

## The Ability of the Beneish M-Score To Detect the Trends of Fraud in the Indonesian Sharia Stock Index



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**ABSTRACT:** The purpose of this study is to determine the level of ability of the Beneish M-Score in detecting financial statement fraud tendencies. This study uses a quantitative approach with logistic regression analysis techniques. The results of this study provide empirical evidence that is different from research on manufacturing companies, state-owned companies, banking, mining, non-financial companies, property companies, real estate and building construction. The contribution of the empirical results of this study shows that overall the Beneish M-Score model is unable to detect the tendency of fraudulent financial statements in Islamic companies. DSRI, GMI, AQI, SGI, DEPI, SGAI, LVGI, and TATA has no effect on fraudulent financial statements in sharia companies.

**KEYWORDS:** Beneish M-Score, Fraud, Financial Statement Fraud, Fraud Detection, Sharia Company.

### I. INTRODUCTION

Fraud and corporate violations constantly threaten public confidence in building confidence in the capital market. The use of the M-Score developed by Beneish to detect fraudulent financial statements has also been carried out by previous researchers at companies in various countries. Research on manufacturing companies shows empirical evidence stating that DSRI, GMI, AQI, SGI, LVGI, and TATA have an effect on fraud detection while DEPI and SGAI have no effect on fraud detection (Fernanda, 2016). Subsequent research states that DSRI, GMI and TATA positively and significantly affect financial statement fraud, while AQI, SGI, DEPI, SGAI, and LVGI have no effect (Harsanti & Mulyani, 2021). However, it is different from Suheni's research which shows that all independent variables that are not used do not affect fraudulent financial statements (Suheni & Arif, 2020).

Research on companies that received sanctions from the OJK stated that only AQI and TATA had an influence on fraud detection (Santosa & Ginting, 2019) whereas according to research conducted on companies that received sanctions on the IDX stated that only DEPI had no effect while DSRI, GMI, AQI, SGI, SGAI, TATA, and LVGI had an effect on fraudulent financial statements (Fadilah et al., 2019). In contrast to research in Malaysia, DSRI, GMI, AQI, SGI, DEPI and SGAI, LVGI, and TATA have an influence on fraudulent financial statements (Omar et al., 2014). The use of 5 M-Score ratios (Roxas, 2011) DSRI, GMI, AQI, SGI, DEPI has an influence on fraudulent financial statements. Companies that receive sanctions and those that do not receive sanctions from the OJK show GMI, DEPI, SGAI, and TATA results which can be used to detect financial fraud while DSRI, AQI, and LVGI cannot detect financial fraud (Tarjo & Herawati, 2015).

Non-financial companies in Bangladesh state that DSRI, AQI, TATA, and SGAI have an influence in detecting profit manipulation (Ahmed & Naima, 2016). DSRI, GMI, AQI, DEPI, and TATA have an effect while SGI, SGAI, LVGI, have no effect on IDX banking financial statement fraud (Septiani et al., 2020). Research with 5 M-Score ratios examined at Kenyan banks shows DSRI, GMI, AQI, SGI, DEPI have an influence on fraudulent financial statements (Nyakarimi et al., 2020). The results of research on all BUMNs show that all the independent variables used do not affect the dependent variable used (Hantono, 2018). Property, real estate and building construction companies provide empirical results DSRI, SGI, DEPI, TATA, LVGI affect earnings management in detecting financial statement fraud (Irsutami & Sapriadi, 2020). Researchers have found that the Beniesh model can detect fraud in the financial statements of other countries conducting research on Société Anonyme and Limited Liability Company (PT) companies in Greece stating that DSRI, GMI, AQI, SGI, and SGAI have an effect on fraudulent financial statements (earnings management). while DEPI, LVGI, and TATA have an influence on fraudulent financial statements (Repousis, 2016).

Comparison of the results of analysis (ACFE, 2018) and (ACFE, 2020) in the Report to the National Asia Pacific, reported that fraudulent financial statements caused the greatest loss, having an average loss of USD 700,000 even though the use was

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13%. Losses due to corruption amounted to 51% (average loss USD 500,000), while misappropriation of assets accounted for 80% (average loss USD 180,000). Then in 2020 the Report to the National Asia Pacific again noted that the largest loss remained in financial statement fraud with a percentage of 14% and the value of the loss increased from the previous USD 700,000 to USD 3,000,000.

Based on the survey, the least number of cases of financial statement fraud is 14% when compared to corruption cases and cases of misuse of assets, but has the largest loss of USD 3,000,000. This difference is most likely caused by types of fraudulent financial reporting that are relatively unknown in Indonesia, for example crimes involving fraudulent tax information and fraudulent information on stock exchanges (ACFE, 2016, 2018). This shows that fraudulent financial statements need to be handled seriously so as not to cause greater losses.

Economic crimes are increasing worldwide, and it is known that financial performance distortions lead to many large companies' bankruptcy and can have a broad impact on entrepreneurs (PwC, 2020). In addition, the impact can also be felt by employees or the broader community so that if a company does business globally, the consequences can impact the world. (Zvarikova & Kovalova, 2021). Cases of fraudulent financial statements at Enron and WorldCom, Toshiba and Satyam that occurred abroad have provided evidence that these frauds had a tremendous impact on both shareholders and stakeholders. Users of financial statements can be harmed if fraudulent financial statements cannot be detected, so it is necessary to research fraudulent financial statements for prevention and early detection to minimize fraudulent financial reporting practices.

The number of fraud scandals requires the capacity to detect fraud in financial statements such as the Beneish M-Score. Eight financial ratios were used by Messod D. Beneish in developing the 1999 model which functions as a predictor of financial statement manipulation and can predict and provide signals for companies to commit financial statement fraud, by conducting an analysis to find out whether a company's score is in the manipulator or non-manipulator category (Beneish, 1999; Repousis, 2016; Santosa & Ginting, 2019). Ratio analysis with Beneish M-Score can help CFE find indications of manipulation and find potential fraud (Widodo & Yusiana, 2017). The Beneish M-Score model is chosen because it has an accuracy rate of 100% in fraudulent companies (Hugo, 2019), so it is very effective in predicting fraud in fraudulent financial statements.

Research conducted using the Beneish M-Score model at home and abroad shows the effectiveness of predicting fraudulent financial statements (Ahmed & Naima, 2016; Omar et al., 2014; Özcan, 2018; Tarjo & Herawati, 2015). However, a number of other studies have proven that the Beneish M-Score is not effective in detecting financial statement fraud (Hantono, 2018; Lotfi & Chadegani, 2017; Suheni & Arif, 2020). The results show differences in empirical results using the ratio model on the Beneish M-Score to predict fraudulent financial statements.

So that the ability of the Beneish M-Score needs to be tested again. This study examines the effect of the Beneish M-Score ratio on fraudulent financial statements. The research interest is in the financial reports of sharia issuers whose articles of association show the activities, types and ways of managing their business based on sharia principles (Dewan Komisiner Otoritas Jasa Keuangan, 2015).

This research differs from previous research with the sample of Islamic issuers. Sharia issuers were chosen because there are ongoing fraud cases, and there has been no previous research focusing on Islamic issuers' financial statements. Research conducted abroad shows that sharia companies are not sterile and inseparable from aspects of fraud where there are still fraud problems (Hassairi & Rajhi, 2011; Okeahalam, 1998). So in this study, sharia companies listed on the IDX were selected according to the Indonesian Sharia Stock Index (ISSI) classification. The reason for choosing this object is because ISSI tends to fluctuate and experience an upward trend and has a broad scope because it consists of a large number of shares (OJK, 2021). The financial report data of sharia issuers used are financial reports that have been sanctioned by the OJK suspension for 2012-2021. This data was chosen because the company's financial statements have violated the rules of the Stock Exchange in Indonesia.

## II. LITERATURE SURVEY

### 2.1 Signal Theory

The first proponents of signaling theory describe how the sender (information owner) gives a signal to the recipient in the form of useful information and represents the state of the company (investor) (Spence, 1973). The signal theory explains management's anticipation of the company's growth in the future, which influences potential investors' reactions to the company (Brigham & Huston, 2011). Material that describes management's efforts to carry out the owner's intentions serves as a signal. When making investment decisions, this data is considered an important signal for investors and business people (Gumanti, 2009). This signal is intended to encourage potential investors to increase their investment and shareholder responsibility.

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### 2.2 Financial Statement Fraud

Fraud is an intentional mistake (internal or external party) of the company for profit that may result in loss to other parties (for example, through manipulation or making false representations to third parties) (ACFE, 2016). Financial statement fraud is altering financial statements to make them appear more profitable than they are (Fadilah et al., 2019). Financial statement fraud is intentionally misrepresenting quantities or omitting amounts to deceive report users (Elder, 2011). Cheating is often perpetrated in business to make money and attract new investors.

### 2.3 Beneish M-Score

Financial statement fraud in the form of manipulating excess profits can be identified by the Beneish M-Score method. By calculating the company's financial ratios using financial data, it can be ascertained whether changes in ratios are a consequence of manipulation or there are conditions that can facilitate manipulation (Beneish, 1999). Here are the eight Beneish M-Score ratios.

#### 1. Days Sales Receivable Index

Balances of trade receivables and income for two consecutive years are examined using the DSRI. An increase in days in receivables is a symptom that income is being manipulated (Beneish, 1999).

#### 2. Gross Margin Index

Assess the profitability of the company as well as its future potential. Negative business prospects increase the possibility that the company can manipulate profits (Beneish, 1999).

#### 3. Asset Quality Index

AQI calculates the ratio of total assets to projected profit. A higher ratio indicates lower quality assets for the company (Beneish, 1999).

#### 4. Sales Growth Index

SGI does not disclose profit manipulation, but companies with more sales are more likely to do so (Beneish, 1999).

#### 5. Depreciation Index

An increase in the rate of depreciation of fixed assets indicates excessive income (Beneish, 1999).

#### 6. Sales and General Administration Expenses Index

The occurrence of an overstatement in profits is indicated by a decrease in the company's operating expenses or an increase in sales (Beneish, 1999).

#### 7. Leverage Index (LEVI)

The company's ability to obtain earnings overstatement to fulfill its obligations is indicated by the increase in the debt component of all the assets owned by the company (Beneish, 1999).

#### 8. Total Accrual (TATA)

The high total accruals shows how much profit accruals owned by the company. By increasing accrual transactions in revenue recognition, it identifies potential circumstances that could lead to excess revenue (Beneish, 1999).

## III. RESEARCH HYPOTHESIS

### 3.1 Days Sales Receivable Index Against Financial Statement Fraud

Accounts such as bad debts and obsolete inventory accounts in the financial statements include the company's estimated balance. If they want to manipulate financial reports, managers focus on these two accounts because receivables and inventories require subjective judgments in assessing uncollectible receivables (Summers & Sweeney, 1998). An increase in trade receivables disproportionate to sales, as measured by the DSRI, indicates an increase in revenue. The increase in this ratio may be due to income inflation from manipulated earnings reporting (Özcan, 2018; Petrik, 2016).

An increase in the DSRI value indicates that there is earnings management (Beneish, 1999; Özcan, 2018; Roxas, 2011). The high value of the DSRI allows financial statements to be manipulated (Repousis, 2016). This gives a signal that there is an overstatement in earnings. Empirical evidence shows that DSRI affects fraudulent financial statements (Arshad et al., 2015; Fadilah et al., 2019; Fernanda, 2016; Harsanti & Mulyani, 2021; Nyakarimi et al., 2020; Omar et al., 2014). So that DSRI is predicted to correlate with fraudulent financial statements. So in this case the hypothesis is:

H<sup>1</sup>: DSRI significantly affects fraudulent financial statements

### 3.2 Gross Margin Index Against Financial Statement Fraud

GMI is a ratio that measures a company's profitability and long-term prospects. The high value of GMI indicates a decline in the company's gross profit. As a result, a decrease in gross profit is considered a negative signal (Lev & Thiagarajan, 1993), thus indicating a declining company prospect and can cause fraud. A decrease in the company's prospects (GMI value > 1) shows

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earnings overstatement (Beneish, 1999). The higher the GMI value, the higher the suspicion of financial statement manipulation (Aris et al., 2015; Özcan, 2018; Roxas, 2011; Tarjo & Herawati, 2015). Empirical evidence shows that GMI affects financial statement fraud (Arshad et al., 2015; Fadilah et al., 2019; Fernanda, 2016; Harsanti & Mulyani, 2021; Nyakarimi et al., 2020; Omar et al., 2014; Tarjo & Herawati, 2015). Therefore, the GMI variable is predicted to have a relationship with fraudulent financial statements. So in this case the hypothesis is:

H<sup>2</sup>: GMI significantly affects fraudulent financial statements.

### **3.3 Asset Quality Index Against Financial Statement Fraud**

SAS No.99 describes the risk of management being under undue pressure to meet the financial objectives set by the board of directors, including the intention to reap the rewards from sales and profits, represented by financial targets (AICPA, 2002). ROA is often used to evaluate organizational productivity and to determine rewards and salary increases (Skousen et al., 2015). Company management will be more vulnerable in earnings management as ROA increases, which is a kind of fraud signal and correlates with financial statement fraud. The more significant the AQI value, the more significant the increase in deferral costs (Beneish, 1999).

Research (Bhavani & Amponsah, 2017) showed a higher AQI during the cheating period. Comparing current, fixed, and total assets allows AQI to measure changes in the risk of asset realization. An increase in the ratio signals that the company has increased its deferral of costs or intangible assets to manipulate its earnings (Ahmed & Naima, 2016). Companies are more prone to falsifying financial accounts if the asset quality index value is greater. The asset quality index is used to analyze risk changes in investment performance. The increase in the asset quality index may be due to additional costs capitalized to reduce total costs (Özcan, 2018). Empirical evidence states that AQI has an effect on fraudulent financial reporting (Arshad et al., 2015; Fadilah et al., 2019; Fernanda, 2016; Nyakarimi et al., 2020; Omar et al., 2014; Santosa & Ginting, 2019). Therefore, the AQI variable is predicted to be related to financial statement fraud. So in this case the hypothesis is:

H<sup>3</sup>: AQI significantly affects fraudulent financial statements

### **3.4 Sales Growth Index Against Fraudulent Financial Statements**

SAS No. 99 said managers would feel pressure to falsify financial accounts when a company's industry, operating environment, or financial stability is threatened. Managers manipulate reports when company growth is below the industry average. Fraud can be detected using accounts receivable sales, sales to total, and inventory to sales total (Persons, 1997). Slow sales growth is a negative signal that lowers the value of the company (William, 2015). Management often overstates sales during accounting periods (Beneish, 1999). A significant drop can also identify potentially fraudulent behavior (Petrik, 2016). Empirical evidence, SGI has an effect on fraudulent financial statements (Arshad et al., 2015; Fadilah et al., 2019; Fernanda, 2016; Nyakarimi et al., 2020; Omar et al., 2014). Therefore, the SGI variable is predicted to be correlated with financial statement fraud. So in this case the hypothesis is:

H<sup>4</sup>: SGI significantly affects fraudulent financial statements

### **3.5 Depreciation Index Against Financial Statement Fraud**

Managers will be pressured to commit financial statement fraud when economic, industry, or operating entity conditions threaten the company's financial stability. That is, management violations will occur as a result of financial instability. Company size can be determined by looking at total assets, so managers try to present good assets throughout the year. A company's assets can become unstable if it fluctuates too much or is too low during the year due to the operating performance of its assets needing to be more utilized. Fewer assets than the previous period can spur businesses to increase total assets. However, companies with low total assets or high asset values also have large cash outflows that can be manipulated to manage the situation to appear stable. Research (Repousis, 2016) shows a greater DEPI value during the fraud period. A decrease in depreciation signals a company's efforts to change the useful life of an asset or depreciation method. As a result, the company's profits on the income statement are exaggerated (Feruleva & Shtefan, 2017). Research (Ahmed & Naima, 2016; Özcan, 2018; Roxas, 2011) also proves that DEPI is greater in the fraud period to be able to detect earnings manipulation. Empirical evidence states that DEPI has an effect on fraudulent financial statements (Arshad et al., 2015; Nyakarimi et al., 2020; Omar et al., 2014; Tarjo & Herawati, 2015). Therefore, the DEPI variable is predicted to be related to financial statement fraud. So in this case the hypothesis is:

H<sup>5</sup>: DEPI significantly affects fraudulent financial statements

### **3.6 Sales and General Administration Expenses Index Against Financial Statement Fraud**

Managers give good signals to stakeholders through financial reports. To meet the expectations of related parties regarding the company's effectiveness in using company assets to create profits, managers often even engage in fraudulent

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behaviour. Financial statement fraud is greater when sales are higher because management will feel pressure to increase sales more in the following year.

Management can change estimates, such as the economic life of assets, by assessing things such as obsolete inventories and uncollectible receivables. Financial statement fraud can be detected using inventory and receivables (Summers & Sweeney, 1998). A negative signal appears when there is an imbalance in sales growth and selling costs (Lev & Thiagarajan, 1993; William, 2015). As a result, the cost of sales and sales value will both increase proportionately under management control.

An increase in SGAI is a negative indicator of the company's prospects and is interpreted as an act of profit manipulation, especially by charging higher fees (Ahmed & Naima, 2016). Empirical evidence states that SGAI has an effect on fraudulent financial reporting (Arshad et al., 2015; Fadilah et al., 2019; Omar et al., 2014; Tarjo & Herawati, 2015). Therefore, the SGAI variable is predicted to be related to financial statement fraud. So in this case the hypothesis is:

H<sup>6</sup>: SGAI significantly affects fraudulent financial statements

### 3.7 Leverage Index Against Financial Statement Fraud

SAS No. 99 explains that when there is excessive pressure from external parties, it will indicate the risk of fraudulent financial reporting. The obstacle that business management often faces is obtaining more debt or outside financial sources to maintain their competitiveness (Skousen et al., 2015).

High levels of leverage are associated with a higher risk of breach of credit agreements and reduced ability to access new capital through loans (Persons, 1997). This statement is further supported (Lou & Wang, 2009) that there is a higher probability of misstatement resulting from fraud when a company is under external pressure the company. Financial statement fraud is influenced by the ratio of total debt to total assets (Skousen et al., 2015). An increase in debt provides a signal that management is manipulating earnings. Empirical evidence states that LVGI has an effect on fraudulent financial statements (Arshad et al., 2015; Fernanda, 2016; Omar et al., 2014). Therefore, the LVGI variable is predicted to be related to financial statement fraud. So in this case the hypothesis is:

H<sup>7</sup>: LVGI significantly affects fraudulent financial statements

### 3.8 Total Accrual Against Fraudulent Financial Statements

The company manipulates its financial accounts in an attempt to enhance the company's reputation. Management's method of manipulating financial reports for companies correlates with an increase in assets (Skousen et al., 2015). The richer the company the more total assets it has. Accruals are often used as a manipulative target. Management has been using the flexibility of Generally Accepted accounting principles to manipulate income figures and make financial results look better than they are (Aris et al., 2015; Beneish, 1999; Dechow et al., 2011). High total accruals indicate a low amount of cash on profit generated. A high TATA value (positive value) suggests a profit overstatement signal (Santosa & Ginting, 2019).

Research (Aris et al., 2015) shows that non-cash income increased during fraud. The ratio of TATA assets is usually used to represent earnings management (Dechow & Dichev, 2002; Jones et al., 2008; McNichols, 2002). Empirical evidence states that TATA has an effect on fraudulent financial statements (Arshad et al., 2015; Fadilah et al., 2019; Fernanda, 2016; Harsanti & Mulyani, 2021; Omar et al., 2014; Santosa & Ginting, 2019; Tarjo & Herawati, 2015). Therefore, the TATA variable is predicted to be related to financial statement fraud. So the hypothesis is:

H<sup>8</sup>: TATA significantly affects fraudulent financial statements

The Beneish M-Score value in the context of this study indicates the potential for misstatements in financial accounts. The findings of model calculations serve as a warning signal to make users more aware of the risks involved in using financial reports as a basis for decisions (Hery, 2016).

## IV. RESEARCH METHODS

The research method uses explanatory quantitative techniques and logistic regression analysis, aided by the SPSS tool, to test and prove the research hypothesis. This research concentrates on Sharia companies listed on the IDX and classified under the Sharia Stock Index (ISSI). Specifically, it examines companies suspended by the OJK between 2012 and 2021. The sampling approach used purposive sampling to obtain a sample of 18 companies or 180 in 10 years. The data type used is financial reports on the 2012-2021 Sharia Stock Index. The independent variable of this research is Fraudulent Financial Statements, while the Beneish M-Score is the dependent variable.

### 4.1 Independent Variable

The independent variables are as follows (Beneish, 1999):

1. Days Sales Receivable Index (DSRI)



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Receivables can grow drastically over time for various reasons, including credit policy changes to increase sales in the face of increasingly fierce competition. Inflation can also impact the growth of receivables and determine the difference in receivables caused by increased income. The DSRI formula is as follows:

$$DSRI = \frac{\text{Receivables } t \div \text{Sales } t}{\text{Receivables } t - 1 \div \text{Sales } t - 1}$$

The DSRI measures whether revenue and accounts receivable balance for two consecutive years.

### 2. Gross Margin Index (GMI)

A situation where the company's margins are deteriorating impacts the possibility of profit manipulation. A poor gross margins send a negative signal in terms of a company's prospects. Therefore, companies are more inclined to manipulate earnings. The following is the GMI formula:

$$GMI = \frac{(\text{Sales } t - 1 - \text{COGS } t - 1) \div \text{Sales } t - 1}{(\text{Sales } t - \text{COGS } t) \div \text{Sales } t}$$

This ratio can be used as evidence of a negative signal in a company's prospects when  $GMI > 1$  (one) indicates a decrease in gross margins. Management is motivated by this circumstance to improve financial statistics to look good.

### 3. Asset Quality Index (AQI)

A ratio that can identify differences in other assets caused by excess cost capacity. AQI value  $> 1$  (one) indicates the company can increase deferred costs and intangible assets and manipulate income. Thus, a high AQI indicates a decline in asset quality and the possibility of profit manipulation. The following is the AQI formula:

$$AQI = \frac{1 - (\text{Current Asset } t + \text{Net Fixed Asset } t) / \text{Total Asset } t}{1 - (\text{Current Asset } t - 1 + \text{Net Fixed Asset } t - 1) / \text{Total Asset } t - 1}$$

AQI measures the risk of assets in year  $t$  against year  $t-1$ . If  $AQI > 1$  (one), it shows that the company can improve cost control.

### 4. Sales Growth Index (SGI)

This ratio manages the perception of growth, namely sales growth from the previous year indicated by an SGI value of  $> 1$ .

The following is the SGI formula:

$$SGI = \frac{\text{Sales } t}{\text{Sales } t - 1}$$

The predicted growth during the financial reporting period can be obtained from the SGI which increases drastically in the fake notes.

### 5. Depreciation Index (DEPI)

This ratio determines the company's physical facilities for one period costs. DEPI compares fixed assets before depreciation between periods with depreciation expense. There is an overstatement signal in earnings if the DEPI is above 1 (one). A ratio greater than 1 means a decrease in depreciation expense for fixed assets, while a ratio less than 1 indicates an increase in depreciation expense for fixed assets.

$$DEPI = \frac{[\text{Depreciation } t - 1 / (\text{PPE } t - 1 + \text{Depreciation } t - 1)]}{[\text{Depreciation } t / (\text{PPE } t + \text{Depreciation } t)]}$$

A DEPI value greater than 1 indicates that asset depreciation is slowing down, possibly as a result of companies adopting new methods of increasing income or extending the usable life of their assets (Beneish, 1999).

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

As a comparison ratio between selling, general, and administrative expenses with sales for two periods.  $SGAI < 1$  indicates if the company's operating expenses are decreasing or its sales are increasing. This shows that there is an overstatement in earnings.

$$SGAI = \frac{\text{SGA } t / \text{Sales } t}{\text{SGA } t - 1 / \text{Sales } t - 1}$$

SGAI with high sales growth can be interpreted as a negative signal for the company's prospects (Beneish, 1999).

### 7. Leverage Index (LEVI)

This ratio shows how the debt limit and earnings manipulation affect each other.

$$LVGI = \frac{[\text{Current Liabilities } t + \text{Total Long Term Debt } t] / \text{Total Asset } t}{[\text{Current Liabilities } t - 1 + \text{Total Long Term Debt } t - 1] / \text{Total Asset } t - 1}$$

LVGI is a comparison of the ratio of total debt to total assets with the previous year. An increase in financial leverage is stated if the LVGI is greater than 1. The impact of technical insolvency on the stock market can be associated with changes in capital structure leverage (Beneish, 1999).

### 8. Total Accrual (TATA)

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This ratio explains accounting profit that does not come from cash income. The potential for earnings manipulation is associated with a greater positive outcome. TATA formula, as follows:

$$TATA = \frac{\text{Income from Operating } t - \text{Cash Flow fom Operating } t}{\text{Total Assets}}$$

Total accrual is determined as the difference between working capital other than depreciation and cash. TATA can be used as a yardstick to measure cash in underlying reported income as well as to measure higher positive accruals (less cash) (Beneish, 1999).

### 4.2 Dependent Variable

The dependent variable as follows (Beneish, 1999) Fraudulent Financial Statements are calculated using the Beneish M-Score formula

$$M = -4.84 + 0.92 * DSRI + 0.528 * GMI + 0.404 * AQI + 0.892 * SGI + 0.115 * DEPI - 0.172 * SGAI + 4.679 * TATA - 0.327 * LVGI$$

The constant number is -4.84 while 8 financial ratios are multiplied by each coefficient. The Beneish M-Score > -2.22 means the financial statements may have been manipulated. In this study used a dummy variable. These variables are divided into two categories, with a value of 0 (the group that did not receive the treatment) and a value of 1 (the group that received the treatment). A dummy variable is used in an attempt to determine how the sample classification affects the estimated parameters. In addition, the dummy variable seeks to measure qualitative characteristics. The dummy variable used is whether the company's financial statements show no signs of fraudulent financial statements (Non Manipulator) is worth "0" and the company's financial statements show signs of fraudulent financial statements (Manipulator) is worth "1".

### 4.3 Data Analysis

The data analysis technique uses logistic regression with SPSS software tools.

$$FSF = \beta_0 + \beta_1 DSRI + \beta_2 GMI + \beta_3 AQI + \beta_4 SGI + \beta_5 DEPI + \beta_6 SGAI + \beta_7 TATA + \beta_8 LVGI + \epsilon$$

Information:

FSF	: Financial Statement Fraud (Dummy variable)
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8$	: Regression coefficient
DSRI	: Day's sales receivables index
GMI	: Gross profit margin
AQI	: Asset quality index
SGI	: Sales growth index
DEPI	: Depreciation index
SGAI	: Sales and general administration expenses index
LVGI	: Leverage index
TATA	: Total Assets
$\epsilon$	: Residual.

## V. RESULTS AND DISCUSSIONS

### 5. 1 Descriptive Statistical Analysis

Data analysis uses the minimum, maximum and average (mean) values. Table 1 below shows the statistical results of the data from the variables used:

**Table 1: Descriptive statistics**

Variable	N	Min	Max	Mean	Std. Deviation
DSRI	180	.00	15.38	1.2431	1.41972
GMI	180	-24.98	12.9	.9262	2.81037
AQI	180	-1.58	20.01	1.1824	1.58513
SGI	180	.00	237.96	2.7229	17.9399
DEPI	180	.00	22.18	1.1644	1.64222
SGAI	180	0.07	10.68	1.1021	.8959
LVGI	180	-401.04	14.43	-1.155	29.99264
TATA	180	-3.92	.72	-.0362	.32032
FSF	180	0	1	.43	0.497

Source: Processed data (2022)

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Table 1 shows the lowest DSRI value of 0.00 and the highest value of 15.38 and the means value of 1.2431. The lowest GMI value is -24.98 and the highest value is 12.90 and the means value is 0.9262. The lowest AQI value is -1.58 and the highest value is 20.01 and the means value is 1.1824. The lowest SGI value is 0.00 and the highest value is 237.96 and the means value is 2.7229. The lowest DEPI value is -0.00 and the highest value is 22.18 and the means value is 1.1644. The lowest SGAI value is 0.07 and the highest value is 10.68 and the means value is 1.1021. The lowest LVGI value is -401.04 and the highest value is 14.43 and the means value is -1.155. The lowest TATA value is -3.92 and the highest value is 0.72 and the means value is -0.0362 while the value of Fraudulent Financial Statements shows the lowest value of 0 and the highest value of 1 and an average of 0.43.

### 5.2 Test Assessing the Overall Model

Stage 1 (Block 0) was determined using a logistic regression model without including independent variables, while stage 2 (Block 1) was calculated using the dependent and independent factors.

**Table 2: Test assessing the overall model block 0**

Iteration		-2 Log likelihood	Coefficients
			Constant
Step 0	1	246.324	-.267
	2	246.323	-.268
	3	246.323	-.268

- Constant is included in the model.
- Initial -2 Log Likelihood: 246.323
- Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.

**Source:** Processed data (2022)

From the table above it is known if, the output results in the model -2 Log Likelihood test value stage 1 is 246.323.

**Table 3: Test assessing the overall model (overall model fit) block 1**

Iteration	-2 Log likelihood	Log Coefficients									
		Constant	X1	X2	X3	X4	X5	X6	X7	X8	
Step 1	1	190.203	-.898	.359	.119	.210	.007	.159	-.295	-.006	1.674
	2	135.349	-2.032	.981	.310	.568	.007	.307	-.556	-.009	7.460
	3	97.733	-3.676	1.991	.717	1.167	.003	.486	-1.245	-.013	15.077
	4	73.189	-5.617	3.326	1.504	1.934	.046	.521	-2.540	-.018	24.639
	5	52.788	-9.724	5.312	2.834	2.827	.721	.468	-3.809	-.027	35.174
	6	40.386	-15.900	7.323	5.194	3.905	1.573	.716	-4.758	-.077	47.945
	7	27.415	-26.365	9.830	7.138	4.848	5.580	1.083	-4.682	-.212	61.055
	8	20.007	-41.435	14.227	9.657	6.755	10.411	1.613	-5.105	-.282	86.865
	9	16.296	-59.957	19.940	13.170	9.405	15.794	2.250	-5.957	-.520	121.078
	10	11.869	-80.872	27.745	18.287	13.008	23.540	3.083	-7.161	-5.986	164.107
	11	7.279	-125.772	44.877	29.851	20.580	40.040	4.895	-11.335	-16.930	259.175
	12	3.863	-206.918	74.454	48.682	33.514	68.979	8.071	-17.617	-32.180	426.604
	13	1.423	-328.734	118.994	74.325	53.036	114.189	12.896	-24.746	-56.929	681.600
	14	.515	-453.293	164.391	100.699	73.072	159.845	17.814	-32.244	-81.427	941.863
	15	.190	-577.418	209.462	127.256	93.001	204.955	22.701	-39.822	-105.326	1200.041
	16	.071	-702.249	254.715	154.061	113.024	250.151	27.614	-47.471	-129.141	1459.164
	17	.026	-828.060	300.299	181.128	133.193	295.607	32.546	-55.198	-153.013	1720.211
	18	.010	-955.025	346.280	208.566	153.513	341.434	37.401	-63.013	-176.993	1983.792
	19	.004	-1082.760	392.556	236.162	173.966	387.475	42.295	-70.919	-201.039	2249.196
	20	.001	-1211.060	439.068	263.841	194.531	433.647	47.249	-78.918	-225.119	2516.081

- Method: enter
- Constant is included in the model.
- Estimation is stopped in iteration number 20 considering that the maximum iteration has been reached. Final solution could not be found.

**Source:** Processed data (2022)



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From the table above it is known if3, the output result of the -2 Log Likelihood test value at the end of stage 2 is 0.001. Output results -2 log likelihood table 4.2 and table 4.3 there is a decrease in stage 1 (Block 0) worth 246.323 to stage 2 (Block 1) worth 0.001. That is, the model after the independent variables are entered fits (fit) with the data (the model is a good model).

### 5.3 Model Conformity Test

This model assesses the fit and overall predictability of the model.

**Table 4: Model feasibility test (hosmer and lemeshow test)**

Step	Chi-square	df	Sig.
1	.000	5	1.000

Source: Processed data (2022)

Table 4 Chi-Square is 0.000 with sig 1.000 > 0.05. That is, the model used follows the data (the observed results and the possible results of the prediction of the model do not have a significant difference).

### 5.4 Determination Coefficient Test

The amount of the variance in the dependent variable is due to the influence of the independent variables shown in Table 5 below:

**Table 5: Determination coefficient test**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	.001 <sup>a</sup>	.746	1.000

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Source: Processed data (2022)

Table 5 presents the output results for the Nagelkerke R Square value of 1,000 or the equivalent of 100%, so it can be concluded that in this study the independent variable is able to explain the dependent variable by 100%.

### 5.5 Total Accrual Against Fraudulent Financial Statements

In the classification table, the high overall percentage value indicates the high ability of the logistic regression model to classify data.

**Table 6: Classification matrix**

Observed			Predicted		
			Financial Statement Fraud		Percentage Correct
			Non Manipulator	Manipulator	
Step 1	Financial Statement Fraud	Non Manipulator	102	0	100.0
		Manipulator	0	78	100.0
Overall Percentage					100.0

Source: Processed data (2022)

Table 6 presents the predicted output for companies in the Non Manipulaor category code zero (0) is 102 financial reports with a classification accuracy of 100%, while the predictions for companies in the Manipulaor category code one (1) are 78 financial reports with a classification accuracy of 100%. So, the overall classification accuracy is 100%.

### 5.6 Simultaneous Test

Simultaneously the independent variables influence the dependent variable.

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**Table 7: Simultaneous test**

		Chi-square	df	Sig.
Step 1	Step	246.322	8	.000
	Block	246.322	8	.000
	Model	246.322	8	.000

Source: Processed data (2022)

Table 4.7 presents the output of a Chi-Square value of 246.322 and sig 0.000 <0.05 (the logistic regression model is good). This indicates that simultaneously all the independent variables affect the dependent variable significantly.

### 5.7 Partial Test (Wald)

An equation table partially shows how the independent variables affect the dependent variable. The test results in Table 6 are as follows:

**Table 8: Partial test (Wald)**

B		S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)		
							Lower	Upper	
Step 1 <sup>a</sup>	DSRI	439.068	1878.911	.055	1	.815	4.838E+190	.000	.
	GMI	263.841	1416.746	.035	1	.852	3.844E+114	.000	.
	AQI	194.531	833.447	.054	1	.815	3.045E+084	.000	.
	SGI	433.647	1920.823	.051	1	.821	2.141E+188	.000	.
	DEPI	47.249	292.916	.026	1	.872	33117527431137 8600000.000	.000	7.087E+269
	SGAI	-78.918	681.762	.013	1	.908	.000	.000	.
	LVGI	-225.119	1027.840	.048	1	.827	.000	.000	.
	TATA	2516.081	10936.745	.053	1	.818	.	.000	.
	Constant	-1211.060	5321.635	.052	1	.820	.000	.	.

a. Variable(s) entered on step 1: DSRI, GMI, AQI, SGI, DEPI, SGAI, LVGI, TATA.

Source: Processed data (2022)

The number of observations was (n=180), the number of independent variables (k=8), degree of freedom (df) = n-k (180-8 = 172), with a sig  $\alpha$  level <0.05. So, ttable is 1.97385. Hypothesis testing based on Table 4.10, namely:

First hypothesis (H1) Wald test results (t) tcount < ttable (0.055 < 1.97385) and probability value > significance level (0.815 > 0.05). That is, H1 is rejected (Has no effect).

Second hypothesis (H2) Test results (t) tcount < ttable (0.035 < 1.97385) and probability value > significance level (0.852 > 0.05). That is, H2 is rejected (Has no effect).

Third hypothesis (H3) Test results (t) tcount < ttable (0.054 < 1.97385) and probability value > significance level (0.815 > 0.05). That is, H3 is rejected (Has no effect).

Fourth hypothesis (H4) Test results (t) tcount < ttable (0.051 < 1.97385) and probability value > significance level (0.821 > 0.05). That is, H4 is rejected (Has no effect).

Fifth hypothesis (H5) Test results (t) tcount < ttable (0.026 < 1.97385) and probability value > significance level (0.872 > 0.05). That is, H5 is rejected (Has no effect).

Sixth hypothesis (H6) Test results (t) tcount < ttable (0.013 < 1.97385) and probability value > significance level (0.908 > 0.05). That is, H6 is rejected (Has no effect).

Seventh hypothesis (H7) Test results (t) tcount < ttable (0.048 < 1.97385) and probability value > significance level (0.827 > 0.05). That is, H7 is rejected (Has no effect).

The eighth hypothesis (H8). Test results (t) tcount < table (0.053 < 1.97385) and probability value > significance level (0.818 > 0.05). That is, H8 is rejected (Has no effect).

### The Effect of DSRI on Fraudulent Financial Statements

The results show that DSRI has no effect (sig > 0.05) on fraudulent financial statements. By comparing the minimum value of 0.00 with the average value of 1.2431 in this study it was determined that the DSRI had a low value. In other words, a decrease in the amount of a company's receivables does not indicate that its financial reporting is fraudulent. The insignificant results of this study signify that if a company has a problem of decreasing receivables because all receivables are collected from

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credit sales, it can be resolved, for example, by after-sale boarding, namely by creating an allowance account for losses. In this way, the profit can be reflected in the report on the amount of accounts receivable that can be realized.

Estimation of losses on accounts receivable is understood as a group of selling expenses that are related to collection of accounts receivable or can reduce a number of revenue items (for example sales) (Suwardjono, 2006). This research follows the signalling theory, which states that a low DSRI value does not indicate that the financial statements contain material misstatements.

The results of this study support (Hantono, 2018; Lotfi & Chadegani, 2017; Santosa & Ginting, 2019; Suheni & Arif, 2020; Tarjo & Herawati, 2015) their research states that the has no effect. These results do not support (Beneish, 1999; Summers & Sweeney, 1998) the study explains that if managers want to manipulate financial reports, managers will focus on accounts receivable and sales.

### **The Effect of GMI on Fraudulent Financial Statements**

The results show that GMI has no effect ( $\text{sig} > 0.05$ ) on fraudulent financial reporting. By comparing the maximum value of 12.9 with the average value of 0.9262 in this study, it was determined that GMI showed a high score. The GMI value does not indicate that a company is committing financial statement fraud. A high value generated by GMI indicates that the company's sales margin has decreased.

The results that are not significant in this study indicate that it will be difficult for companies to distort data when a company experiences a decline in profits or profitability because it can be easily recognized by paying attention to the company's capacity to earn profits from the previous year. The size of changes in gross profit is also influenced by the quantity or volume of goods sold and the cost per unit (average) price of products sold or produced. So that it is possible that a change (decrease) in gross profit is a natural thing for the company and will make management try their best to improve the company's prospects so that it is better in the future. This study's results do not follow the signal theory that a decrease in gross profit is considered a negative signal, thus indicating that a company's prospects are experiencing a decline and can be a cause of fraud.

The company's profitability affects the existence of manipulation (leveling the company's income) (Handayani & Fuad, 2015). The company makes adjustments to high income to match the target and allocates the remaining funds to compensate for periods of low income. The results of this study support (Hantono, 2018; Lotfi & Chadegani, 2017; Suheni & Arif, 2020) their research which states that the has no effect. This study does not support this (Beneish, 1999; Tarjo & Herawati, 2015). The study states that the decline in gross profit indicates a negative signal related to the company's prospects. So companies that show poor prospects tend to manipulate earnings.

### **The Effect of AQI on Fraudulent Financial Statements**

The results show that AQI has no effect ( $\text{sig} > 0.05$ ) on fraudulent financial reporting. By comparing the minimum value of -1.58 with the average value of 1.1824 in this study it was determined that AQI had a low value. That is, a low AQI value does not indicate a company is committing financial statement fraud. Insignificant results in this study indicate when there are financial targets set by the directors but cannot be achieved by management because the level of the asset quality index has no effect on management's ability to commit fraudulent financial statements because managers consider that the value and AQI targets in the company are still considered reasonable and achievable. Even though the AQI value is low, the company will try to maintain financial stability in various ways to satisfy and meet the expectations of principals, namely investors or shareholders. The results of this study follow the signaling theory, which states that a low AQI value signals that manipulating a company's earnings will not increase its deferred costs or intangible assets.

The results of this study are not in line with what was done (Hantono, 2018; Lotfi & Chadegani, 2017; Suheni & Arif, 2020; Tarjo & Herawati, 2015) their research states that the target size of the Asset Quality Index will not trigger fraudulent financial reporting by management. The results of this study contradict the results of his research (Beneish, 1999; Reposis, 2016) the study shows that AQI has a significant impact on identifying fraudulent financial statements.

### **The Effect of SGI on Fraudulent Financial Statements**

The results show that SGI has no effect ( $\text{sig} > 0.05$ ) on fraudulent financial reporting. By comparing the minimum value of 0.00 with the average value of 2.7229 in this study, it was determined that SGI had a low score. Insignificant results in this study indicate that low sales growth rates do not indicate that management is committing financial statement fraud because management usually only focuses on the company's ability to earn profits.

This means that regardless of the difficulties and demands faced by management to increase sales, managers will always try to do what is best for the company without having to commit fraud. These results are inconsistent with the signal theory that slow sales growth is a negative signal that will reduce company value and may indicate fraud.

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The results of this study are not in line with what was done (Omar et al., 2014; Repousis, 2016). These studies indicate that SGI significantly affects earnings management in identifying fraudulent financial statements. The cause of increased manipulation of financial reports is caused by pressure on managers to obtain high levels of income or sales for the company in order to meet the resource needs and the company's financial structure (Annisa & Ghozali, 2020). The results of this study are not in line with what was done (Hantono, 2018; Harsanti & Mulyani, 2021; Suheni & Arif, 2020) their research states that managers will try to provide the best for the company regardless of whether or not there is pressure on management to increase sales.

### **The Effect of the DEPI on Fraudulent Financial Statements**

Based on the results of DEPI's research, it has no effect ( $\text{sig} > 0.05$ ) on fraudulent financial statements. By comparing the minimum value of 0.00 with the average value of 1.1644 in this study it was determined that DEPI had a low value. The results are not significant in this study because the company changes its accounting policy (depreciation method) and different depreciation methods in the period produce different values.

This study is not following the signal theory, which states that companies that experience a decrease in depreciation are a signal of the company's efforts to change the useful life of assets or the method of depreciation in manipulating profits. The results of this study are not in line with what was done (Beneish, 1999; Hantono, 2018; Suheni & Arif, 2020) their research states that in the calculation of depreciation there are regulations for the methods used in calculating depreciation such as the straight-line method and yearly figures as well as depreciation policies applied by companies with applicable policies. The results of this study contradict the results of his research t (Omar et al., 2014; Tarjo & Herawati, 2015) the study indicates that DEPI has a substantial impact on detecting financial statement fraud in income management.

### **The Effect of the SGAI on Fraudulent Financial Statements**

The results show that SGAI has no effect ( $\text{sig} > 0.05$ ) on fraudulent financial statements. By comparing the minimum value of 0.07 with the average value of 1.1021 in this study, it was determined that SGAI had a low score. A low SGAI value indicates a decrease in selling, administrative and general costs for the company (management can reduce expenses, making the company's costs efficient to maintain its sales value).

The insignificant results in this study also show that the company can maintain its sales value (using company assets to generate profits) so that it is not motivated to commit fraud. These results contradict the signal theory that a low SGAI value indicates a company is manipulating profits.

The results of this study are not in line with what was done (Hantono, 2018; Harsanti & Mulyani, 2021; Suheni & Arif, 2020) their research states that companies will not be able to manipulate financial statements, as long as the company can maintain its sales activities. The results of this study are not in line with what was done (Repousis, 2016; Tarjo & Herawati, 2015) this study shows that SGAI significantly influences earnings management in identifying fraudulent financial statements.

### **The Effect of LVGI on Fraudulent Financial Statements**

The LVGI research results have no effect ( $\text{sig} > 0.05$ ) on fraudulent financial statements. By comparing the maximum value of 14.43 with the average value of -1.1545 in this study, it was determined that the LVGI had a high value. This shows that the manager will not commit fraudulent financial statements when there is a significant change in accounts payable. High leverage can be interpreted to violate credit agreements, and low ability to obtain additional capital through loans (Persons, 1997).

The results are insignificant in this study because the value of the debt owned depends on the company's size. A high debt value only sometimes means management manipulates financial statements to achieve high profits. On the contrary, this shows that management is confident (has the ability) so that it has an obligation to generate high income. This result is not in accordance with the signaling theory which states when there is an increase in debt it gives a signal that management is manipulating earnings.

The results of this study are not in line with what was done (Hantono, 2018; Harsanti & Mulyani, 2021; Lotfi & Chadegani, 2017; Suheni & Arif, 2020) their research shows that LVGI has no effect on fraudulent financial statements. The results of this study contradict the results of his research (Omar et al., 2014) the research shows that LVGI has an effect on earnings management in detecting financial statement fraud.

### **The Effect of TATA on Fraudulent Financial Statements**

Based on the results of the TATA study, it had no effect ( $\text{sig} > 0.05$ ) partially on fraudulent financial statements. By comparing the maximum value of 0.72 with an average value of -0.0362 in this study, it was determined that TATA had a high value. This means that when there is an increase in total accruals, it does not indicate fraudulent financial reporting. High total accruals indicate that the income cash generated is low.

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The insignificant results in this study are due to the total accrual detecting losses caused by lower receipts than expenses. Assets that have settled are a sign that the company is ineffective when managing its assets, so management tends to make long-term investments (profits are earned after the next period). This result is not following the signalling theory, which states that a high TATA indicates a signal of overstatement of earnings.

The results of this study corroborate the research conducted (Hugo, 2019; Özcan, 2018; Widodo & Yusiana, 2017) their research showing TATA has no effect on fraudulent financial reporting. The results of this study contradict the results of his research (Harsanti & Mulyani, 2021; Omar et al., 2014; Tarjo & Herawati, 2015) that TATA has an effect on earnings management in detecting fraudulent financial statements.

### CONCLUSIONS

The research results show that the eight ratios of the Beneish M-Score do not affect financial statement fraud. This is because Sharia companies with the Beneish M-Score model cannot detect fraudulent financial statements, which can be seen from the results of the classification matrix data. It turns out that Sharia companies have more indications of non-manipulators (102 financial reports) than manipulators (78 financial reports), while this study used a sample suspended from the OJK. Based on the Beneish M-Score model, it is not appropriate to use this method to differentiate between manipulator and non-manipulator reports in Islamic companies. Therefore, using the Beneish M-Score model for detecting fraudulent financial statements in companies listed on the Indonesian Sharia Stock Index (ISSI) is not recommended.

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