Financial Statement Fraud Detection with Beneish M-Score Analysis on Soe Companies in the Mineral and Coal Industry Sector Listed on Idx

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ABSTRACT: Indonesia as a country that has a bad corruption rating certainly really needs to have an overview of various frauds. Therefore, it is necessary to study fraud in Indonesia which is expected to provide a complete picture of fraud in Indonesia. This study aims to determine the detection of financial statement fraud with Beneish M-Score analysis in state-owned companies in the Mineral and Coal Industry sector that are listed on the IDX in 2018-2020 which are classified as manipulators, gray companies and non-manipulators. The data collection method is documentation with the number of samples being 3 BUMN companies in the Mineral and Coal Industry sector that are listed on the IDX in 2018-2020. The data analysis used is the Beneish Ratio Index by using five calculated Days Sales in Receivable Index (DSRI) indexes, Gross Margin Index (GMI), Asset Quality Index (AQI), Sales Growth Index (SGI), and Total Accrual To Total Assets Index (TATA). The results of the study revealed that state-owned companies in the Mineral and Coal Industry sector classified as manipulators in 2018 were not detected, 2019 1 company, 2020 was not detected. The percentage of manipulators is 11%. State-owned companies in the Mineral and Coal Industry sector classified as gray companies in 2018 1 company, 2019 not detected, 2020 not detected. The percentage of gray company is 11%. State-owned companies in the Mineral and Coal Industry sector classified as non-manipulators in 2018 2 companies, 2019 2 companies, 2020 3 companies. The percentage of gray company is 78%.

Keywords: beneish m-score, financial statement fraud, manipulator, gray company, non-manipulator

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INTRODUCTION

The Indonesian economy has entered the era of globalization where every company experiences development from time to time. The success of a company in running its business can be seen from the company's performance, which can be seen from its financial statements. Financial statements are an important tool to obtain information or a description of a company in order to show the financial condition that has been achieved by the company concerned in a certain period.

According to (Tuanakotta, 2013) fraud is a deliberate act by one or more members of management, or managers, or employees, or third parties, through fraud to obtain illegal or unlawful profits. Indonesia as a country that has a bad corruption rating certainly really needs to have an overview of various frauds.

Therefore, it is necessary to detect fraud/manipulation of financial statements. Messod Daniel Beneish in his research entitled "The Detection of Earning Manipulation" in 1999 managed to find a way to identify falsified financial statements. Beneish conducted a study of companies that did falsify their financial statements, then compared them with companies listed on Compustat in the period 1982-1992. The results of this study, Beneish found the characteristics of manipulated financial statements, such as an unreasonable increase in receivables, a decrease in gross profit and assets, an increase in sales growth, and an increase in accruals. (Apriani & Nuzula, 2019)

Beneish M-Score is measured using 5 ratios and has been modified by several researchers (Mavengere 2015; Paolone and Magazzino 2014). Only 5 ratio model scores produce significant results. In previous research, Roxas (2011) confirmed that the score model, with 5 ratios, could identify earnings manipulation more accurately than the eight ratios (Abbas, 2017) in (Stephanus, 2018). This detection tool is the Beneish M-Score using five variables Days Sales in Receivable Index (DSRI), Gross Margin Index (GMI), Asset Quality Index (AQI), Sales Growth Index (SGI), and Total Accrual To Total Assets Index (SYSTEM)

The results of the Beneish ratio will collect companies based on their status, namely as manipulators or, non-manipulators. The level of accuracy of the Beneish ratio in identifying manipulator companies reaches 71% (Beneish, 1999). (Apriani & Nuzula, 2019)

The survey results from ACFE 2019 showed that of 239 respondents considered that the government was considered the most disadvantaged organization due to fraud. This result is consistent with the findings of the 2016 Indonesia Fraud Survey. As many as 48.5% of respondents stated that the institution that was most disadvantaged by fraud was the government. This is possible because most of the fraud cases revealed by the media in Indonesia are cases of fraud in the government. Furthermore, respondents considered that the institutions most disadvantaged by fraud were state-owned enterprises (BUMN) as much as 31.8%, followed by private companies as much as 15.1%, non-profit organizations as much as 2.9, and the last one was others at 1.7% (Association of Certified Fraud Examiners). (ACFE), 2019).

THEORETICAL BASIS

Fraud

Fraud is an illegal act in the form of financial fraud and fraud committed for personal or group gain by means of financial transaction manipulation; manipulating financial statements; misappropriation/theft of assets both individually and in mutual cooperation; and theft of individual or corporate identity or information. (Sofianti, 2019, p. 35).

Beneish M-Score Model

Beneish M-Score is a method to help uncover companies that are likely to commit fraud on revenues recorded in financial reports (Beneish, Fraud Detection and Expected Return, 2012)

Beneish M-Score helps uncover companies that are likely to commit fraud on revenues recorded in the financial statements. The Beneish M-Score consists of several variables, namely Days Sales in Receivable Index (DSRI), Gross Margin Index (GMI), Asset Quality Index (AQI), Sales Growth Index (SGI), and Total Accrual To Total Assets Index (TATA).
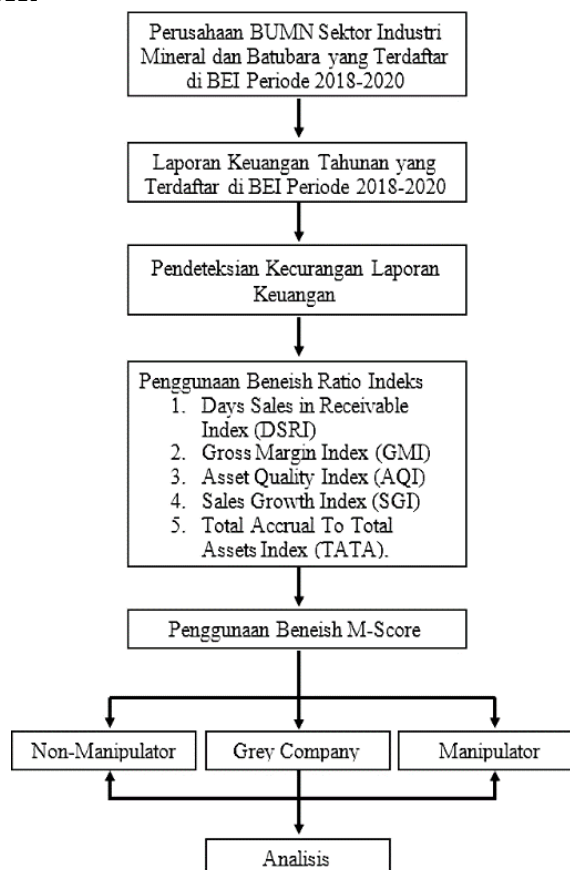
Research Framework

Figure 1. Research Framework

Source: Processed Data, 2021

METHODOLOGY

The object of research in this paper is the detection of financial state fraud using the Beneish M-Score model in the financial statements of state-owned companies in the Mineral and Coal Industry sector that are listed on the IDX in 2018-2020. The population used in this study is all financial statements of state-owned companies in the mineral and coal industry sector listed on the Indonesia Stock Exchange (IDX) which publish their financial statements during the 2018-2020 period. Based on the specified criteria, the samples used in this study were 3 state-owned companies in the Mineral and Coal Industry sector registered with BEN with complete financial report data for the 2018-2020 period. The type of data used in this research is quantitative data with descriptive analysis method. Source of data in this study is secondary data. In this study, the researcher used the Beneish M-Score with the index ratio analysis technique.

a) Calculating the company's Beneish M-Score according to the formula for each variable.

   1. *Days Sales Receivable Index* (DSRI)

$$\textbf{DSRI} = \frac{\textbf{Piutang Usaha}_{(t)}/\textbf{Penjualan}_{(t)}}{\textbf{Piutang Usaha}_{(t-1)}/\textbf{Penjualan}_{(t-1)}}$$

DSRI: Day's Sales in Receivable Index. according to(Kartikasari & Irianto, 2010) in (Stephanus, 2018), this ratio compares trade receivables to sales generated by the company in one year (t) and the previous year (t-1). The large increase in DSRI was the result of changes in credit policies to increase sales in the face of existing competition. However, an imbalance in the increase in receivables relative to sales may indicate a surge in revenue. Thus, the increase which tends to be large in DSRI is related to the possibility of recording sales and revenues that are too large.

   2. *Gross Margin Index*(GMI)

$$\textbf{GMI} = \frac{\textbf{Laba Kotor}_{(t-1)}/\textbf{Penjualan}_{(t-1)}}{\textbf{Laba Kotor}_{(t)}/\textbf{Penjualan}_{(t)}}$$

GMI: Index of Gross Margin (Gross Margin Index). according to(Kartikasari & Irianto, 2010) in (Stephanus, 2018), Index of gross profit is a ratio that measures the level of profitability of the company, this ratio represents the company's prospects in the future. Beneish (1999) states that if the gross margin worsens, it will have a negative impact on the company's prospects. So, if the company has poor prospects then there will be more manipulation.

3. *Asset Quality Index* (AQI)

$$AQI = \frac{1 - \frac{\text{Aktiva lancar}_{(t)} + \text{Aktiva Tetap}_{(t)}}{\text{Total Aktiva}_{(t)}}}{1 - \frac{\text{Aktiva lancar}_{(t-1)} + \text{Aktiva Tetap}_{(t-1)}}{\text{Total Aktiva}_{(t-1)}}}$$

AQI: Asset Quality Index. According to Kartika and Irianto (2010) in(Stephanus, 2018), AQI shows the quality of the company's non-current assets

that are likely to provide benefits to the company in the future. Beneish (1999) states that the higher the ratio, it is believed that the company will increase deferred costs/increase intangible assets and manipulate income.

4. *Sales Growth Index*(SGI)

$$SGI = \frac{\text{Penjualan}_{(t)}}{\text{Piutang Usaha}_{(t-1)}}$$

SGI: Index of Sales Growth (Sales Growth Index). According to Kartika and Irianto (2010) in(Stephanus, 2018), If SGI > 1, then this indicates an increase in sales, while a decrease in this ratio indicates a decrease in sales.

5. *Total Accruals to Total Assets*(SYSTEM)

$$TATA = \frac{\text{Laba Usaha}_{(t)} - \text{Arus Kas darI Aktivitas Operasi}_{(t)}}{\text{Total Aktiva}_{(t)}}$$

TATA: Index of Total Accruals to Total Assets (Total Accruals to Total Assets). According to Kartika and Irianto (2010) in(Stephanus, 2018), high total accruals indicate the high amount of accrued earnings owned by the company. If accruals are positive there is a higher probability of earnings manipulation.

 b) Comparing Index Calculate by using the Index parameter.

1. *Days Sales In Receivable Index* (DSRI)

Table 1. Parameter Index Days Sales in Receivable Index (DSRI)

No	Index	Information
1	1,031	Non Manipulator
2	1.031 < index < 1.465	Gray Company
3	1,465	Manipulator

2. *Gross Margin Index* (GMI)

Table 2. Gross Margin Index (GMI) Parameter Index

No	Index	Information
1	1.014	Non Manipulator
2	1.014 < index < 1.193	Gray Company
3	1.193	Manipulator

1. *Asset Quality Index* (AQI)

Table 3. Asset Quality Index (AQI) Parameter Index

No	Index	Information
1	1.039	Non Manipulator
2	1.039 < index < 1.254	Gray Company
3	1.193	Manipulator

2. *Sales Growth Index* (SGI)

Table 4. Sales Growth Index (SGI) Parameter Index

No	Index	Information
1	1.134	Non Manipulator
2	1.134 < index < 1.607	Gray Company
3	1,607	Manipulator

3. *Total Accruals to Total Assets* (SYSTEM)

Table 5. Parameter Index of Total Accruals to Total Assets (TATA)

No	Index	Information
1	0.018	Non Manipulator
2	0.018 < index < 0.031	Gray Company
3	0.031	Manipulator

Table 6. Ratio Parameter Index

No	Ratio	Parameter Index	Information
1	DSRI	>1	Increase in Accounts Receivable
2	GMI	>1	Decrease in Gross Profit
3	AQI	>1	Decreasing Asset Quality
4	SGI	>1	Sales Increase
5	DEPI	>1	Decreasing Depreciation
6	SGAI	>1	Increased Operating Expenses
7	LVGI	<1	Increase in Debt
8	SYSTEM	Positive Value	Increase in Accrual Transactions in Revenue recognition

Index numbers of companies that are in the manipulator index number and non-manipulator index numbers and companies classified asgray company.

    c) Determine which companies are classified as manipulators or non-manipulators with the following criteria:
1. Companies that have 3 arithmetic indexes that match the parameter index that declares the manipulator, are classified as manipulators.
2. Companies that have 3 arithmetic indexes that match the parameter index that declares non-manipulators are classified as non-manipulators.
3. Companies that have 3 arithmetic indexes that match the parameter index which states a gray company, and a arithmetic index that does not meet the 2 criteria for classifying manipulators and non-manipulators can be classified as gray companies
    d) Calculate the percentage of companies classified as manipulators, non-manipulators or gray companies.
    e) Graph the growth of fraudulent financial statements for 3 years

RESULTS

This research is a quantitative descriptive study and uses secondary data obtained from the IDX official website (www.idxchannel.com). The method used is purposive sampling by using the criteria determined by the researcher. From the criteria that have been determined, the researchers obtained a sample of 3company BUMN in the Mineral and Coal Industry sector Listed on the IDX in 2018-2020.

Research result

Based on the results of calculations using the Beneish M-Score model that have been carried out previously, the following table summarizes the results of the study:

Table 7. Calculation Summary Results

No	Kode Emiten	DSRI	GMI	AQI	SGI	TATA	Hasil
	Tahun 2018						
1	TINS	1,117	1,093	1,002	1,195	0,204	0,922
		G	G	N	G	M	G
2	PTBA	0,479	0,652	0,961	1,087	-0,066	0,623
		N	N	N	N	N	N
3	ANTM	0,155	0,943	1,117	1,995	-0,001	0,842
		N	N	G	M	N	N
	Tahun 2019						
No	Kode Emiten	DSRI	GMI	AQI	SGI	TATA	Hasil
1	TINS	0,468	2,573	0,961	1,752	0,158	1,183
		N	M	N	M	M	M
2	PTBA	0,951	0,917	0,960	1,029	0,028	0,777
		N	N	N	N	G	N
3	ANTM	0,917	1,013	1,022	1,296	-0,022	0,845
		N	N	N	G	N	N
	Tahun 2020						
No	Kode Emiten	DSRI	GMI	AQI	SGI	TATA	Hasil
1	TINS	0,155	0,799	0,881	0,788	-0,295	0,466
		N	N	N	N	N	N
2	PTBA	0,917	0,799	0,929	0,795	-0,041	0,680
		N	N	N	N	N	N
3	ANTM	1,603	0,831	0,983	0,837	-0,006	0,850
		M	N	N	N	N	N

Source: Processed Data, 2021

Based on the results of table 4.23 above, the TINS company in 2018 was detected as a gray company. Continued in 2019 TINS detected manipulators. It is proven by the GMI ratio index which means there is an unnatural increase in the company's profitability, detected by the SGI index which means there is an increase in the company's sales in the related year. Furthermore, it is detected by the TATA ratio index which shows the high amount of unreasonable profits in the company in the related year. But in 2020 TINS succeeded in suppressing fraud by detecting non-manipulators, this proves that the company's management is working well in formulating anti-fraud strategies. PTBA and ANTM companies are considered good in suppressing fraud.

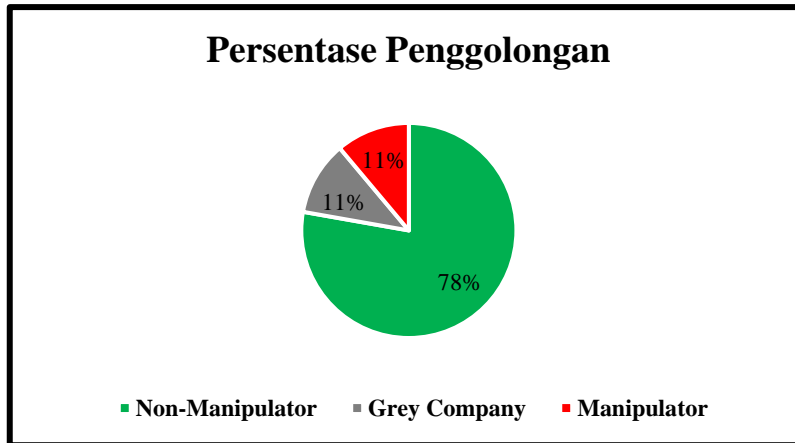**Percentage of Manipulator Gray Company Non-Manipulator**
The calculation of the percentage of manipulators, gray companies, and non-manipulators will be presented in the following table:

Table 8. Percentage Calculation Results

Tahun	Non-Manipulator		Grey Company		Manipulator		Total Sampel	Rata-Rata Presentase		
								Non-Manipulator	Grey Company	Manipulator
2018	2	67%	1	33%	0	0%	3			
2019	2	67%	0	0%	1	33%	3	78%	11%	11%
2020	3	100%	0	0%	0	0%	3			

Source: Processed Data, 2021

Source: Processed Data, 2021

Graph 1. Percentage of Manipulators, Gray Companies, and Non-Manipulators

Based on the graph above describes the percentage of classification State-owned companies in the Mineral and Coal Industry sector listed on the Indonesia Stock Exchange in 2018-2020in the manipulator, gray company, and non-manipulator category within a period of 3 (three) years, namely in 2018 to 2020. The companies classified as manipulators are 11%, classified as gray companies are 11%, and companies classified as non-manipulators are 78%.

CONCLUSIONS AND RECOMMENDATIONS

Detection of financial statement fraud with Beneish M-Score analysis on state-owned companies in the Mineral and Coal Industry sector listed on the Indonesia Stock Exchange in 2018-2020 can be submitted as follows:

1. Detection of financial statement fraud with the Beneish M-score analysis shows that in 2018 there were no companies classified as manipulators, in 2019 there was 1 company classified as manipulators, in 2020 there were no companies classified as manipulators. The percentage of companies classified as manipulators is 11%.

2. Detection of financial statement fraud with the Beneish M-score analysis shows that in 2018 there was 1 company classified as a gray company, in 2019 there was no company classified as a gray company, in 2020 there was no company classified as a gray company. The percentage of companies that are classified as gray companies is 11%.

3. Detection of financial statement fraud with Beneish M-score analysis shows that in 2018 there were 2 companies classified as non-manipulator, in 2019 there are 2 companies belonging tonon-manipulator, in 2020 all companies are classified as non-manipulators. The percentage of companies that are classified as gray companies is 78%.

SUGGESTION

Based on the conclusions that have been submitted, the advice given to the company is that the company should not commit fraud in the presentation of financial statements, because it will harm users of financial statements and damage the good name of the company. Investors and creditors are expected to be able to do a good analysis of the financial statements so as not to suffer losses due to manipulation of the financial statements.

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