Analysis of Corporate Bankruptcy and Financial Statement Fraud Prediction using Altman Models and Beneish Models

Cut Annisa Selanda, and Afriyanti Hasanah
Applied Business Administration, Politeknik Negeri Batam, Jl. Ahmad Yani, Batam, Indonesia

Keywords: Altman Models Model, Beneish Models Model, Bankruptcy, Financial Statement Fraud

Abstract: The purpose of this study was to analyze the prediction of financial statement fraud and bankruptcy of companies using the Altman Models model and the Beneish Models model. This research is a descriptive analysis research with a quantitative approach using secondary data from the company's financial statements. The population in this study are property and real estate companies listed on the Indonesia Stock Exchange (BEI) in the period 2014-2018 with a sample of 24 companies. The result showed that there is a relationship between financial statement fraud and company bankruptcy conditions where there are financial statements that are predicted to go bankrupt before manipulated, there are financial statements that are manipulated before bankrupt, and there are financial statements that are simultaneously predicted to go bankrupt and manipulated. Based on the analysis, the researcher argued that stakeholders would be better protected when the Altman Models model and Beneish Models model are used simultaneously. Further research is recommended to use another bankruptcy prediction tool and financial statement fraud prediction tool.

SCITEPRESS
SCIENCE AND TECHNOLOGY PUBLICATIONS

1 INTRODUCTION

Each company has a financial report that serves to provide information for making decisions, making calculations, measurements, and evaluating all aspects of the company's economy in a comprehensive manner (Syakur, 2015). Financial statements must be presented in a relevant, accurate, detailed, and free from all forms of fraud. Many of the practices that occur, high expectations in achieving the income of a company are often followed by ambition to manipulate financial statements (Christy, Sugito, & Abdul, 2015). The material misstatement of financial statements was deliberately done to trick investors and creditors (ACFE, 2016). Earnings management is a form of financial statement fraud by reporting fictitious transactions that will produce the desired profit value.

Cases of manipulation of financial statements occur abroad and domestically. In 2001 it was revealed that the management of one of the largest companies in the United States, the Enron companies, overestimated profits in the company's financial statements until its debts were discovered and finally declared bankrupt in December 2001 (Deil, 2014). In 2002, the company World com which was also a large company in the United States went bankrupt after the company's financial game was revealed (Pertiwi, 2015). The case of financial manipulation in Indonesia was carried out by the SNF companies.

In 2018, SNP Finance was declared bankrupt after committing fraud by reporting a fictitious financial report by the Financial Services Authority (OJK). Based on the cases above, financial statement fraud needs to be detected as an effort to protect those who need information (Gumiwang, 2018).

Fraud detection was carried out by Beneish Models by formulating 8 analysis ratios to identify the occurrence of fraudulent financial statements or being involved in earnings manipulation (Beneish, 1999). The ratio can predict that 76% of the sample companies studied by Beneish Models are classified as manipulating financial statements. The method found by Beneish Models is known as the Beneish Models model. An analysis of the causes of the financial statement fraud needs to be done. One of the causes of fraud in bankruptcy (Albrecht, Albrecht, Albrecht, & Zimbelman, 2012). Companies in a vulnerable situation will try to increase profits to get financial statements that will attract investors to invest. Bankruptcy prediction was carried out by Altman Models using 5 financial ratios and came to

Selanda, C. and Hasanah, A.
Analysis of Corporate Bankruptcy and Financial Statement Fraud Prediction using Altman Models and Beneish Models.
DOI: 10.5220/0010354501540164
In *Proceedings of the 2nd International Conference on Applied Economics and Social Science (ICAESS 2020) - Shaping a Better Future Through Sustainable Technology*, pages 154-164
ISBN: 978-989-758-517-3
Copyright © 2021 by SCITEPRESS – Science and Technology Publications, Lda. All rights reserved

be known as the Altman Models model. Z-Score's research results were able to predict bankruptcy with an accuracy rate of 95% (Altman E. I., 1968).

There is the highest possibility that companies facing financial difficulties will manipulate their income to show a healthy company condition (Maccarthy, 2017). This is in line with other research statement that poor financial conditions have a strong motivation to commit fraud (Abbas, 2017). Another study by shows that companies are in a state of financial difficulties and also detected as a manipulator (Mavangere, 2015). This research is a development of research that applies the Beneish Models and Altman Models models simultaneously in detecting bankruptcy and corporate fraud by using a sample of companies that have been proven to have committed fraud and bankruptcy (Maccarthy, 2017) (Abbas, 2017) (Mavangere, 2015). The sample of this study is the property and real estate subsector companies listed on the Indonesia Stock Exchange (IDX). The purpose of this study is to test first, that the company is in a bankrupt or bankrupt zone before it is classified as a manipulator. Second, the company is classified as a manipulator before it is predicted to be in a zone prone to bankruptcy or bankruptcy. Third, companies classified as manipulators are also predicted to be in a bankrupt or bankrupt zone.

The difference in research conducted with previous research is, most of the previous studies used a sample of companies that have been declared cheating so that the conclusions obtained are limited to cases that have been proven to be cheating, while the sample of companies in this study is companies that are still listed on the IDX.

2 THEORETICAL FRAMEWORK AND HYPOTEHESIS DEVELOPMENT

2.1 Theoretical Framework

2.1.1 Agency Theory

Agency theory underlies a set of shareholder contracts with management in managing the control and use of resources in the company (Jensen & Meckling, 1976). Information about the company's performance and operations are more widely owned by management, giving rise to opportunities to commit fraud such as manipulation of numbers in the financial statements which will eventually develop into something that is materially misleading and will harm the company.

2.1.2 Fraud Triangle Theory

The Fraud Triangle theory explains that cheating is caused by 3 factors including the first, pressure which covers almost everything including economic demands, lifestyle, and so on. Second, the opportunity (opportunity) that usually occurs due to a lack of internal control supervision and abuse of authority. Third, rationalization is a set of ethical values in a person's attitude and character (Cressey, 1953).

2.1.3 Maximizes Social Welfare Theory

Bankruptcy theory states that social welfare is maximized when companies experience economic difficulties. This is because creditors are more interested in the availability of assets and the extent to which these assets can satisfy their claims rather than the prospect of saving the company.

2.2 Hypothesis Development

2.2.1 The Company Is Predicted to Go Bankrupt before Manipulated

The Fraud Triangle theory which states that one of the causes of fraud is when under pressure and opportunity (Cressey, 1953). Abuse of authority by management is done to produce financial reports that are always good so investors remain interested in investing their capital (Jensen & Meckling, 1976). This hypothesis can be supported if there are companies that are in the gray zone or are bankrupt from the results of the Altman Models interpretation, before being classified as a manipulator of the results of the M-Score interpretation.

2.2.2 The Company Is Predicted to Be Classified as a Manipulator before It Is in the Bankruptcy Zone

The Fraud Triangle theory which states that one of the causes of fraud is the opportunity (Cressey, 1953). The opportunity is owned by management as a party that is more flexible about the company's financial statements (Jensen & Meckling, 1976). The desire and ambition to achieve a company is often followed by fraud (Christy, Sugito, & Abdul, 2015). Companies always want to have financial reports that look good when the fraud can lead to bankruptcy in the future. This hypothesis can be supported if there

are companies classified as manipulators from the M-Score interpretation results before they are predicted to be in the gray zone or bankrupt from the Altman Models interpretation results.

2.2.3 Companies That Are Classified as Manipulators Simultaneously Are Also Predicted to Be in the Bankruptcy Zone

The Fraud Triangle theory which states that one of the causes of fraud is when the opportunity arises when management wants to commit fraud and there is the pressure when the company is in bad condition so that the company is categorized in bankruptcy and also classified as a manipulator (Cressey, 1953).

This hypothesis can be supported if there are companies that are classified as manipulators and are also in a bankrupt zone.

3 RESEARCH METHODS

3.1 Data Types and Sources

The type of data in this study are secondary data in the form of financial statements of the property and real estate sub-sector companies for the period 2014-2018. Data sources were obtained through the IDX's official website, www.idx.co.id. As well as the individual company sample pages.

3.2 Variable Operational Definitions and Measurements

3.2.1 Bankruptcy

In 1995, Altman Models modified the model so that it could be used in all types of companies in developing countries (Altman, Peck, & Hartzell, 1995). The elimination of Sales / Total Assets variables is done because this ratio is very varied in companies with different asset sizes. The modified Altman Models equation is:

$$\textbf{Z-Score} = 6.56\textbf{Z1} + 3.26\textbf{Z2} + 6.72\textbf{Z3} + 1.05\textbf{Z4}$$

Source: (Altman E. I., 1968)

The definition of ratio used as a measurement is:

1. Z1 Ratio (*Net Working Capital to Total Assets*)

$$Z1 = \frac{Net\ Working\ Capital}{Total\ Assets}$$

The Z1 ratio measures the company's ability to generate networking capital from total assets. If the company is in financial difficulty, working capital will decrease faster than total assets, so the ratio will decrease.

2. Z2 Ratio (*Retained Earnings to Total Assets*)

$$Z2 = \frac{Retained\ Earnings}{Total\ Assets}$$

The Z2 ratio measures the company's ability to generate retained earnings from total company assets.

3. Z3 Ratio (*Earnings Before Interest and Tax to Total Assets*)

$$Z3 = \frac{Earnings\ Before\ Interest\ and\ Tax}{Total\ Assets}$$

Z3 ratio measures the effectiveness of the company in earning profits before paying interest and taxes.

4. Ratio Z4 (Book Value *of Equity to Book Value of Debts*)

$$Z4 = \frac{Book\ Value\ of\ Equity}{Book\ Value\ of\ Debts}$$

Table 1: The Altman Models Model Parameter Index

No.	Z-Score	Classification
1	<1.10	The company is bankrupt
2	1.10<Z<2.60	The company is in grey zone
3	>2.60	The company in good condition

Source: (Altman E. I., 1968)

3.2.2 Fraudulent Financial Statements

Fraudulent is measured using the Beneish Models model with the formula:

$$\textbf{M}\text{-}Score = -4.84 + 0.92\ \textbf{DSRI} + 0.528\textbf{GMI} + 0.404\textbf{AQI} + 0.892\ \textbf{SGI} + 0.115\textbf{DEPI}$$

+ -

0.172 **SGAI** + 4.679**TATA** + -0.327 **LVGI**

The definition of ratio used as a measurement is:

1. *Day Sales in Receivable Index* (DSRI)

The DSRI ratio is used to compare accounts receivable against sales generated by the company one year (t) and the previous year (t-1).

$$DSRI=\frac{Account\ Receivable_{(t)}/Sales_{(t)}}{Account\ Receivable_{(t-1)}/Sales_{(t-1)}}$$

An increase in the amount of trade receivables owned indicates.

2. *Gross Margin Index* (GMI)

The GMI ratio is used to compare the company's gross profit for one year (t) and the previous year (t-1).

$$GMI=\frac{Gross\ Profit_{(t-1)}/Sales_{(t-1)}}{Gross\ Profit_{(t)}/Sales_{(t)}}$$

Z4 ratio shows the capability of a company to fulfill the obligations of the capital market value. Generally, companies that run aground will accumulate more debt than their capital.

Altman Models ratio calculation is intended to determine the category of a company classified as healthy, prone to bankruptcy, or bankrupt if it gets a value according to the parameter index according to the Z-Score. The parameter index determined by Altman Models is as follows:

The decrease in the company's gross profit means the company's prospects have decreased and indicated fraud.

3. Assets Quality Index (AQI)

Increasing the amount of deferred expenses is an indication of fraud because the company is trying to delay costs.

$$AQI=\frac{\left(1-\frac{Current\ Assets_t+Fixed\ Assets_t}{Total\ Assets}\right)}{\left(1-\frac{Current\ Assets_{t-1}+Fixed\ Assets_{t-1}}{Total\ Assets_{t-1}}\right)}$$

AQI ratio compares non-current assets other than fixed assets with the total assets of the company in one year (t) and the previous year (t-1).

4. Sales Growth Index (SGI)

The SGI ratio compares sales in one year (t) and the previous year (t-1).

$$SGI=\frac{Sales_{t-1}}{Sales\ _{t-1}}$$

A decrease in this ratio indicates a decrease in sales. This indicates fraud.

If LVGI> 1, then this shows the potential condition of the company for the occurrence of earnings overstatement to meet the needs of paying the high debt.

5. *Depreciation Index* (DEPI)

The DEPI ratio compares depreciation expense to fixed assets before depreciation in one year (t) and the previous year (t -1).

$$DEPI=\frac{\left(\frac{Depreciation_{t-1}}{Depreciation_{t-1}+Fixed\ Assets_{t-1}}\right)}{\left(\frac{Depreciation_t}{Depreciation_t+Fixed\ Assets_t}\right)}\textbf{tor}$$

Beneish Models ratio calculations each have a parameter index to determine whether the company is classified as a manipulator and a non-manipulator. The parameter index determined by Beneish Models is as follows:

6. *Index* (SGAI)

The SGAI ratio measures sales, general expenses, and administration to sales in one year (t) and the previous year (t -1).

$$SGAI=\frac{\left(\frac{SGAI_t}{Sales_t}\right)}{\left(\frac{SGAI_{t-1}}{Sales_{t-1}}\right)}$$

A decrease in the company's operating expenses when there is an increase in sales indicates an overstatement of earnings.

7. *Total Accrual to Total Assets* (TATA)

A decrease in the company's operating expenses when there is an increase in sales indicates an overstatement of earnings.

$$TATA = \frac{Operating\ Profit_t - Cashflow\ from\ Operating\ Activities_t}{Total\ Assets_t}$$

8. *Leverage Index* (LVGI)

Index of debt level is a ratio that compares the amount of debt to total assets in a year (t) and the previous year (t -1).

$$LVGI = \frac{\left(\frac{Total\ Liabilities_t}{Total\ Assets_t}\right)}{\left(\frac{Total\ Liabilities_{t-1}}{Total\ Assets_{t-1}}\right)}$$

Table 2: The Beneish Models Parameter Index

No	Index	Non-Manipulator	Manipulator
1	DSRI	≤1.030	≥1.460
2	GMI	≤1.041	≥1.190
3	AQI	≤1.040	≥1.250
4	SGI	≤1.134	≥1.610
5	DEPI	≤1.001	≥1.077
6	SGAI	≤1.001	≥1.041
7	TATA	≤0.018	≥0.031
8	LVGI	≤1.037	≥1.111
Total		≤2.22	≥2.22

Source: (Beneish, 1999)

3.3 Location and Research Object

The study was conducted on the property and real estate subsector companies listed on the Indonesia Stock Exchange (IDX) for the period 2014-2018.

3.4 Sampling Technique

The sample selection is done by using a non-probability purposive sampling technique with the first criteria, property, and real estate subsector companies listed on the Indonesia Stock Exchange (BEI) in a row during the 2014-2018 period. Second, Publish financial statements 5 years in a row during the period 2014-2018.

3.5 Data Collection Technique

Data collection techniques used in this study are archival data techniques in the database, namely secondary data collection in the form of financial statements.

3.6 Data Processing Techniques

The research data processing technique is first, determining the variables of the financial statements. Second, the data input process is entered into the table. Third, the calculation of the variables ratios of the Altman Models model and the Beneish Models Model. Data processing using Microsoft Excel programs.

4 RESULT AND DISCUSSION

4.1 Altman Models Ratio Calculation Result

Table 3: Altman Models Ratio Calculation Result

No	Company	Z-Score				
		2014	2015	2016	2017	2018
1	APLN	2.77	2.31	1.8	2.32	1.72
2	ASRI	1.63	1.49	1.57	2.05	2.35
3	BEST	7.2	5.34	5.55	5.76	6.62
4	BIPP	3.12	5.08	3.09	3.09	3.95
5	BKSL	2.98	2.48	3.2	3.55	3.2
6	COWL	1.26	1.1	1.37	0.62	-0.05
8	DART	7.64	-1.42	-2.33	-1.33	-2.18
9	DILD	-1.64	-0.58	-1.86	-1.72	-0.52
10	EMDE	-2.14	-2.41	-1.12	-1.24	-1.14
11	FMII	-3.05	2.5	-0.69	-2.78	-2.8
12	GPRA	-1.72	-2.24	-2.04	-1.87	-1.89
13	GWSA	-1.04	-0.67	-1.69	-2.76	-1.52
14	KIJA	-1.58	-1.84	-1.2	-2.44	-1.08
15	LPCK	-0.98	-0.6	-1.9	-0.6	-0.65
16	LPKR	-1.39	-1	-1.61	-1.4	-1.83
17	MDLN	-0.74	-0.69	-2.24	-2.04	-1.87
18	MTLA	-0.78	-2.17	-2.15	-1.25	-2.68
19	MTSM	-2.93	-2.82	-0.39	-2.16	-2.55
20	NIRO	-1.87	-1.45	-1.18	-1.64	-2.31
21	MORE	-2.38	-20.3	-2.44	-2.22	-1.88
22	PWON	-1.39	-0.22	-0.25	-1	-1.95
23	SMDM	-1.52	-1.89	-1.53	-2.3	-2.24
24	SMRA	-1.33	-0.91	0.75	-1.56	-2.19

Source: Data processed with *Microsoft Excel*.

4.2 Beneish Models M-Score Ratio Calculation Result

Table 4: Beneish Models M-Score Ratio Calculation Result

No	Company	Z-Score				
		2014	2015	2016	2017	2018
1	APLN	-2.15	-2.07	-1.78	-1.58	-1.86
2	ASRI	-1.65	-1.82	-1.53	-1.87	-1.48
3	BEST	-1.67	-1.28	7.27	-2.39	-2.99
4	BIPP	-1.08	-2.29	-1.89	-1.83	-2.47
5	BKSL	-1.57	-2.02	-0.81	-1.48	-1.86
6	COWL	-1.87	-2.06	-1.79	-1.33	-2.24
8	DART	-1.84	-1.78	-1.77	-1.93	-1.73
9	DILD	0,3361				
		11	-1.42	-2.33	-1.33	-2.18
10	EMDE	-1.64	-0.58	-1.86	-1.72	-0.52
11	FMII	-2.14	-2.41	-1.12	-1.24	-1.14
12	GPRA	-3.05	02.05	-0.69	-2.78	-2.8
13	GWSA	-1.72	-2.24	-2.04	-1.87	-1.89
14	KIJA	-1.04	-0.67	-1.69	-2.76	-1.52
15	LPCK	-1.58	-1.84	-1.2	-2.44	-1.08
16	LPKR	-0.98	-0.6	-1.9	-0.6	-0.65
17	MDLN	-1.39	-1	-1.61	-1.4	-1.83
18	MTLA					0,10208
		-0.74	-0.69	-2.24	-2.04	3
19	MTSM	-0.78	-2.17	-2.15	-1.25	-2.68
20	NIRO	-2.93	-2.82	-0.39	-2.16	-2.55
21	MORE	-1.87	-1.45	-1.18	-1.64	-2.31
22	PWON	-2.38	-2.03	-2.44	-2.22	-1.88
23	SMDM	-1.39	-0.22	-0.25	-1	-1.95
24	SMRA	-1.52	-1.89	-1.53	-2.3	-2.24

Source: Data processed with Microsoft Excel

4.3 Descriptive Statistic

Table 5: Descriptive Statistic

Variable	N	*Min*	*Max*	*Mean*	*Std. Deviation*
Z-Score	120	-0,05	31,88	5,6976	4,85823
M-Score	120	-3,05	7,64	-1,4711	1,44233

Source: Data proses by SPSS Statistics 20.

Based on the above table, it can be seen that the amount of data used in this study is 120 data each from the results of the M-Score and Altman Models 5 years in a row with a sample of 24 real estate and property sector companies listed on the IDX. The table shows that the known Altman Models as a bankruptcy prediction tool has an average value of 5.6976, a standard deviation value of 4.85823, a minimum value of -0.05 obtained by Cowell Development Company (COWL) in 2018, and a maximum value of 31.88 obtained by Indonesia Prima Property Company (OMRE) in 2016. M-Score as a cheating prediction tool has an average value of -1.44711, a standard deviation value of 1.44233, a minimum value of - 3.05 obtained by Fortune Mate Indonesia Company (FMII) in 2014, and a maximum value of 7.64 obtained by Duta Realty Company (DART) in 2014.

4.4 Normality Test

Table 6: Normality Test

Shapiro	*Statistic*	*D f*	*Sig.*
M-Score	.940	21	.214
Z-Score	.945	21	.276

Source: Data processed with SPSS Statistics 20

Based on the results of the normality test above, it is known that the value of degree of freedom is 21 if the value of degree of freedom <50 then the normality decision is taken using Shapiro. The Shapiro output shows significant value for the Altman Models of 0.214 and a significant value for the M- Score of 0.276, because the significant values of the two models> 0.05, it can be concluded that the calculated Altman Models and M-Score data are distributed normally.

4.5 Descriptive Analysis

A summary of the company's conditions each year from 2014 to 2018 using the Altman Models model is as follows:

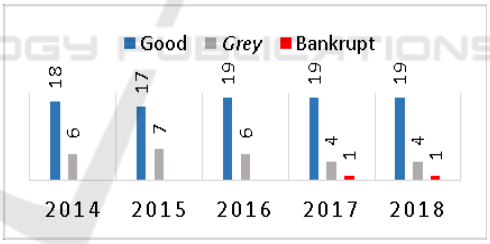

Figure 1: Company Conditions Using the Altman Models Model

Overall based on the Altman Models results, the property, and real estate sub-sector companies are in a healthy condition. A summary of the company's conditions each year from 2014 to 2018 using the Beneish Models M-Score model is as follows:

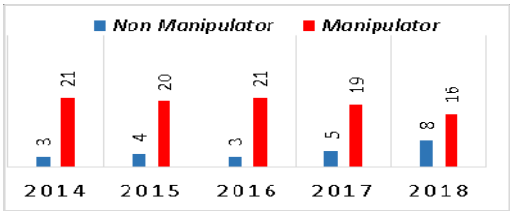

Figure 2: Company Conditions Using the Beneish Models Model

Overall based on the M-Score results, the property and real estate sub-sector companies in 2014-2018 were classified as manipulators.

The two tables above show that the majority of companies are in good health, but on the other hand, most companies are detected as manipulators every year. This shows that an analysis of the company's financial condition and the detection of simultaneous financial statement fraud is needed.

4.6.1 The Company Is Predicted to Go Bankrupt before Manipulated

Based on the results of table 3 and table 4 calculations using the Altman Models model and Beneish Models model, there are companies that are predicted to be in the bankruptcy zone before being classified as a manipulator. This states that the first hypothesis (H1) is supported. The company is as follows:

1. Fortune Mate Indonesia (FMII) Company

In 2014, the Altman Models of 2.25 indicated that the Fortune Mate Indonesia companies was in a bankrupt condition and the M-score of -5.05 showed that the company was not classified as a manipulator. 1 year to 2 years after the company is predicted to be bankrupt, namely in 2016 and 2017, the Altman Models of 7.74 and 13.44 shows that companies leaving the gray zone are in good health but the M- Score is 2.50 and -0.69 shows that the company is classified as a manipulator. In 2014 the overall M- Score results did not indicate that the company was classified as a manipulator, but the SGAI ratio value indicated the potential for fraud.

4.6 Data Analysis of Hypotheses

The company's 2014 financial report found that sales decreased by 14% while operations increased by 7%. Beneish Models stated that the value of the SGAI ratio ≥1,040 indicates the potential for fraud. In 2015 and 2016 the company left the gray zone but the M-Score results stated that the company was classified as a manipulator. This shows that the company is indicated to be healthy because based on the financial statements, the company experienced an increase in sales of up to 437% in 2015 and 68% in 2016. Beneish Models said an increase in sales with an SGI ratio of 61,610 indicates the potential for fraud. In 2015 and 2016 there was also an increase in the composition of the accruals of assets owned by the company. Beneish Models state an increase in accrual transactions in revenue recognition with a TATA ratio of ≥0.031 indicates the potential for fraud. In 2016 the value of the AQI ratio increased by 0.95 from the previous year, Beneish Models stated that an increase in the amount of non-current assets with an AQI ratio value ≥1,250 indicates the potential for fraud.

In 2017 and 2018 the results of the FMII company Altman Models are still in good health and the M-Score shows the company is not classified as a manipulator. Each of the Beneish Models ratios if examined shows that there is still a potential indicated ratio of fraud. The ratio is the DSRI ratio based on financial statements, the company has difficulty in collecting cash from debtors, and sales decreased by 9% in 2017. The AQI ratio shows the potential for fraud because of an increase in the amount of current assets that can provide benefits in the future.

The LGVI ratio value in 2017 also shows that the potential for fraud is due to an increase in the amount of corporate debt by 120%. In 2018 the company is in a healthy condition and only the LVGI ratio is indicated to be a possible manipulator due to fraud committed in the previous year. The financial statements show an increase in the amount of debt up to 221%. This shows that the analysis of each result of the M-Score ratio value is needed to make a decision.

2. Indonesia Prima Property (OMRE)

In 2014 the results of the Altman Models 1.51 showed that the Indonesian Prima Property companies was gray or prone to bankruptcy and the M-Score - 2.38 results showed that the company was not classified as a manipulator. One year after the company is predicted to be prone to bankruptcy, namely in 2015 the Altman Models of 15.01 shows the company coming out of the gray zone to be in a healthy condition but the M-Score value of -2.03 indicates that the company is classified as a manipulator. In 2014 the overall M-Score results did not indicate that the company was classified as a manipulator, but the SGAI ratio value indicated the potential for fraud.

The company's financial statements show that there was an increase in operating expenses on decrease sales. Beneish Models states an increase in operating expenses with a value of SGAI ratio ≥1,040 indicates the potential for fraud. In 2015 the company came out of the gray zone but the M-Score results stated that the company was classified as a manipulator. This shows that in 2015 the company was indicated to be healthy due to a decrease in asset quality with an AQI ratio of ≥1,250.

In 2016, 2017 and 2018, the company is in a healthy condition and is not classified as a manipulator, but if the M-Score ratio is analyzed one by one, the value of the SGAI ratio 3 years in a row will be potential for fraud. The financial report shows that there was an increase in operating expenses by 1%, 0.82%, and 0.78% in sales which actually continued to decrease. The value of the GMI ratio in 2017 also has the potential for fraud. A decrease in profitability of the company's gross profit by 34% in 2017 caused the value of the GMI ratio ≥1,190 to potential fraud. This shows that the analysis of each result of the M-Score ratio value is needed to make a decision.

The explanation above proves the existence of companies that are in the gray zone or go bankrupt before being classified as a manipulator. These results are in accordance with the bankruptcy or the condition of the company's financial difficulties can lead to fraud (Albrecht, Albrecht, Albrecht, & Zimbelman, 2012). This statement is in line with the Fraud Triangle theory which states that one of the causes of fraud is when under pressure and opportunity (Cressey, 1953). Abuse of authority by management is done to produce financial reports that are always good so investors remain interested in investing their capital (Jensen & Meckling, 1976).

This result is also in line with other research on companies that have been declared cheating by using the Altman Models model and Beneish Models model, that prior to fraud, the company was in a bankrupt situation (Kartikasari & Irianto, 2010) (Maccarthy, 2017) (Abbas, 2017).

4.6.2 The Company Is Predicted to Be Classified as a Manipulator before It Is in the Bankruptcy Zone

Based on the results of the Altman Models and Beneish Models Model calculations in table 3 and table 4, there are companies that are predicted to be classified as manipulators before being in the bankruptcy zone. This states that the second Hypotheses (H2) is supported. The company is as follows:

1. APLN Company

Table 3 shows that in 2014 a Altman Models of 2.977 stated that the company was in good health but an M-Score of -2.15 indicated the company was classified as a manipulator from 2015 to 2018, after being predicted to be classified as a manipulator, the company's Altman Models value indicates a bankrupt condition and is consistent with the potential for fraud. The potential ratio variables for fraud are as follows:

a. SGAI ratio value

In 2014 the sales increased by 7.5% but not in accordance with the increase in operating expenses and in 2018 it was known from the company's financial statements, there was a 28% decrease in sales resulting in an SGAI ratio ≥1,040 indicating a potential for fraud due to the decrease prospects.

b. TATA ratio value

In 2014, 2015, 2016, and 2017, it is known that the amount of cash generated from profits is low, namely 46%, 29%, 31%, and 36% of the operating profit obtained. This causes the value of the TATA ratio 00.031 so that it is indicated the potential for fraud.

c. DSRI Ratio Value

In 2018 there was an increase in the amount of receivables by 9.2% and a 28% decrease in sales which led to a DSRI value of 41,460 which was potential for fraud.

This explains that the fraud committed caused bankruptcy and it will be difficult to stop committing fraud because the company must continue to cover up the fraud committed with other new frauds. Other research states that this property issuer indeed carries various bad records related to the condition of his company.

2. BKSL Company

In 2014, the Altman Models was 2.98, which means the company was in good health, but the M-Score was - 1.57, indicating the company was classified as a manipulator. A year after it was predicted to be classified as a manipulator, the 2015 Altman Models indicates that the company is prone to bankruptcy and continues to have the potential for fraud. In2014 the company was in good health but there was a decrease in profitability of the company's gross profit by 45%, a decrease in the quality of fixed assets by 87%, and an increase in operating expenses by 29% in sales which actually decreased by 26%. This causes the value of the GMI ratio ≥1,190, the value of the AQI ratio ≥1,250, and SGAI ≥1,040 which indicates the potential for fraud.

In 2015, when the Altman Models showed that the company was prone to bankruptcy, according to information that the company had worsened due to the decrease in gross profit because of the large number of sales which fell after being caught in a bribery case. In 2016, 2017, 2018, even though the company left the bankrupt zone, the M-Score

indicates the company was classified as a manipulator. This shows that a company that looks fine is not necessarily free from all forms of fraud. Fraud detection analysis must be carried out before the possibility of bankruptcy in the following years.

3. DART Company

In 2014 the Altman Models was 3.89, indicating that the company was in good health but the M-Score of 7.64 indicated that the company was classified as a manipulator from 2015 to 2018 after being predicted to be classified as a manipulator, the company's Altman Models value indicates a bankrupt and prone to bankruptcy potential, except in 2016. The potential ratio variables for fraud are as follows:

a. DSRI ratio

In 2014, 2015 and 2016 from the company's financial statements known to increase receivables by 1,541%, 24%, and 23%. Beneish Models states if the value of accounts receivable that increases with a DSRI value of ≥1,040 are potential for fraud.

b. DEPI Ratio

In 2014, 2016, 2017, and 2018 there was a decrease in depreciation of assets which actually increased. Beneish Models stated that the delay in disclosure of depreciation with a DEPI value of 01,077 is potential for fraud.

c. SGAI ratio

From 2014 to 2018 the value of the SGAI ratio ≥1,040, which indicates the potential for fraud. Sales increased in 2014 but were not in line with the number of operational increases, and sales decreased in the following years but operational expenses that actually increased caused the company to be detected as the potential for fraud.

d. TATA Ratio

In 2014, 2015 and 2017, it is known that the amount of cash generated on earnings is low and this explains that the fraud committed caused bankruptcy. In 2015 the company was in a bankrupt condition after being classified as a manipulator with a very high M-score. In 2016 it was known that PT Indonesian Rating Agency had downgraded Duta Realty Company rating due to the weakening of financial conditions. This is consistent with the detection using the Altman Models model that in 2015 the company was in bankruptcy condition and in 2016 the company ranking was lowered.

The explanation above proves the existence of companies that are predicted to be classified as manipulators before being in the gray zone or going bankrupt. The results of this hypothesis analysis are in accordance with the statement other research which explains that in general bankruptcy experienced by large companies is due to the manipulation of financial statements (Irianto, 2003). This statement is in line with the Fraud Triangle theory which states that one of the causes of fraud is the opportunity (Cressey, 1953). The opportunity is owned by management as a party that is more flexible about the company's financial statements (Jensen & Meckling, 1976). The statement of other research the desire and ambition to achieve a company is often followed by fraud (Christy, Sugito, & Abdul, 2015). Companies always want to have financial reports that look good when the fraud can actually lead to bankruptcy in the future.

4.6.3 Companies That Are Classified as Manipulators Simultaneously Are Also Predicted to Be in the Bankruptcy Zone

Based on the results of the calculation of table 3 and table 4 using the Altman Models model and Beneish Models model, there are companies that are classified as manipulators simultaneously also in the bankruptcy code. This states that the third hypotheses (H3) is supported. The company is as follows:

1. ASRI Company

Table 3 shows that in a row from 2014 to 2018, the Altman Models value stated that the company was in a bankrupt condition and the M-Score was as large as indicating the company was classified as a manipulator. The potential ratio variables for fraud are as follows:

a. DSRI ratio

In 2014, 2015, and 2016 there was an increase in receivables by 77% in 2014, a decrease in sales by 2.5% in 2015, and an increase in receivables by 51% in 2016 and a decrease in sales resulting in a DSRI value ≥1,040 indicating potential for fraud.

b. DEPI Ratio

In 2018 there will be a depreciation decrease of 21%. Beneish Models stated that the delay in disclosure of depreciation with a DEPI value of 01,077 is potential for fraud.

c. SGAI ratio

In 2014 and 2018 the value of the SGAI ratio ≥1,040 indicated the potential for fraud. There was

an increase in sales, but operating expenses decreased so the company was suspected to be a manipulator as stated by Beneish Models.

d. TATA Ratio

In 2015 it was known that operating profit rose 75% but the amount of cash generated was not significant and caused the value of the TATA ratio ≥0.031 so that it was indicated as a potential for fraud.

This explains that there is a relationship between fraud and bankruptcy. This must be watched out because the value of the company that does not improve and running its operations through fraud can ultimately cause the company to go bankrupt.

2. Cowell Development (COWL) Company

Consequently from 2014 to 2017, the Altman Models value states that the company is in a bankrupt condition and M-Score is equal to indicate the company is classified as a manipulator, whereas in 2018 the company is not classified as a manipulator but is in a bankrupt condition. In 2014 from the value of DSRI, the company is predicted to overestimate the number of sales, the value of TATA shows the amount of cash generated from earnings is not appropriate, and the value of LVGI shows an increase in the amount of debt by 206%. The SGI ratio is also detected as the potential for fraud because sales rose sharply by 70% so it is feared that the company has the drive to continue to maintain and raise the sales target. In 2017 based on the very high DSRI value, namely an increase due to an increase in receivables by 77%, indicating companies are having difficulty collecting cash from the debtors. In 2018, the company is not classified as a manipulator but is already in the bankrupt zone, but the ratio still has SGAI value that has the potential for fraud. Cowell Development Company in 2018 is predicted to be in bankrupt condition with the lowest Altman Models value among all property and real estate sub-sector companies because it is known that in 2018 the company was declared to have suffered a very high loss of 162 Billion Rupiah.

3. DILD Company

Respectively from 2014 to 2018, the Altman Models value states that the company is in a bankrupt condition, and an M-Score value of indicates the company is classified as a manipulator. The potential ratio variables for fraud are as follows:

a. DSRI ratio

In 2015 and 2018 there was an increase in sales but accounts receivable increased by 51% in 2015 and 65% in 2016 which resulted in a DSRI value ≥1,040 indicating potential for fraudulent.

b. GMI ratio

In 2015 there was a decrease in the profitability of gross profit where there was an increase in sales by 16% but not significantly to the increase in gross profit. Beneish Models stated the value of the GMI ratio ≥1,190 potential for fraud.

c. SGAI ratio

In 2014, 2015 and 2016 the value of the SGAI ratio ≥1,040 indicated the potential for fraud. There has been an increase in sales for 3 years in a row, but it is not in accordance with the increase in operating expenses so the company is suspected to be a manipulator as stated by Beneish Models (Beneish, 1999).

d. TATA Ratio

From 2015 to 2017 it was found that the company experienced a deficit that showed an increase in accrual transactions in revenue recognition. TATA ratio value 00,031 so that it is indicated the potential for fraud.

In 2016 it was known that Indonesia Securities Rating downgraded Development Company in accordance with the Altman Models prediction that the company was right in bankruptcy since 2015. This shows that the company continued to commit fraud to run its operations even though the fraud did not make the company look good- fine. This condition is very dangerous to the company's value if there is no further effort to analyze and improve the company's prospects going forward.

The explanation above proves the existence of companies classified as manipulators is also predicted to be in the gray zone or go bankrupt. This result is in line with other research that companies that are predicted to go bankrupt are also detected to manipulate financial statements (Mavangere, 2015). This is in line with the theory of Fraud Triangle which states that one of the causes of fraud is when there is an opportunity when management wants to commit fraud and pressure when the company is in bad condition so that fraud continues (Cressey, 1953). Although the accuracy of the ratio of the Altman Models model and the ratio of the Beneish Models model is not 100%, it is better to detect it in order to avoid unwanted losses in the future.

Property business observer explained that the condition of the property subsector over the past 5 years was indeed not conducive because it was still in a phase of stagnation, one of the factors stemming from the wait and see actions of investors towards the political year and tax reporting. The use of the Altman Models model and the Beneish Models model together is very helpful to find out the actual financial condition of the company rather than just using the Altman Models model which shows the property and real estate companies are in a healthy condition but it turns out to be potential for fraud. The detection of the Beneish Models model still has the possibility of inaccuracy in classifying the company.

The explanation above proves the existence of companies classified as manipulators is also predicted to be in the gray zone or go bankrupt. This result is in line with other research that companies that are predicted to go bankrupt are also detected to manipulate financial statements (Mavangere, 2015).

Other research which states that one of the causes of fraud is when there is an opportunity when management wants to commit fraud and pressure when the company is in bad condition so that fraud continues (Cressey, 1953). Although the accuracy of the ratio of the Altman Models model and the ratio of the Beneish Models model is not 100%, it is better to detect it in order to avoid unwanted losses in the future.

5 CONCLUSION

The author can conclude the three supported hypotheses that there are companies that are predicted to be in the bankruptcy zone before being classified as a manipulator. This shows that the condition of the company's financial difficulties can cause companies to commit financial statements. There are companies that are predicted to be classified as manipulators in the bankruptcy zone. This shows that fraud will also cause the company to be in a vulnerable condition to go bankrupt or bankrupt. There are companies that are predicted to be classified as manipulators simultaneously and also predicted to be in the bankruptcy zone. This states that the company continues to commit fraud to carry out its operations even though the fraud does not make the company look okay. This also shows that the company's bankruptcy conditions are vulnerable to fraud.

Stakeholders will be better protected when the Altman Models model and the Beneish Models model are jointly used to see the company's condition.

REFERENCES

Abbas, A. (2017). Earnings Fraud and Financial. 117-134. Asia Pasific Fraud Journal.

ACFE. (2016). Report to Nations on Occupational Fraud and Abuse Global Study 2016.

Albrecht, W. S., Albrecht, C. O., Albrecht, C. C., & Zimbelman, M. F. (2012). Fraud Examination 4th Edition. Natorp Boulevard: South-Weastern, Chengage Learning.

Z-Score, E. I. (1968). Financial Ratios, Dscriminant. 589-609. Journal of Finance.

Z-Score, Peck, & Hartzell, J. (1995). Emerging Markets Corporate Bonds: A Scoring System. Wiley and Sons.

Beneish, M. D. (1999). The Detection of Earning Manipulation. Financial Analysis Journal.

Christy, I. M., Sugito, & Abdul, H. (2015). Penerapan Formula Beneish M-Score dan Analisis DIskriminan Linier untuk Klasifikasi Perusahaan Manipulator dan Non Manipulator. 287-293. Jurnal Gaussian.

Cressey, D. (1953). Other People's Money: a Study in The Social Psychology of embezzlment.

Deil, S. A. (2014, April 3). Retrieved from Liputan6.com: https://www.liputan6.com/bisnis/read/2031867/ enron-skandal-besar-perusahaan-energi-yang- cekik-investor.

Gumiwang, R. (2018). Kasus SNP Finance: Upaya Menutup Celah Curang Keuangan. Retrieved from tirto.id: www.tirto.id.

Irianto, G. (2003). Skandal Korporasi dan Akuntan.

Jensen, & Meckling. (1976). The Theory of The Firm: Manajerual Behaviour, Agency Cost, and Ownership Srucrute. 305-360. Journal of Financial and Economics.

Kartikasari, R. N., & Irianto, G. (2010). Penerapan Model Beneish (1999) dan Model Altman Models (2000) dalan Pendeteksian Kecurangan Laporan keuangan. Jurnal Akuntansi Multiparadigma.

Maccarthy, J. (2017). Using Altman Models Altman Models and Beneish M-Score Models to Detect Financial Fraud and Corporate Failure: A Case Study of Enron Corporation. 159-166. International Journal of Finance and Accounting 2017.

Mavangere, K. (2015). Predicting corporate bankruptcy and earnings manipulation using the Altman Models Altman Models and Beneish M score. International Journal of Management Sciences and Business Research.

Pertiwi, H. A. (2015, October 20). Perusahaan dengan Skandal Terbesar di Dunia. Retrieved from www.economy.okezone.com.

Syakur, A. S. (2015). INTERMEDIATE ACCOUNTING. Jakarta: AV Publisher.