

# Application of Beneish M-Score to Detect Fraudulent Financial Statements in State-Owned Company in Indonesia

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## ABSTRACT

**Introduction/Main Objectives:** This study aims to determine which State-Owned Company is included in the manipulator, non-manipulator, and gray company groups. **Background Problems:** According to a study conducted in 2016 by the Association of Certified Fraud Examiners, the majority Fraud cases involved 81.2% of government agencies, 8.1% of State-Owned Enterprises, and 2.3% of private companies. The businesses designated by of State-Owned Company caused the most losses to the industrial sector because of fraud at 58.8%. **Research Methods:** This research uses a quantitative descriptive method. The objects in this study are State-Owned Company companies in Indonesia in 2018-2021. The research sample used a purposive sampling technique. The writer performed data using seven types of financial ratios in contained the Beneish M-score method. **Finding/Results:** The results showed that in 2018 there was 1 company that included in the manipulator group, 22 companies were included in the non-manipulator group, and it included no company was in the gray company group in 2018. Then, in 2019, there were 3 companies that were included in the manipulator group, 17 companies were included in the non-manipulator group, and 3 companies were included in the gray company group. In 2020, there were 5 companies included in the manipulator, 16 non-manipulator companies, 2 companies included in the gray company group. And in the last year, namely 2021, there will be 1 company that is included in the manipulator group, 22 non-manipulator companies, and no company that is included in the gray company group in 2021.

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## 1. Introduction

Fraud is an act carried out in a planned manner by another person by hiding, omitting, and changing visible facts so that they can influence and change decisions, intending to benefit the perpetrator of the fraud. Fraud is not only a problem in high-income countries, but less developed countries, such as, Indonesia experience many fraud cases. Study findings by the ACFE (Association of Certified Fraud Examiners) increasingly support this incident. Fraud occurs when insiders or outsiders commit illegal acts with the aim of deceiving other parties (ACFE, 2016). Studies conducted in various parts of the world show that an average of 5% of their annual turnover becomes victims of fraud every year. The ACFE estimates fraud losses at \$6.3 billion in 2016, with average case losses exceeding \$2.7 million.

The cases of fraudulent financial statements happened in December 2001, known as the Enron case in the United States. Enron is an energy commodity company in the United States whose case involving public accountants in financial reporting fraud that had a significant impact on financial markets around the world. This is done by practicing "window dressing" and hiding debts using "off-balance sheet" techniques (Soltani, 2014).

Fraudulent financial statements are attempts to deceive users of financial statements by hiding material information or providing false information which is used to deceive users of financial statements. Deliberately committing fraudulent acts by management responsible for preparing financial reports can cause financial reports to contain significant inaccuracies (Annisya et al, 2016). According to a study conducted in 2016 by the Association of Certified Fraud Examiners, the majority Fraud cases involved 81.2% of government agencies, 8.1% of State-Owned Enterprises, and 2.3% of private companies, the businesses designated by STATE-OWNED COMPANY caused the most losses to the industrial sector due to fraud at 58.8% (ACFE, 2016). Ministry of State-Owned Company supervises 115 state-owned companies, 96 unregistered businesses and 20 State-Owned Company are listed on the Indonesian Stock Exchange. State-Owned Company are the result of capital injections from the government and investments from stakeholders, both the government and stakeholders who hope to gain profits from their investments. Manipulating financial reports or "window dressing" is commonplace in State-Owned Enterprises, according to Thoir (2020). From what is obtained from the company, it shows high profits but actually does not have enough funds from what is reported in the company's financial statements.

Beneish M-Score, was introduced by Messod D. Beneish, is an analytical tool that is useful for detecting fraud that occurs, especially in financial reports in cases of fraud. Currently, there are analytical tools that are effective in detecting financial statements in companies and are skilled at distinguishing between financial statements that manipulate and financial statements that do not

manipulate. The mathematical gap between public companies that falsify reports and companies that do not falsify their reports was revealed by Messod D. Beneish in the note "The Detection of Earnings Manipulation" (Financial Analysts Journal, Sept-Oct 1999). Beneish used COMPUSTAT data for all companies listed between 1989 and 1992 to analyze their financial statements. In his article, Beneish explains that dramatic increases in receivables, worsening gross margins, declining sales growth assets, and increasing accruals are symptoms of manipulating financial statements. Messod D. Beneish created the Beneish M-Score which is calculated by utilizing information from the current year (t) with the previous year (t-1). Beneish uses financial report ratios in his study to explain the existence of activities to manipulate financial reports including: Day's Sales in Receivables Index (DSRI), Gross Margin Index (GMI), Asset Quality Index (AQI), Sales Growth Index (SGI), Depreciation Index (DEPI), Sales General and Administrative Expenses Index (SGAI), Leverage Index (LVGI), and Total Accrual Index (TATA). This technique helps users divide the companies being investigated into 3 (three) groups, namely manipulators, non-manipulators, gray companies which show signs of manipulation but have little actual financial impact (Mantone, 2013 in Latifatussolikah & Pertiwi, 2020: 164).

## **2. Literature Review**

According to the Indonesian Accountants Association (2015:2). Financial reports are a structured presentation of the financial position and financial performance of an entity. The purpose of financial reports is to provide information about the financial position, financial performance and cash flow of an entity that is useful to most of its users.

According to the Association of Certified Fraud Examiners (ACFE), fraud is defined as an act of fraud or mistake made by a person or entity who knows that the mistake can result in some bad benefit to the individual or entity or other party. According to the ACFE, fraud is anything that can be cleverly used to gain advantage by covering up the truth, deception, cunning or deception, and other dishonest means.

Fraudulent financial reporting or fraudulent financial reporting included in the category of fraudulent statements. The definition of financial statement fraud according to the ACFE (2020) is an action carried out by an employee intentionally to cause misstatement or omission of material information in the preparing an organization's financial reports. Financial statement fraud can be committed by presenting values higher than they should be (overstatements) or presenting values lower than they should be (understatements). Examples of misstatements that are commonly made are overstating the amount of assets, sales, profits, and also underestimating the amount of debt, costs and losses (Noble, 2019).

ACFE (Association of Certified Fraud Examiners) divides fraud into three types or typologies based on actions, such as:

1. Asset Misappropriation. This type includes misuse or theft of company or other party assets. This is the easiest form of fraud to detect because it is tangible or can be calculated/measured (defined value).
2. Fraudulent Statements includes actions taken by officials or executives of a company or government agency to cover up the true financial condition by carrying out financial engineering in the presentation of financial reports to gain profit.
3. Corruption. This action often occurs in developing countries where law enforcement is weak and there is still a lack of awareness of good governance so that the integrity factor is still questionable. This type of fraud often cannot be detected because the parties working together enjoy the benefits (symbiotic mutualism). This includes abuse of authority/conflict of interest, bribery, illegal/illegal receipts, and economic extortion.

### 3. Method, Data, and Analysis

#### 3.1. Types of research

This type of research is quantitative descriptive research. According to Arikunto (2019), descriptive research is research intended to investigate a condition, situation or other event, then the results will be presented in the form of a research report.

#### 3.2. Population and Sample

According to Margono, population is the entire research object consisting of humans, objects, animals, plants, symptoms, test scores, or events as data sources that have certain characteristics in a study. In this research, the population used is state-owned companies with a total of 48 companies, for the period 2018 to 2021. The sample is part of the selected population and represents that population. According to Sugiyono (2019:146) the sample is part of the number and characteristics of the population. In this research, the sample taken was *purposive sampling*, a technique for determining the sample using certain considerations or criteria. The criteria used are as follows:

1. the total number of state-owned companies in Indonesia.
2. State-owned companies in Indonesia that publish financial reports for the 2018-2021 period.
3. State-owned companies in Indonesia that publish detailed financial reports.

#### 3.3. Data collection technique

The data collection technique in this research was obtained using the documentation method, namely collecting data by collecting secondary data from financial reports on state-owned companies on the official website of the Indonesian Stock Exchange ([www.idx.co.id](http://www.idx.co.id)) and the *websites* of the companies concerned that will be used. became the sample in this research. Literary research or library research is carried out as an effort to obtain theoretical data as a comparison with the research data obtained.

### 3.4. Operational Variables

The variable used in this research is the *Beneish M-Score* to help reveal companies that may have committed fraudulent acts recorded in financial reports. *Beneish M-Score* consists of several variables, namely as follows:

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

This variable is the ratio of daily sales in receivables in the first year where the revenue manipulation was found in year (t) with the corresponding size in year (t-1). DSRI measures whether receivables and income are in balance between two consecutive years. The formula for DSRI is as follows:

$$DSRI = \frac{Net\ Receivables(t) / Sales(t)}{Net\ Receivables(t-1) / Sales(t-1)}$$

2. *Gross Margin Index* (GMI)

GMI is the ratio of gross profit margin in the previous year (t-1) to profit margin in the current year (t). If GMI is greater than 1, it will indicate a negative signal for the company's prospects (Lev and Thiagarajan, 1993). The formula for GMI is as follows:

$$GMI = \frac{Sales(t-1) - Cost\ of\ Good\ Sold(t-1) / Sales(t-1)}{Sales(t) - Cost\ of\ Good\ Sold(t) / Sales(t)}$$

3. *Asset Quality Index* (AQI)

AQI is a ratio that compares the company's current assets other than fixed assets with the company's total assets in one year (t) and the previous year (t-1). The formula for AQI is as follows:

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

4. *Sales Growth Index* (SGI)

SGI is a variable that measures the company's sales growth rate. A result greater than 1 indicates that sales will increase from the previous year. The formula from SGI is as follows:

$$SGI = \frac{Sales(t)}{Sales(t-1)}$$

5. *Depreciation Index* (DEPI)

DEPI is the ratio of the depreciation rate in year t-1 to the corresponding rate in year t. The depreciation rate in a given year is equal to depreciation/ (depreciation + net PPE). The formula for DEPI is as follows:

$$DEPI = \frac{\frac{Depreciation(t-1)}{Depreciation(t-1) - Fixed\ Assets(t-1)}}{\frac{Depreciation(t)}{Depreciation(t) - Fixed\ Assets(t)}}$$

6. *Sales and General Administration Expenses Index* (SGAI)

SGAI is a ratio that compares selling, general and administrative expenses to sales in one year (t) and the previous year (t-1). The formula for SGAI is as follows:

$$SGAI = \frac{\frac{SGAI(t)}{Sales(t)}}{\frac{SGAI(t-1)}{Sales(t-1)}}$$

### 7. Leverage Index (LVGI)

LVGI is a ratio that compares total debt to total assets in a year (t) and the previous year (t-1). This ratio aims to find out how the company's debt level compares to its total assets from year to year.

The formula for LVGI is as follows:

$$LVGI = \frac{\frac{\text{Total Liabilities}(t)}{\text{Total Assets}(t)}}{\frac{\text{Total Liabilities}(t-1)}{\text{Total Assets}(t-1)}}$$

### 3.5. Data analysis technique

Following are the steps taken by researchers in carrying out data analysis to determine which companies are classified as manipulators, non-manipulators, and gray companies, as follows:

1. Calculating the value of the ratio index contained in the Beneish M-Score based on the data presented in the financial reports of state-owned companies in Indonesia which are the samples in this research.
2. Making a comparison between the ratio index value and the parameter index value, which is as follows:

**Table 1** Ratio Parameter *Index Values*

No	Ratio	Index Parameters		
		Non-Manipulator	Manipulator	Gray Company
1.	DSRI	≤1,031	≥1,465	1.031 < index < 1.465
2.	GMI	≤1,014	≥1,193	1.014 < index < 1.193
3.	AQI	≤1,039	≥1,254	1,039 < index < 1.254
4.	SGI	≤1,134	≥1,607	1.134 < index < 1.607
5.	DEPI	≤1,001	≥1,077	1.001 < index < 1.077
6.	SGAI	≤1,054	≥1,041	1.054 < index < 1.041
7.	LVGI	≤1,037	≥1,111	1.037 < index < 1.111

Source: Beneish, 1999

3. Grouping companies into manipulators, non-manipulators, and gray companies. This classification is determined based on the following conditions: (Hadi et al., 2020).
  - a. Manipulator class, if:
    - 1) The company has ≥3 (three) types of ratio indexes where the parameter index indicates the manipulator.
    - 2) The company has 3 (three) types of index ratios where the parameter index states manipulator, 2 (two) types of indexes where the parameter index states gray company, and 3 (three) types of ratio index where the parameter index states non-manipulator.
    - 3) The company has 4 (four) types of ratio indexes where the parameter index indicates a manipulator and 4 (four) types of ratio indexes where the parameter index indicates a non-manipulator.
    - 4) The company has 4 (four) types of ratio indexes where the parameter index states the manipulator and 4 (four) types of ratio indexes where the parameter index states the gray company.

- b. Non-manipulator group if the company has  $\geq 3$  (three) types of ratio indexes where the parameter index states non-manipulator.
- c. Gray company category, if:
- 1) The company has  $\geq 3$  (three) types of ratio indexes where the parameter index states that it is a gray company and the ratio index does not meet the criteria for being in the manipulator and non-manipulator groups.
  - 2) The company has 3 (three) types of ratio indexes where the parameter index is gray company, 2 (two) types of ratio indexes where the parameter index indicates manipulator, and 3 (three) types of ratio index where the parameter index indicates non-manipulator.
  - 3) The company has 4 (four) types of index ratios where the parameter index states gray company and 4 (four) types of ratio indexes where the parameter index states non-manipulator.

#### 4. Result and Discussion

##### 4.1. Result

The research object focuses on state-owned companies from the period 2018 to 2021. There are 23 companies as samples in this research.

**Table 2** DSRI Ratio Calculation Results from 2018 to 2021

No	Company name	2018	2019	2020	2021	Average value
1.	PT. Garuda Indonesia (Persero) Tbk	1,599	0.315	1,538	0.895	1,087
2.	Republic of Indonesia Money Printing Corporation	0.847	0.115	1,736	1,752	1,113
3.	PT. Telekomunikasi Indonesia (Persero), Tbk.	1,214	1,022	0.949	0.718	0.976
4.	PT. Pertamina (Persero)	0.971	1,421	0.996	0.902	1,073
5.	PT. State Electricity Company (Persero)	1,765	1,202	0.203	0.987	1,039
6.	Perum Perhutani	0.674	1,023	0.828	0.936	0.865
7.	PT. Utama Indonesian Reinsurance (Persero)	1,956	1,062	1,093	0.126	1,059
8.	PT. Bank Mandiri (Persero) Tbk	0.561	1,006	0.959	1,749	1,069
9.	PT. Bank Negara Indonesia (Persero) Tbk	0.833	0.933	0.092	2,129	0.997
10.	PT. Bank Rakyat Indonesia (Persero) Tbk	1,029	0.912	1,751	0.292	0.996
11.	PT. Adhi Karya (Persero) Tbk	0.974	1,136	0.088	2,179	1,094
12.	PT. Semen Baturaja (Persero) Tbk	0.933	0.987	1,101	1,019	1,010
13.	PT. Hutama Karya (Persero)	0.479	2,131	0.402	0.979	0.998
14.	PT. Jasa Marga (Persero) Tbk	0.456	1,992	1,078	0.416	0.986
15.	PT. Waskita Karya (Persero) Tbk	1,023	0.931	3,863	1,692	1,877
16.	Public Housing Corporation	1,209	2,866	0.029	1,219	1,331
17.	Damri Municipal Corporation	0.768	2,011	1,114	0.913	1,202
18.	PT. Indonesian Railways (Persero)	1,921	0.191	0.829	2,294	1,309
19.	PT. Indonesian Tourism Developer (Pesero)	0.859	0.921	2,507	1,453	1,435
20.	PT. Krakatau Steel (Persero) Tbk	0.934	1,185	1,141	2,825	1,521
21.	PT. Pupuk Indonesia (Persero)	0.819	0.751	0.677	0.962	0.802
22.	PT. Rajawali Nusantara Indonesia (Persero)	1,185	0.725	0.976	1,968	1,214

No	Company name	2018	2019	2020	2021	Average value
23.	PT. Wijaya Karya (Persero) Tbk	1,262	0.482	2,185	0.923	1,213

Source: Data processed, 2022.

After calculating the DSRI ratio for state-owned companies. The results obtained: In 2018, 4 state-owned companies included in the manipulator group, 15 companies in the non-manipulator group, gray company 4 companies. In 2019, 4 state-owned companies were included in the manipulator group, 14 companies in the non-manipulator group, and 5 companies in the gray company group. In 2020, there were 6 state-owned companies included in the manipulator group, 12 companies in the non-manipulator group, 5 companies in the gray company group. In 2021, there will be 8 state-owned companies included in the manipulator group, 13 companies in the non-manipulator group, and 2 gray companies.

**Table 3** GMI Ratio Calculation Results from 2018 to 2021

No	Company name	2018	2019	2020	2021	Average value
1.	PT. Garuda Indonesia (Persero) Tbk	1,626	1,356	3,064	1,116	1,791
2.	Republic of Indonesia Money Printing Corporation	1,202	0.814	1,185	0.876	1,019
3.	PT. Telekomunikasi Indonesia (Persero), Tbk.	0.981	0.965	0.993	0.953	0.973
4.	PT. Pertamina (Persero)	0.742	1,061	1,318	0.721	0.961
5.	PT. State Electricity Company (Persero)	0.935	0.955	0.827	0.938	0.914
6.	Perum Perhutani	0.826	1,189	0.939	0.854	0.952
7.	PT. Utama Indonesian Reinsurance (Persero)	0.886	0.943	1,005	0.687	0.880
8.	PT. Bank Mandiri (Persero) Tbk	0.492	0.929	0.937	1,751	1,027
9.	PT. Bank Negara Indonesia (Persero) Tbk	0.714	0.861	1,047	1,039	0.915
10.	PT. Bank Rakyat Indonesia (Persero) Tbk	0.918	0.958	0.784	0.824	0.871
11.	PT. Adhi Karya (Persero) Tbk	0.968	1,023	1,414	1,473	1,220
12.	PT. Semen Baturaja (Persero) Tbk	0.777	0.998	1,161	0.983	0.980
13.	PT. Hutama Karya (Persero)	0.676	1,013	1,219	1,057	0.991
14.	PT. Jasa Marga (Persero) Tbk	0.949	1,403	1,922	0.903	1,294
15.	PT. Waskita Karya (Persero) Tbk	0.927	1,554	1,939	2,272	1,673
16.	Public Housing Corporation	0.876	3,119	1,231	0.873	1,525
17.	Damri Municipal Corporation	0.933	1,008	1,682	1,156	1,195
18.	PT. Indonesian Railways (Persero)	0.899	0.761	1,452	1,009	1,030
19.	PT. Indonesian Tourism Developer (Pesero)	0.851	0.917	1,308	0.749	0.956
20.	PT. Krakatau Steel (Persero) Tbk	0.833	1,225	1,049	0.628	0.934
21.	PT. Pupuk Indonesia (Persero)	0.849	0.974	0.992	0.914	0.932
22.	PT. Rajawali Nusantara Indonesia (Persero)	0.994	0.795	0.935	0.871	0.899
23.	PT. Wijaya Karya (Persero) Tbk	0.304	1,145	1,646	0.929	1,006

Source: Data processed, 2022.

After calculating the GMI ratio for state-owned companies. The results obtained: In 2018, there were 2 state-owned companies included in the manipulator group, 21 in the non-manipulator group, and there were no companies in the gray company group. In 2019, there were 5 companies included



in the manipulator group, 14 in the non-manipulator group, 4 in the gray company group. In 2020, there were 11 state-owned companies included in the manipulator group, 8 companies in the non-manipulator group, and the gray company group as many as 4 companies. In 2021, there will be 4 state-owned companies included in the manipulator group, 16 companies in the non-manipulator group, and 3 companies in the gray company group.

**Table 4** AQI Ratio Calculation Results from 2018 to 2021

No	Company name	2018	2019	2020	2021	Average value
1.	PT. Garuda Indonesia (Persero) Tbk	0.741	0.357	0.473	0.578	0.537
2.	Republic of Indonesia Money Printing Corporation	0.772	1,424	0.791	0.962	0.987
3.	PT. Telekomunikasi Indonesia (Persero), Tbk.	0.911	0.964	1,115	1,318	1,077
4.	PT. Pertamina (Persero)	1,339	0.997	0.999	1,244	1,145
5.	PT. State Electricity Company (Persero)	1,209	1,335	9,856	1,024	3,356
6.	Perum Perhutani	1,705	0.722	1,052	1,073	1,138
7.	PT. Utama Indonesian Reinsurance (Persero)	1,009	1,079	1,105	0.891	1,021
8.	PT. Bank Mandiri (Persero) Tbk	1,329	0.984	1,077	1,345	1,184
9.	PT. Bank Negara Indonesia (Persero) Tbk	1,147	1,206	1,011	1,108	1,118
10.	PT. Bank Rakyat Indonesia (Persero) Tbk	1,111	1,125	1,052	1,098	1,097
11.	PT. Adhi Karya (Persero) Tbk	1,025	1,192	0.993	1,051	1,065
12.	PT. Semen Baturaja (Persero) Tbk	1,209	0.789	0.793	1,543	1,084
13.	PT. Hutama Karya (Persero)	0.951	1,472	1,091	1,187	1,175
14.	PT. Jasa Marga (Persero) Tbk	0.622	0.111	0.922	0.968	0.656
15.	PT. Waskita Karya (Persero) Tbk	1,278	0.732	0.664	1,066	0.935
16.	Public Housing Corporation	1,262	1,039	0.669	0.994	0.991
17.	Damri Municipal Corporation	1,286	1,157	0.577	0.685	0.926
18.	PT. Indonesian Railways (Persero)	0.731	0.771	1,328	1,059	0.972
19.	PT. Indonesian Tourism Developer (Pesero)	0.767	0.751	3,163	1,297	1,495
20.	PT. Krakatau Steel (Persero) Tbk	0.969	0.698	1,211	1,165	1,011
21.	PT. Pupuk Indonesia (Persero)	1,191	0.893	0.752	1,142	0.995
22.	PT. Rajawali Nusantara Indonesia (Persero)	1,102	1,234	1,094	0.989	1,105
23.	PT. Wijaya Karya (Persero) Tbk	1,679	0.972	1,133	0.775	1,140

Source: Data processed, 2022.

After calculating the AQI ratio for state-owned companies. The results obtained: In 2018, there were 7 state-owned companies included in the manipulator group, 9 companies in the non-manipulator group, and there were 7 state-owned companies classified as gray companies in 2018. In 2019, there were 7 state-owned companies included in the manipulator group. 2 companies, 13 companies in the non-manipulator group, and 8 companies in the gray company group. In 2020, there were 3 companies included in the manipulator group, 10 companies in the non-manipulator group, and 10 companies in the gray company group. In 2021, there were 4 state-owned companies included in the manipulator group, 8 companies in the non-manipulator group, and a gray company group of 11 companies.

**Table 5** Results of SGI Ratio Calculation for 2018 to 2021

No	Company name	2018	2019	2020	2021	Average value
1.	PT. Garuda Indonesia (Persero) Tbk	0.615	0.737	0.326	0.896	0.644
2.	Republic of Indonesia Money Printing Corporation	0.832	0.123	0.844	1,141	0.735
3.	PT. Telekomunikasi Indonesia (Persero), Tbk.	1,021	1,037	1,007	1,049	1,029
4.	PT. Pertamina (Persero)	1,349	0.942	0.759	1,388	1,110
5.	PT. State Electricity Company (Persero)	1,069	1,047	1,209	1,066	1,098
6.	Perum Perhutani	1,211	0.558	1,065	1,171	1,001
7.	PT. Utama Indonesian Reinsurance (Persero)	1,128	1,061	0.995	1,455	1,160
8.	PT. Bank Mandiri (Persero) Tbk	2,033	1,088	1,067	0.571	1,190
9.	PT. Bank Negara Indonesia (Persero) Tbk	1,411	1,081	0.956	0.668	1,029
10.	PT. Bank Rakyat Indonesia (Persero) Tbk	1,089	1,277	1,276	1,213	1,214
11.	PT. Adhi Karya (Persero) Tbk	1,033	0.149	0.707	0.111	0.500
12.	PT. Semen Baturaja (Persero) Tbk	1,286	1,002	0.861	1,017	1,042
13.	PT. Hutama Karya (Persero)	1,479	0.987	0.821	0.947	1,059
14.	PT. Jasa Marga (Persero) Tbk	1,054	0.071	0.521	1,107	0.688
15.	PT. Waskita Karya (Persero) Tbk	1,079	0.643	0.516	0.441	0.670
16.	Public Housing Corporation	1,141	0.321	0.812	1,146	0.855
17.	Damri Municipal Corporation	1,072	0.992	0.594	0.865	0.881
18.	PT. Indonesian Railways (Persero)	1,112	0.977	0.689	0.991	0.942
19.	PT. Indonesian Tourism Developer (Pesero)	1,176	1,091	0.765	1,336	1,092
20.	PT. Krakatau Steel (Persero) Tbk	1,211	0.816	0.953	1,593	1,143
21.	PT. Pupuk Indonesia (Persero)	1,178	1,027	1,008	1,094	1,077
22.	PT. Rajawali Nusantara Indonesia (Persero)	1,006	1,258	1,069	1,151	1,121
23.	PT. Wijaya Karya (Persero) Tbk	3,285	0.873	0.608	1,077	1,461

Source: Data processed, 2022.

After calculating the SGI ratio for state-owned companies. The results obtained: In 2018, there were 2 state-owned companies included in the manipulator group, 12 companies in the non-manipulator group, and there were 9 companies in the gray company group in 2018. In 2019, there were no state-owned companies included in the manipulator group, non-manipulator group. 20 manipulator companies, and 2 companies in the gray company group. In 2020, there were no state-owned companies included in the manipulator group, 20 companies in the non-manipulator group, and 3 companies in the gray company group. In 2021, there will be no state-owned companies included in the manipulator group, 15 companies in the non-manipulator group, and 8 gray companies in state-owned companies.

**Table 6** DEPI Ratio Calculation Results from 2018 to 2021

No	Company name	2018	2019	2020	2021	Average value
1.	PT. Garuda Indonesia (Persero) Tbk	1,228	2,679	0.324	1,489	1,430
2.	Republic of Indonesia Money Printing Corporation	0.769	0.901	0.854	1,066	0.898

No	Company name	2018	2019	2020	2021	Average value
3.	PT. Telekomunikasi Indonesia (Persero), Tbk.	0.926	0.908	0.895	0.928	0.914
4.	PT. Pertamina (Persero)	0.816	0.945	0.955	0.934	0.913
5.	PT. State Electricity Company (Persero)	0.899	0.962	0.961	0.977	0.950
6.	Perum Perhutani	0.167	0.849	1,065	0.981	0.766
7.	PT. Utama Indonesian Reinsurance (Persero)	0.677	0.746	1,179	0.446	0.762
8.	PT. Bank Mandiri (Persero) Tbk	1,289	0.673	0.859	0.323	0.786
9.	PT. Bank Negara Indonesia (Persero) Tbk	0.852	0.997	0.867	0.971	0.922
10.	PT. Bank Rakyat Indonesia (Persero) Tbk	0.779	0.866	0.865	0.771	0.820
11.	PT. Adhi Karya (Persero) Tbk	0.749	0.756	0.775	0.964	0.811
12.	PT. Semen Baturaja (Persero) Tbk	0.942	0.929	0.977	0.328	0.794
13.	PT. Hutama Karya (Persero)	0.666	0.712	0.801	0.833	0.753
14.	PT. Jasa Marga (Persero) Tbk	0.853	0.804	0.943	1,028	0.907
15.	PT. Waskita Karya (Persero) Tbk	0.792	0.781	1,007	1,031	0.903
16.	Public Housing Corporation	0.883	0.993	0.957	1,111	0.986
17.	Damri Municipal Corporation	1,093	0.922	1,112	1,094	1,055
18.	PT. Indonesian Railways (Persero)	0.709	0.791	0.863	0.831	0.799
19.	PT. Indonesian Tourism Developer (Pesero)	0.854	0.851	0.831	0.454	0.748
20.	PT. Krakatau Steel (Persero) Tbk	0.935	1,274	0.979	0.947	1,034
21.	PT. Pupuk Indonesia (Persero)	0.985	0.966	1,003	0.994	0.987
22.	PT. Rajawali Nusantara Indonesia (Persero)	0.889	1,059	0.973	1,029	0.988
23.	PT. Wijaya Karya (Persero) Tbk	0.683	0.793	0.982	0.625	0.771

Source: Data processed, 2022.

After calculating the DEPI ratio for state-owned companies. The results obtained: In 2018, there were 3 state-owned companies included in the manipulator group, 20 in the non-manipulator group, and there were no companies in the gray company group. In 2019, as many state-owned companies were included in the manipulator group 2 companies, 20 companies in the non-manipulator group, and 1 in the gray company group. Then continuing in 2020, 2 state-owned companies are included in the manipulator group, 18 companies in the non-manipulator group, and 3 companies in the gray company group. In 2021, there will be 3 state-owned companies included in the manipulator group, 16 in the non-manipulator group, and 4 in the gray company group of state-owned companies.

**Table 7.** SGAI Ratio Calculation Results from 2018 to 2021

No	Company name	2018	2019	2020	2021	Average value
1.	PT. Garuda Indonesia (Persero) Tbk	0.846	0.998	2,479	0.668	1,248
2.	Republic of Indonesia Money Printing Corporation	0.653	2,918	0.851	1,209	1,408
3.	PT. Telekomunikasi Indonesia (Persero), Tbk.	0.964	0.971	0.621	0.411	0.742
4.	PT. Pertamina (Persero)	0.802	0.074	1,176	1,603	0.914
5.	PT. State Electricity Company (Persero)	1,051	1,036	0.691	0.944	0.931
6.	Perum Perhutani	0.911	0.782	0.862	0.796	0.838
7.	PT. Utama Indonesian Reinsurance (Persero)	1,423	0.983	0.767	0.747	0.980

No	Company name	2018	2019	2020	2021	Average value
8.	PT. Bank Mandiri (Persero) Tbk	0.531	0.863	2,134	0.864	1,098
9.	PT. Bank Negara Indonesia (Persero) Tbk	0.791	1,862	0.572	1,004	1,057
10.	PT. Bank Rakyat Indonesia (Persero) Tbk	1,006	1,041	0.891	0.958	0.974
11.	PT. Adhi Karya (Persero) Tbk	1,179	1,292	1,151	0.993	1,154
12.	PT. Semen Baturaja (Persero) Tbk	1,249	1,419	0.998	0.951	1,154
13.	PT. Hutama Karya (Persero)	0.872	1,228	1,748	0.612	1,115
14.	PT. Jasa Marga (Persero) Tbk	1,091	1,566	1,608	1,032	1,324
15.	PT. Waskita Karya (Persero) Tbk	0.735	1,278	1,131	2,768	1,478
16.	Public Housing Corporation	0.715	3,171	1,342	0.914	1,536
17.	Damri Municipal Corporation	1,081	1,017	1,541	0.915	1,139
18.	PT. Indonesian Railways (Persero)	1,176	0.008	0.936	1,182	0.826
19.	PT. Indonesian Tourism Developer (Pesero)	0.971	1,057	1,219	0.809	1,014
20.	PT. Krakatau Steel (Persero) Tbk	0.719	1,646	0.564	0.673	0.901
21.	PT. Pupuk Indonesia (Persero)	0.996	0.956	0.954	0.931	0.959
22.	PT. Rajawali Nusantara Indonesia (Persero)	0.743	1,211	0.564	0.828	0.837
23.	PT. Wijaya Karya (Persero) Tbk	0.784	1,356	1,582	0.818	1,135

Source: Data processed, 2022.

After calculating the SGAI ratio for state-owned companies. The results obtained: In 2018, there were 7 state-owned companies included in the manipulator group, 16 companies in the non-manipulator group, and there were no state-owned companies included in the gray company group. In 2019, as many state-owned companies were included in the manipulator group 13 companies, 8 companies in the non-manipulator group, and 2 in the gray company group. Then continuing in 2020, 11 state-owned companies are included in the manipulator group, 12 companies in the non-manipulator group, and there are no state-owned companies included in the group. in the gray company group. In 2021, there will be 4 state-owned companies included in the manipulator group, 18 state-owned companies included in the non-manipulator group, and 1 state-owned company included in the gray company group.

**Table 8** LVGI Ratio Calculation Results from 2018 to 2021

No	Company name	2018	2019	2020	2021	Average Value
1.	PT. Garuda Indonesia (Persero) Tbk	3,879	0.111	1,358	1,567	1,729
2.	Republic of Indonesia Money Printing Corporation	0.967	1,485	0.952	0.574	0.995
3.	PT. Telekomunikasi Indonesia (Persero), Tbk.	0.991	1,091	1,086	0.931	1,025
4.	PT. Pertamina (Persero)	1,014	0.986	1,025	0.779	0.951
5.	PT. State Electricity Company (Persero)	1,086	1,093	0.988	0.958	1,031
6.	Perum Perhutani	0.242	0.937	1,105	1,012	0.824
7.	PT. Utama Indonesian Reinsurance (Persero)	1,212	0.973	1,069	0.232	0.872
8.	PT. Bank Mandiri (Persero) Tbk	0.818	1,087	1,077	0.834	0.954
9.	PT. Bank Negara Indonesia (Persero) Tbk	1,001	0.856	1,068	1,016	0.985
10.	PT. Bank Rakyat Indonesia (Persero) Tbk	1,021	0.744	1,341	0.972	1,020

No	Company name	2018	2019	2020	2021	Average Value
11.	PT. Adhi Karya (Persero) Tbk	0.998	1,027	1,051	1,005	1,020
12.	PT. Semen Baturaja (Persero) Tbk	1,145	1,006	1,083	0.996	1,058
13.	PT. Hutama Karya (Persero)	1,013	0.897	0.952	0.824	0.922
14.	PT. Jasa Marga (Persero) Tbk	0.983	4,647	0.217	0.982	1,707
15.	PT. Waskita Karya (Persero) Tbk	1,111	0.993	1,106	1,011	1,055
16.	Public Housing Corporation	1,072	1,087	1,261	1,054	1,119
17.	Damri Municipal Corporation	0.936	1,042	1,429	1,163	1,143
18.	PT. Indonesian Railways (Persero)	0.871	1,049	1,221	0.922	1,016
19.	PT. Indonesian Tourism Developer (Pesero)	1,027	1,263	1,301	1,317	1,227
20.	PT. Krakatau Steel (Persero) Tbk	1,057	1,534	0.977	0.989	1,139
21.	PT. Pupuk Indonesia (Persero)	1,023	0.897	0.956	0.978	0.964
22.	PT. Rajawali Nusantara Indonesia (Persero)	1,067	0.966	1,057	0.981	1,018
23.	PT. Wijaya Karya (Persero) Tbk	0.837	0.974	1,094	0.991	0.974

Source: Data processed, 2022.

After calculating the LVGI ratio for state-owned companies. The results obtained: In 2018, there were 4 state-owned companies included in the manipulator group, 15 companies in the non-manipulator group, and there were 4 state-owned companies included in the gray company group in 2018. In 2019, there were 4 state-owned companies included in the manipulator group. 4 companies, 13 companies in the non-manipulator group, and 6 state-owned companies included in the gray company group. In 2020, there are 6 state-owned companies included in the manipulator group, 7 companies in the non-manipulator group, there are 10 state-owned companies in the group gray company. Continuing in 2021, 3 state-owned companies are included in the manipulator group, 19 companies are in the non-manipulator group, and 1 company is included in the gray company group.

#### 4.2. Discussions

##### 4.2.1. Grouping of State-Owned Company in 2018

In 2018, 1 state-owned company included in the manipulator group, it included 22 companies in the non-manipulator group, and there were no companies included in the gray company group. The following table shows the results of the grouping.

**Table 9.** Grouping of State-Owned Company in 2018

No	Company Name	DSRI	GMI	AQI	SGI	DEPI	SGAI	LVGI	Result
1	PT. Garuda Indonesia (Persero) Tbk	Mani	Mani	Non	Non	Mani	Non	Mani	Manipulator
2	Perum Percetakan Uang Republik Indonesia	Non	Mani	Non	Non	Non	Non	Non	Non-Manipulator
3	PT. Telekomunikasi Indonesia (Persero), Tbk.	Grey	Non	Non	Non	Non	Non	Non	Non-Manipulator
4	PT. Pertamina (Persero)	Non	Non	Mani	Grey	Non	Non	Non	Non-Manipulator
5	PT. Perusahaan Listrik Negara (Persero)	Mani	Non	Grey	Non	Non	Mani	Grey	Non-Manipulator
6	Perum Perhutani	Non	Non	Mani	Grey	Non	Non	Non	Non-Manipulator
7	PT. Reasuransi Indonesia Utama (Persero)	Mani	Non	Non	Non	Non	Mani	Mani	Non-Manipulator
8	PT. Bank Mandiri (Persero) Tbk	Non	Non	Mani	Mani	Mani	Non	Non	Non-Manipulator
9	PT. Bank Negara Indonesia (Persero) Tbk	Non	Non	Grey	Grey	Non	Non	Non	Non-Manipulator
10	PT. Bank Rakyat Indonesia (Persero) Tbk	Non	Non	Grey	Non	Non	Non	Non	Non-Manipulator
11	PT. Adhi Karya (Persero) Tbk	Non	Non	Grey	Non	Non	Mani	Non	Non-Manipulator
12	PT. Semen Baturaja (Persero) Tbk	Non	Non	Grey	Grey	Non	Mani	Mani	Non-Manipulator
13	PT. Hutama Karya (Persero)	Non	Non	Non	Grey	Non	Non	Non	Non-Manipulator
14	PT. Jasa Marga (Persero) Tbk	Non	Non	Non	Non	Non	Mani	Non	Non-Manipulator
15	PT. Waskita Karya (Persero) Tbk	Non	Non	Mani	Non	Non	Non	Mani	Non-Manipulator
16	Perum Perumnas	Grey	Non	Mani	Grey	Non	Non	Grey	Non-Manipulator
17	Perum Damri	Non	Non	Mani	Non	Mani	Mani	Non	Non-Manipulator
18	PT. Kereta Api Indonesia (Persero)	Mani	Non	Non	Non	Non	Mani	Non	Non-Manipulator
19	PT. Pengembang Pariwisata Indonesia (Pesero)	Non	Non	Non	Grey	Non	Non	Non	Non-Manipulator
20	PT. Krakatau Steel (Persero) Tbk	Non	Non	Non	Grey	Non	Non	Grey	Non-Manipulator
21	PT. Pupuk Indonesia (Persero)	Non	Non	Grey	Grey	Non	Non	Non	Non-Manipulator
22	PT. Rajawali Nusantara Indonesia (Persero)	Grey	Non	Grey	Non	Non	Non	Grey	Non-Manipulator
23	PT. Wijaya Karya (Persero) Tbk	Grey	Non	Mani	Mani	Non	Non	Non	Non-Manipulator

Source: Data processed, 2022.

#### 4.2.2. Grouping of State-Owned Company in 2019

The 2019 grouping included 3 companies included in the manipulator group, 17 state-owned companies included in the non-manipulator group, and 3 state-owned companies included in the gray company group. The following table shows the grouping of state-owned companies.

Table 10 Grouping of State-Owned Company in 2019

No	Company Name	DSRI	GMI	AQI	SGI	DEPI	SGAI	LVGI	Result
1	PT. Garuda Indonesia (Persero) Tbk	Non	Mani	Non	Non	Mani	Non	Non	Non-Manipulator
2	Perum Percetakan Uang Republik Indonesia	Non	Non	Grey	Non	Non	Mani	Mani	Non-Manipulator
3	PT. Telekomunikasi Indonesia (Persero), Tbk.	Non	Non	Non	Non	Non	Non	Grey	Non-Manipulator
4	PT. Pertamina (Persero)	Grey	Grey	Non	Non	Non	Non	Non	Non-Manipulator
5	PT. Perusahaan Listrik Negara (Persero)	Grey	Non	Mani	Non	Non	Grey	Grey	Non-Manipulator
6	Perum Perhutani	Non	Grey	Non	Non	Non	Non	Non	Non-Manipulator
7	PT. Reasuransi Indonesia Utama (Persero)	Grey	Non	Grey	Non	Non	Non	Non	Non-Manipulator
8	PT. Bank Mandiri (Persero) Tbk	Non	Non	Non	Grey	Non	Non	Grey	Non-Manipulator
9	PT. Bank Negara Indonesia (Persero) Tbk	Non	Non	Grey	Non	Non	Mani	Non	Non-Manipulator
10	PT. Bank Rakyat Indonesia (Persero) Tbk	Non	Non	Grey	Grey	Non	Mani	Non	Non-Manipulator
11	PT. Adhi Karya (Persero) Tbk	Grey	Grey	Grey	Non	Non	Mani	Non	Grey Company
12	PT. Semen Baturaja (Persero) Tbk	Non	Non	Non	Non	Non	Mani	Non	Non-Manipulator
13	PT. Hutama Karya (Persero)	Mani	Non	Mani	Non	Non	Mani	Non	Non-Manipulator
14	PT. Jasa Marga (Persero) Tbk	Mani	Mani	Non	Non	Non	Mani	Mani	Manipulator
15	PT. Waskita Karya (Persero) Tbk	Non	Mani	Non	Non	Non	Mani	Non	Non-Manipulator
16	Perum Perumnas	Mani	Mani	Grey	Non	Non	Mani	Grey	Manipulator
17	Perum Damri	Mani	Non	Grey	Non	Non	Grey	Grey	Grey Company
18	PT. Kereta Api Indonesia (Persero)	Non	Non	Non	Non	Non	Non	Grey	Non-Manipulator
19	PT. Pengembang Pariwisata Indonesia (Pesero)	Non	Non	Non	Non	Non	Mani	Mani	Non-Manipulator
20	PT. Krakatau Steel (Persero) Tbk	Grey	Mani	Non	Non	Mani	Mani	Mani	Manipulator
21	PT. Pupuk Indonesia (Persero)	Non	Non	Non	Non	Non	Non	Non	Non-Manipulator
22	PT. Rajawali Nusantara Indonesia (Persero)	Non	Non	Grey	Grey	Grey	Mani	Non	Grey Company
23	PT. Wijaya Karya (Persero) Tbk	Non	Grey	Non	Non	Non	Mani	Non	Non-Manipulator

Source: Data processed, 2022.

#### 4.2.3. Grouping of State-Owned Company in 2020

The 2020 grouping included 5 state-owned companies that were included in the manipulator group, 16 state-owned companies that were included in the non-manipulator group, and 2 state-owned companies that were included in the gray company group. The following table shows the grouping of state-owned companies in 2020.

Table 11 Grouping of State-Owned Company in 2020

No	Company Name	DSRI	GMI	AQI	SGI	DEPI	SGAI	LVGI	Result
1	PT. Garuda Indonesia (Persero) Tbk	Mani	Mani	Non	Non	Non	Mani	Mani	Manipulator
2	Perum Percetakan Uang Republik Indonesia	Mani	Grey	Non	Non	Non	Non	Non	Non-Manipulator
3	PT. Telekomunikasi Indonesia (Persero), Tbk.	Non	Non	Grey	Non	Non	Non	Grey	Non-Manipulator
4	PT. Pertamina (Persero)	Non	Mani	Mani	Non	Non	Mani	Non	Non-Manipulator
5	PT. Perusahaan Listrik Negara (Persero)	Non	Non	Grey	Grey	Non	Non	Non	Non-Manipulator
6	Perum Perhutani	Non	Non	Grey	Non	Grey	Non	Grey	Non-Manipulator
7	PT. Reasuransi Indonesia Utama (Persero)	Grey	Non	Grey	Non	Mani	Non	Grey	Grey Company
8	PT. Bank Mandiri (Persero) Tbk	Non	Non	Grey	Grey	Non	Mani	Grey	Grey Company
9	PT. Bank Negara Indonesia (Persero) Tbk	Non	Grey	Grey	Non	Non	Non	Grey	Non-Manipulator
10	PT. Bank Rakyat Indonesia (Persero) Tbk	Mani	Non	Grey	Grey	Non	Non	Mani	Non-Manipulator
11	PT. Adhi Karya (Persero) Tbk	Non	Mani	Non	Non	Non	Mani	Grey	Non-Manipulator
12	PT. Semen Baturaja (Persero) Tbk	Grey	Grey	Non	Non	Non	Non	Grey	Non-Manipulator
13	PT. Hutama Karya (Persero)	Non	Mani	Grey	Non	Non	Mani	Non	Non-Manipulator
14	PT. Jasa Marga (Persero) Tbk	Grey	Mani	Non	Non	Non	Mani	Non	Non-Manipulator
15	PT. Waskita Karya (Persero) Tbk	Mani	Mani	Non	Non	Grey	Mani	Grey	Manipulator
16	Perum Perumnas	Non	Mani	Non	Non	Non	Mani	Mani	Non-Manipulator
17	Perum Damri	Grey	Mani	Non	Non	Mani	Mani	Mani	Manipulator
18	PT. Kereta Api Indonesia (Persero)	Non	Mani	Mani	Non	Non	Non	Mani	Non-Manipulator
19	PT. Pengembang Pariwisata Indonesia (Pesero)	Mani	Mani	Mani	Non	Non	Mani	Mani	Manipulator
20	PT. Krakatau Steel (Persero) Tbk	Grey	Grey	Grey	Non	Non	Non	Non	Non-Manipulator
21	PT. Pupuk Indonesia (Persero)	Non	Non	Non	Non	Grey	Non	Non	Non-Manipulator
22	PT. Rajawali Nusantara Indonesia (Persero)	Non	Non	Grey	Non	Non	Non	Grey	Non-Manipulator
23	PT. Wijaya Karya (Persero) Tbk	Mani	Mani	Grey	Non	Non	Mani	Grey	Manipulator

Source: Data processed, 2022.

#### 4.2.4. Grouping of State-Owned Company in 2021

The 2021 grouping includes 1 state-owned company that is included in the manipulator group, 2 state-owned companies that are included in the non-manipulator group, and there are no state-owned companies that are included in the gray company group. The following table shows the grouping of state-owned companies in 2021.



Table 12 Grouping of State-Owned Company in 2021

No	Company Name	DSRI	GMI	AQI	SGI	DEPI	SGAI	LVGI	Result
1	PT. Garuda Indonesia (Persero) Tbk	Non	Mani	Non	Non	Mani	Non	Mani	Non-Manipulator
2	Perum Percetakan Uang Republik Indonesia	Mani	Non	Non	Grey	Grey	Mani	Non	Non-Manipulator
3	PT. Telekomunikasi Indonesia (Persero), Tbk.	Non	Non	Mani	Non	Non	Non	Non	Non-Manipulator
4	PT. Pertamina (Persero)	Non	Non	Grey	Grey	Non	Mani	Non	Non-Manipulator
5	PT. Perusahaan Listrik Negara (Persero)	Non	Non	Grey	Non	Non	Non	Non	Non-Manipulator
6	Perum Perhutani	Non	Non	Grey	Grey	Non	Non	Non	Non-Manipulator
7	PT. Reasuransi Indonesia Utama (Persero)	Non	Non	Non	Grey	Non	Non	Non	Non-Manipulator
8	PT. Bank Mandiri (Persero) Tbk	Mani	Mani	Mani	Non	Non	Non	Non	Non-Manipulator
9	PT. Bank Negara Indonesia (Persero) Tbk	Mani	Grey	Grey	Non	Non	Non	Non	Non-Manipulator
10	PT. Bank Rakyat Indonesia (Persero) Tbk	Non	Non	Grey	Grey	Non	Non	Non	Non-Manipulator
11	PT. Adhi Karya (Persero) Tbk	Mani	Mani	Grey	Non	Non	Non	Non	Non-Manipulator
12	PT. Semen Baturaja (Persero) Tbk	Non	Non	Mani	Non	Non	Non	Non	Non-Manipulator
13	PT. Hutama Karya (Persero)	Non	Grey	Grey	Non	Non	Non	Non	Non-Manipulator
14	PT. Jasa Marga (Persero) Tbk	Non	Non	Non	Non	Grey	Grey	Non	Non-Manipulator
15	PT. Waskita Karya (Persero) Tbk	Mani	Mani	Grey	Non	Grey	Mani	Non	Manipulator
16	Perum Perumnas	Grey	Non	Non	Grey	Mani	Non	Grey	Non-Manipulator
17	Perum Damri	Non	Grey	Non	Non	Mani	Non	Mani	Non-Manipulator
18	PT. Kereta Api Indonesia (Persero)	Mani	Non	Grey	Non	Non	Mani	Non	Non-Manipulator
19	PT. Pengembang Pariwisata Indonesia (Pesero)	Grey	Non	Mani	Grey	Non	Non	Mani	Non-Manipulator
20	PT. Krakatau Steel (Persero) Tbk	Mani	Non	Non	Grey	Non	Non	Non	Non-Manipulator
21	PT. Pupuk Indonesia (Persero)	Non	Non	Non	Non	Non	Non	Non	Non-Manipulator
22	PT. Rajawali Nusantara Indonesia (Persero)	Mani	Non	Grey	Non	Grey	Non	Non	Non-Manipulator
23	PT. Wijaya Karya (Persero) Tbk	Non	Non	Grey	Non	Non	Non	Non	Non-Manipulator

Source: Data processed, 2022.

## 5. Conclusion and Suggestion

### 5.1. Conclusion

Beneish M-score analysis tool to determine fraud in financial reports committed by State-Owned Enterprises (BUMN) in the 2018-2021 period, it knows that in 2018 there was 1 company included in the manipulator group, 22 companies included in the non-manipulators group, and there were no companies included in the gray company group in 2018. Then, in 2019, there were 3 companies included in the manipulator group, 17 companies included in the non-manipulator group, and 3 companies included in the gray company group. In 2020, there were 5 companies included in the manipulator group, 16 non-manipulator companies, 2 companies included in the gray company group. And in the last year, namely 2021, there was 1 company included in the manipulator group, 22 non-manipulator companies, and no companies included in the gray company group in 2021.

### 5.2. Suggestion

For investors and lenders, they can use results of research as material for consideration in making investments and providing loans to companies so that they can strengthen analysis in carrying out investment activities. However, in this study, it is only a predictor, not a claim that the company has committed a fraud on the company's financial reports, look for additional information outside the company's financial reports.

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