone ($Z < 1.10$), meaning that in 2019 PT. Air Asia Indonesia Tbk. experienced financial difficulties again. PT. Garuda Indonesia Tbk. was in the distress zone ($Z < 1.10$), meaning that in 2019 PT. Garuda Indonesia Tbk. experienced financial difficulties again. PT. Jaya Trishindo Tbk. was in the safe zone ($Z > 2.60$), meaning that PT. Jaya Trishindo Tbk. in 2019 was in a safe condition where the Company did not have the potential to experience *Financial Distress*.

In 2020, PT. Air Asia Indonesia Tbk. was in the distress zone ($Z < 1.10$), meaning that in 2020 PT. Air Asia Indonesia Tbk. experienced financial difficulties again. PT. Garuda Indonesia Tbk. was in the distress zone ($Z < 1.10$), meaning that in 2020 PT. Garuda Indonesia Tbk. experienced financial difficulties again. In 2020 PT. Jaya Trishindo Tbk. was in the gray zone ($1.10 < Z < 2.60$), meaning that there was no *Financial Distress*, but PT. Jaya Trishindo Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress*.

In 2021, PT. Air Asia Indonesia Tbk. is in the distress zone ($Z < 1.10$), meaning that in 2021 PT. Air Asia Indonesia Tbk. is experiencing financial difficulties again. PT. Garuda Indonesia Tbk. is in the distress zone ($Z < 1.10$), meaning that in 2021 PT. Garuda Indonesia Tbk. is experiencing financial difficulties again. In 2021 PT. Jaya Trishindo Tbk. is in the safe zone ($Z > 2.60$), meaning that PT. Jaya Trishindo Tbk. in

2019 was in a safe condition where the Company did not have the potential to experience *Financial Distress*.

2. Ohlson's method

The following are the results of *financial distress analysis* using the Ohlson method:

Table 8. Results of Financial Distress Analysis Using the Ohlson Method

No	Nama Perusahaan	Kode	Tahun	O-Score	Keterangan
1	PT. Air Asia Indonesia Tbk	CMPP	2018	-7,28	Zona Aman
			2019	-8,01	Zona Aman
			2020	-4,81	Zona Aman
			2021	0,48	Zona Distress
2	PT. Garuda Indonesia Tbk	GIAA	2018	-5,81	Zona Aman
			2019	-5,35	Zona Aman
			2020	-6,69	Zona Aman
			2021	-0,05	Zona Aman
3	PT. Jaya Trishindo Tbk	HELI	2018	-8,40	Zona Aman
			2019	-10,19	Zona Aman
			2020	-8,22	Zona Aman
			2021	-8,60	Zona Aman

Source: Processed data, 2023

From the results of the calculation of *Financial Distress* using the Ohlson method (O-score) in Indonesian aviation sector companies listed on the Indonesia Stock Exchange (IDX) for the period 2018 to 2021, namely, in 2018 PT. Air Asia Indonesia Tbk. was in a safe zone condition ($O < 0.038$), meaning that there was no *Financial Distress*, but PT. Air Asia Indonesia Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress*. PT. Garuda Indonesia Tbk. is in a safe zone condition ($O < 0.038$), meaning that in 2018 there was no *Financial Distress*, but PT. Garuda Indonesia Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress*. PT. Jaya Trishindo Tbk. In 2018 it was in a safe zone condition ($O < 0.038$), meaning that there was no *Financial Distress*, but PT. Jaya Trishindo Tbk. must remain vigilant about the company's financial condition, because the company could potentially experience *Financial Distress*. In 2019, PT. Air Asia Indonesia Tbk. was in a safe zone ($O < 0.038$), meaning that there was no *Financial Distress*, but PT. Air Asia Indonesia Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress*. PT. Garuda Indonesia Tbk. was in a safe zone ($O < 0.038$), meaning that in 2019 there was no *Financial Distress*, but PT. Garuda Indonesia Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress*. PT. Jaya Trishindo Tbk. In 2019, it was in a safe zone ($O < 0.038$), meaning that there was no *Financial Distress*, but PT. Jaya Trishindo Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress*.

In 2020, PT. Air Asia Indonesia Tbk. was in a safe zone ($O < 0.038$), meaning that there was no *Financial Distress*, but PT. Air Asia Indonesia Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress*. PT. Garuda Indonesia Tbk. was in a safe zone ($O < 0.038$), meaning that in 2020 there was no *Financial Distress*, but PT. Garuda Indonesia Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress*. PT. Jaya Trishindo Tbk. In 2020 it was in a safe zone ($O < 0.038$), meaning that there was no *Financial Distress*, but PT. Jaya Trishindo Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress*.

In 2021, PT. Air Asia Indonesia Tbk. is in a safe zone ($O > 0.038$), meaning that in 2021 PT. Air Asia Indonesia Tbk. is experiencing financial difficulties . PT. Garuda Indonesia Tbk. is in a safe zone ($O < 0.038$), meaning that in 2021 there will be no *Financial Distress* , but PT. Garuda Indonesia Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress* . PT. Jaya Trishindo Tbk. In 2021 it is in a safe zone ($O < 0.038$), meaning that there will be no *Financial Distress* , but PT. Jaya Trishindo Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress*.

3. Fulmer Method

The following are the results of *financial distress analysis* using the Fulmer method:

Table 9. Results of Financial Distress Analysis Using the Fulmer Method

No	Nama Perusahaan	Kode	Tahun	H-Score	Keterangan
1	PT. Air Asia Indonesia Tbk	CMPP	2018	2,96	Zona Aman
			2019	-12,33	Zona Distress
			2020	-5,44	Zona Distress
			2021	-8,82	Zona Distress
2	PT. Garuda Indonesia Tbk	GIAA	2018	-0,07	Zona Distress
			2019	-2,09	Zona Distress
			2020	-0,78	Zona Distress
			2021	-3,52	Zona Distress
3	PT. Jaya Trishindo Tbk	HELI	2018	2,87	Zona Aman
			2019	3,69	Zona Aman
			2020	1,97	Zona Aman
			2021	2,11	Zona Aman

Source: Processed data, 2023

From the results of the *Financial Distress calculation* using the Fulmer method (*H- score*) in Indonesian aviation sector companies listed on the Indonesia Stock Exchange (IDX) for the period 2018 to 2021, namely, in 2018 PT. Air Asia Indonesia Tbk. was in a safe zone condition ($H > 0$), meaning that in 2018 there was no *Financial Distress* , but PT. Air Asia Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress*. PT. Garuda Indonesia Tbk. is in a distress zone condition ($H < 0$), meaning that in 2018 PT. Garuda Indonesia Tbk. experienced financial difficulties. In 2018 PT. Jaya Trishindo Tbk. was in a safe zone condition ($H > 0$), meaning that there was no *Financial Distress* , but PT. Jaya Trishindo Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress*.

In 2019, PT. Air Asia Indonesia Tbk. was in a safe zone ($H < 0$), meaning that in 2019 PT. Air Asia Indonesia Tbk. experienced financial difficulties . PT. Garuda Indonesia Tbk. was in a distress zone ($H < 0$), meaning that in 2019 PT. Garuda Indonesia Tbk. experienced financial difficulties again. In 2019 PT. Jaya Trishindo Tbk. was in a safe zone ($H > 0$), meaning that there was no *Financial Distress* , but PT. Jaya Trishindo Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress*.

In 2020, PT. Air Asia Indonesia Tbk. was in a safe zone ($H < 0$), meaning that in 2020 PT. Air Asia Indonesia Tbk. experienced financial difficulties again . PT. Garuda Indonesia Tbk. was in a distress zone ($H < 0$), meaning that in 2020 PT. Garuda Indonesia Tbk. experienced financial difficulties again. In 2020 PT. Jaya Trishindo Tbk. was in a safe zone ($H > 0$), meaning that there was no *Financial Distress* , but PT. Jaya Trishindo Tbk. must still be aware of the company's financial condition, because the company could potentially experience *Financial Distress*.

In 2021, PT. Air Asia Indonesia Tbk. is in a safe zone ($H < 0$), meaning that in 2021 PT. Air Asia Indonesia Tbk. will again experience financial difficulties . PT. Garuda

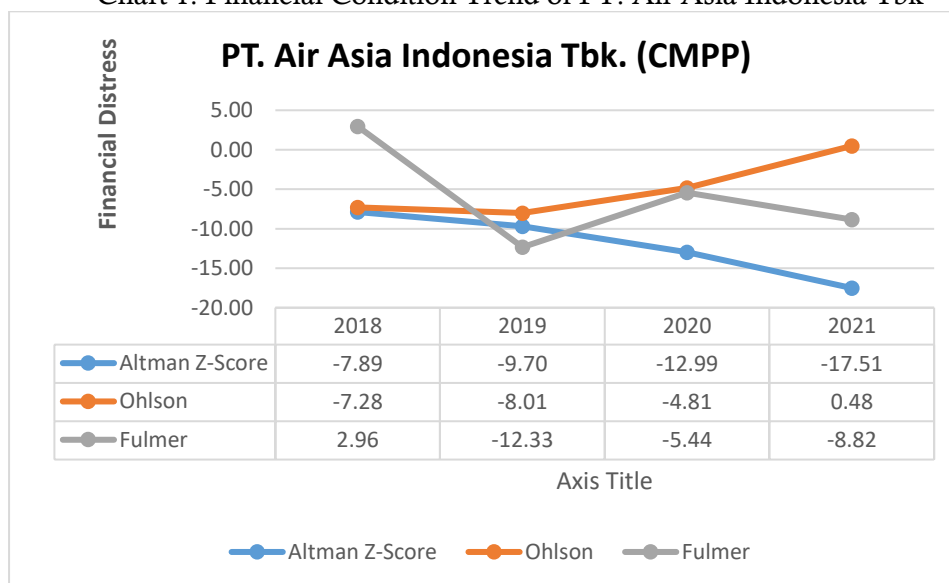
Indonesia Tbk. is in a distress zone ($H < 0$), meaning that in 2021 PT. Garuda Indonesia Tbk. will again experience financial difficulties. In 2021 PT. Jaya Trishindo Tbk. is in a safe zone ($H > 0$), meaning that there is no *Financial Distress*, but PT. Jaya Trishindo Tbk. must still be aware of the company's financial condition, because the company has the potential to experience *Financial Distress*.

Financial Distress Analysis Results with the Altman Z-Score, Ohlson, and Fulmer Methods

The following is a comparison of the financial conditions of each Indonesian aviation sector company listed on the Indonesia Stock Exchange (IDX) for the period 2018 to 2021 based on the *Financial Distress analysis* using the Altman Z-Score, Ohlson, and Fulmer methods:

1. PT. Air Asia Indonesia Tbk. (CMPP)

Chart 1. Financial Condition Trend of PT. Air Asia Indonesia Tbk



Source: Processed data, 2023

Based on graph 4.1, it can be seen that in 2018 using the Altman Z-Score method, PT. Air Asia Indonesia Tbk. obtained a Z value of -7.89, the company experienced *Financial Distress* ($Z < 1.10$), based on calculations using the Ohlson method, the company obtained a value of -7.28, the company did not experience *Financial Distress* ($O < 0.038$), and based on calculations using the Fulmer method, the company obtained a value of 2.96, the company did not experience *Financial Distress* ($H > 0$).

In 2019 using the Altman Z-Score method, PT. Air Asia Indonesia Tbk. obtained a Z value of -9.70 the company again experienced *Financial Distress* ($Z < 1.10$), based on calculations using the Ohlson method the company obtained a value of -8.01 the company did not experience *Financial Distress* ($O < 0.038$), and based on calculations using the Fulmer method the company obtained a value of -12.33 the company experienced *Financial Distress* ($H > 0$).

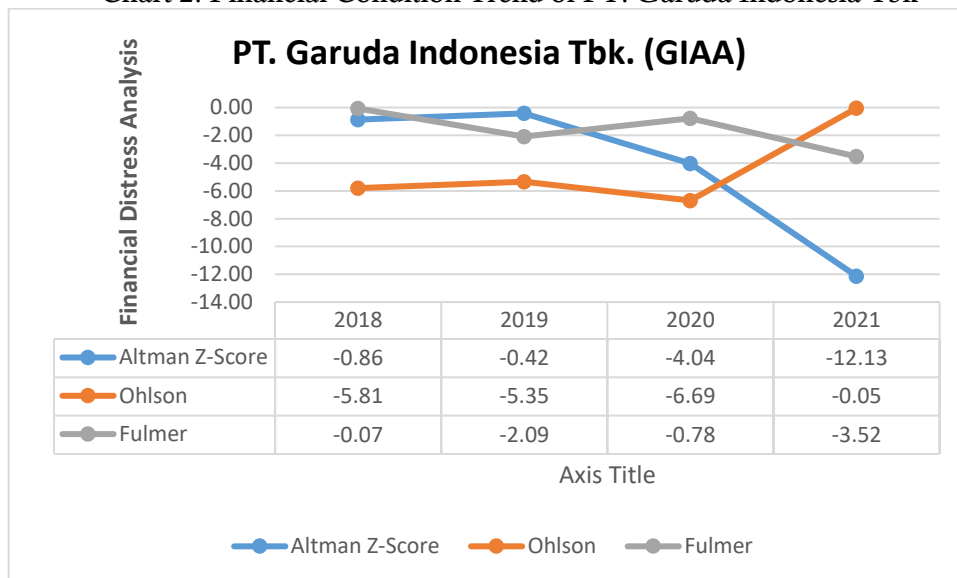
In 2020 using the Altman Z-Score method, PT. Air Asia Indonesia Tbk. obtained a Z value of -12.99 the company again experienced *Financial Distress* ($Z < 1.10$), based on calculations using the Ohlson method the company obtained a value of -4.81 the company did not experience *Financial Distress* ($O < 0.038$), and based on calculations using the Fulmer method the company obtained a value of -5.44 the company experienced *Financial Distress* ($H > 0$).

In 2021 using the Altman Z-Score method, PT. Air Asia Indonesia Tbk. obtained a Z value of -17.51 the company is again experiencing *Financial Distress* ($Z < 1.10$), based on calculations using the Ohlson method the company obtained a value of 0.48 the company is experiencing *Financial Distress* ($O < 0.038$), and based on calculations using the Fulmer

method the company obtained a value of -8.82 the company is experiencing *Financial Distress* ($H > 0$).

2. PT. Garuda Indonesia Tbk. (GIAA)

Chart 2. Financial Condition Trend of PT. Garuda Indonesia Tbk



Source: Processed data, 2023

Based on graph 4.2, it can be seen that in 2018 using the Altman Z-Score method, PT. Garuda Indonesia Tbk. obtained a Z value of -0.86, the company experienced *Financial Distress* ($Z < 1.10$), based on calculations using the Ohlson method, the company obtained a value of -5.81, the company did not experience *Financial Distress* ($O < 0.038$), and based on calculations using the Fulmer method, the company obtained a value of -0.07, the company experienced *Financial Distress* ($H > 0$).

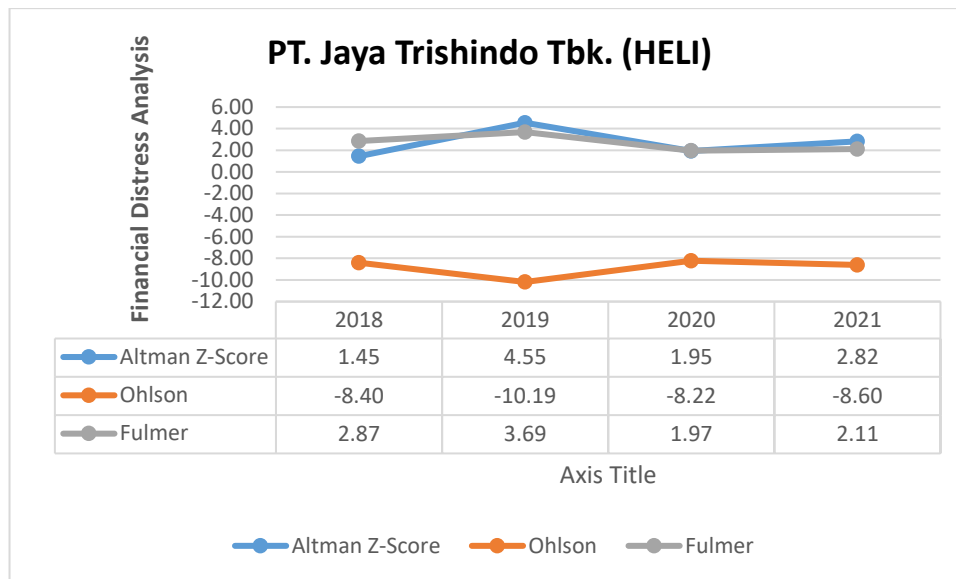
In 2019 using the Altman Z-Score method, PT. Garuda Indonesia Tbk. obtained a Z value of -0.42 the company experienced *Financial Distress again* ($Z < 1.10$), based on calculations using the Ohlson method the company obtained a value of -5.35 the company did not experience *Financial Distress* ($O < 0.038$), and based on calculations using the Fulmer method the company obtained a value of -2.09 the company experienced *Financial Distress again* ($H > 0$).

In 2020 using the Altman Z-Score method, PT. Garuda Indonesia Tbk. obtained a Z value of -4.04 the company is experiencing *Financial Distress again* ($Z < 1.10$), based on calculations using the Ohlson method the company obtained a value of -6.69 the company is not experiencing *Financial Distress* ($O < 0.038$), and based on calculations using the Fulmer method the company obtained a value of -0.78 the company is experiencing *Financial Distress again* ($H > 0$).

In 2021 using the Altman Z-Score method, PT. Garuda Indonesia Tbk. obtained a Z value of -12.13 the company is experiencing *Financial Distress again* ($Z < 1.10$), based on calculations using the Ohlson method the company obtained a value of -0.05 the company is not experiencing *Financial Distress* ($O < 0.038$), and based on calculations using the Fulmer method the company obtained a value of -3.52 the company is experiencing *Financial Distress again* ($H > 0$).

3. PT. Jaya Trishindo Tbk. (HELI)

Chart 3. Financial Condition Trend of PT. Jaya Trishindo Tbk



Source: Processed data, 2023

Based on graph 4.3, it can be seen that in 2018 using the Altman Z-Score method, PT. Jaya Trishindo Tbk. obtained a Z value of 1.45, the company did not experience *financial distress* but the company was in a position that had the potential to experience *Financial Distress* ($1.10 < Z < 2.60$), based on calculations using the Ohlson method, the company obtained a value of -8.40, the company did not experience *Financial Distress* ($O < 0.038$), and based on calculations using the Fulmer method, the company obtained a value of 2.87, the company did not experience *Financial Distress* ($H > 0$).

In 2019 using the Altman Z-Score method, PT. Jaya Trishindo Tbk. obtained a Z value of 4.55 the company did not experience *Financial Distress* ($Z > 2.60$), based on calculations using the Ohlson method the company obtained a value of -10.19 the company did not experience *Financial Distress* ($O < 0.038$), and based on calculations using the Fulmer method the company obtained a value of 3.69 the company did not experience *Financial Distress* ($H > 0$).

In 2020 using the Altman Z-Score method, PT. Jaya Trishindo Tbk. obtained a Z value of 1.95, the company did not experience *financial distress* but the company was in a position that had the potential to experience *Financial Distress* ($1.10 < Z < 2.60$), based on calculations using the Ohlson method the company obtained a value of -8.22 the company did not experience *Financial Distress* ($O < 0.038$), and based on calculations using the Fulmer method the company obtained a value of 1.97 the company did not experience *Financial Distress* ($H > 0$).

In 2021 using the Altman Z-Score method, PT. Jaya Trishindo Tbk. obtained a Z value of 2.82, the company did not experience *Financial Distress* ($Z > 2.60$), based on calculations using the Ohlson method, the company obtained a value of -8.60, the company did not experience *Financial Distress* ($O < 0.038$), and based on calculations using the Fulmer method, the company obtained a value of 2.11, the company did not experience *Financial Distress* ($H > 0$).

Comparison of Financial Distress Prediction Results Using the Altman Z-Score, Ohlson, and Fulmer Methods

The following are the differences in the results of *Financial Distress predictions* using the Altman Z-Score, Ohlson, and Fulmer methods for Indonesian aviation sector companies listed on the Indonesia Stock Exchange (IDX) for the period 2018 to 2021:

Figure 2. Comparison of *Financial Distress* Prediction Results Using the Altman Z-Score, Ohlson, and Fulmer Methods

No.	Metode	Hasil Analisis	2018	2019	2020	2021
1	Altman Z-Score	Zona Aman	0 -	1 PT.Jaya Trishindo Tbk.	0 -	1 PT.Jaya Trishindo Tbk.
		Zona Abu-Abu	1 PT.Jaya Trishindo Tbk.	0 -	1 PT.Jaya Trishindo Tbk.	0 -
		Zona Distress	2 PT. Air Asia Indonesia Tbk. PT. Garuda Indonesia Tbk.	2 PT. Air Asia Indonesia Tbk. PT. Garuda Indonesia Tbk.	2 PT. Air Asia Indonesia Tbk. PT. Garuda Indonesia Tbk.	2 PT. Air Asia Indonesia Tbk. PT. Garuda Indonesia Tbk.
2	Ohlson	Zona Aman	3 PT.Jaya Trishindo Tbk. PT. Air Asia Indonesia Tbk. PT. Garuda Indonesia Tbk.	3 PT.Jaya Trishindo Tbk. PT. Air Asia Indonesia Tbk. PT. Garuda Indonesia Tbk.	3 PT.Jaya Trishindo Tbk. PT. Air Asia Indonesia Tbk. PT. Garuda Indonesia Tbk.	2 PT.Jaya Trishindo Tbk. PT. Garuda Indonesia Tbk.
		Zona Distress	0 -	0 -	0 -	1 PT. Air Asia Indonesia Tbk.
		Zona Aman	2 PT.Jaya Trishindo Tbk. PT. Air Asia Indonesia Tbk.	1 PT.Jaya Trishindo Tbk.	1 PT.Jaya Trishindo Tbk.	1 PT.Jaya Trishindo Tbk.
3	Fulmer	Zona Distress	1 PT. Garuda Indonesia Tbk.	2 PT. Air Asia Indonesia Tbk. PT. Garuda Indonesia Tbk.	2 PT. Air Asia Indonesia Tbk. PT. Garuda Indonesia Tbk.	2 PT. Air Asia Indonesia Tbk. PT. Garuda Indonesia Tbk.

Source: Processed data, 2023

Based on the analysis above, it can be concluded that the *Financial Distress prediction* for the period 2018 to 2021. Most Indonesian aviation sector companies are in a state of *Financial Distress* or a condition where a company is experiencing financial difficulties. The difference in the results of the three methods is due to differences in financial ratios. In addition, the difference in weight given to each ratio used as an indicator also has a great influence. The Altman Z-Score method emphasizes the company's ability to generate profit and loss using the profitability ratio. The Ohlson method emphasizes the use of logistics analysis such as the use of leverage, liquidity, and profitability ratios. Then, the Fulmer method emphasizes the use of asset turnover ratios, so that companies can find out how efficiently a company uses its assets to generate sales, but does not use the cash to total assets ratio, so that companies know the cash capacity to pay current liabilities.

CONCLUSION

From the results of *Financial Distress predictions* using the Altman Z-Score method on Indonesian aviation sector companies listed on the Indonesia Stock Exchange (IDX) for the period 2018 to 2021, there are 2 companies that are continuously experiencing *Financial Distress conditions*, namely PT Air Asia Indonesia Tbk. And PT Garuda Indonesia Tbk. And only 1 company that does not experience *Financial Distress conditions* but has the potential to experience these conditions is PT Jaya Trishindo Tbk, this was seen in 2018 when the company just entered the Indonesia Stock Exchange (IDX) or IPO and when the pandemic occurred in 2020 the company experienced financial conditions in the Gray Zone.

From the results of *Financial Distress predictions* using the Ohlson method on Indonesian aviation sector companies listed on the Indonesia Stock Exchange (IDX) for the period 2018 to 2021, only 1 company in 2021 experienced *Financial Distress conditions*, namely PT Air Asia Indonesia Tbk. In 2021.

From the results of *Financial Distress predictions* using the Fulmer method on Indonesian aviation sector companies listed on the Indonesia Stock Exchange (IDX) for the period 2018 to 2021, there are 2 companies that are continuously experiencing *Financial Distress conditions*, namely PT Air Asia Indonesia Tbk. Except in 2018 and PT Garuda Indonesia

Tbk. Which are continuous and only 1 company does not experience *Financial Distress conditions* but has the potential to experience these conditions, namely PT Jaya Trishindo Tbk.

From the prediction results using the three methods, it can be seen that one of the most influential indicators that causes *Financial Distress* in PT. Air Asia Indonesia Tbk. and PT. Garuda Indonesia Tbk in 2018 to 2021 is the lack of the company's ability to generate profit or loss which is analyzed using the Altman Z-Score method, where in this method the calculation ratio used is the profitability ratio. While PT. Jaya Trishondo Tbk. obtained fluctuating results, where PT. Jaya Trishondo Tbk. obtained a safe zone in the Ohlson and Fulmer methods, a gray zone in 2018 and 2020 in the Altman Z-Score method.

There are differences in the prediction results of the three methods, this is due to differences in financial ratios. In addition, the difference in weight given to each ratio used as an indicator also has a great influence. The Altman Z-Score method emphasizes the company's ability to generate profit and loss using the profitability ratio. The Ohlson method emphasizes the use of logistic analysis such as the use of leverage, liquidity, and profitability ratios. Then, the Fulmer method emphasizes the use of asset turnover ratios, so that companies can find out how efficiently a company uses its assets to generate sales, but does not use the cash to total assets ratio, so that companies know the cash capacity to pay current liabilities.

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