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Analysis of Financial Statement Fraud Using the Beneish M-Score Method: A Study of Companies Involved in Legal Cases in Indonesia

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Abstract: The purpose of this study is to analyze financial statement fraud using the Beneish M-Score method. The main variables utilize indicators from eight financial ratios: Day Sales in Receivables Index (DSRI), Gross Margin Index (GMI), Asset Quality Index (AQI), Sales Growth Index (SGI), Depreciation Index (DEPI), Selling, General, & Admin Expenses Index (SGAI), Leverage Index (LVGI), and Total Accruals to Total Assets (TATA) to generate the M-Score value. Companies are suspected of committing financial statement fraud if they have an M-Score value greater than -2.22. The population in this study consists of 40 companies listed on the Indonesia Stock Exchange, comprising 20 companies suspected of committing financial statement fraud and 20 companies suspected of not committing financial statement fraud. The research results show that among the 20 companies suspected of committing financial statement fraud, 9 companies have M-Score values greater than -2.22. Meanwhile, among the 20 companies suspected of not committing financial statement fraud, 3 companies have M-Score values greater than -2.22.

Keyword: Financial Statement Fraud, Beneish M-Score, Financial Statement Manipulation, Fraud Detection, Criminal Cases.

INTRODUCTION

Financial statement fraud remains a persistent issue with widespread implications for public trust and the integrity of the national financial system. In Indonesia, major cases such as those involving PT Garuda Indonesia and PT Kimia Farma demonstrate how the manipulation of financial information harms stakeholders and damages the credibility of the capital market. Consequently, there is a pressing need for early detection mechanisms for manipulative reporting, viewed through the lenses of both forensic accounting and criminal

law enforcement. These manipulative practices are often closely tied to legal violations in Indonesia. Specifically, the falsification of financial statements can be categorized as the crime of document forgery, as regulated under Article 236 of the Criminal Code (KUHP). Beyond criminal consequences, companies face severe administrative sanctions, ranging from trading suspensions by the Indonesia Stock Exchange (IDX) to potential delisting, which directly erodes shareholder value.

One recognized statistical approach for detecting this phenomenon is the Beneish M-Score. Beneish (1999) describes this model as a profile derived from a sample of earnings manipulators, designed to distinguish the characteristics of manipulating firms from non-manipulators. The model operates by analyzing eight financial statement variables intended to reveal the effects of manipulation or the conditions prompting companies to engage in such activities. In his initial testing, Beneish (1999) identified half of the companies involved in earnings manipulation prior to public disclosure. This capability establishes the model as a valuable screening tool for investment professionals assessing financial statements.

The effectiveness of this model has been tested across various empirical contexts in Indonesia. Widowati & Oktoriza (2021) applied the M-Score to the raw material and manufacturing sectors using five measurement variables, including DSRI and GMI. They successfully identified companies classified as manipulators based on these categories. These findings were reinforced by Effendy & Inapty (2022), who compared the Beneish model with the F-Score. They concluded that the Beneish model remains relevant even during volatile economic conditions such as the Covid-19 pandemic; statistical tests showed no significant difference in M-Score values before and during the pandemic, indicating the model's consistency in predicting fraud. The specific indicators of driving fraud can vary depending on a company's internal conditions. A study by Kurniasari *et al.* (2024) on PT Waskita Karya Tbk highlighted that specific ratios such as DSRI, SGAI, and TATA served as indicators for detecting fraud in certain years, though the model did not achieve a 100% detection rate across every observation period. Conversely, Marbun (2022) observed a strong correlation between financial pressure and fraud. He noted that companies facing predicted bankruptcy often exhibit signs of potential financial statement fraud driven by this financial distress, confirming that the prospect of bankruptcy often serves as the initial trigger for manipulation.

The application of this model extends to other specific sectors as well. Darmatika *et al.* (2025) found that the Beneish M-Score effectively detected signs of manipulation, identifying 28.57% of their sample as manipulators. While (Widowati & Oktoriza, 2021) examined general sectors using industry-based samples, this study specifically focuses on evaluating companies that have been legally proven to commit fraud and those subject to trading suspensions by the IDX during the 2019–2025 period. The details of the sampled companies are as follows:

Table 1. List of Companies with and without Legal Issues (2019-2025)

No	Code	Company with Legal Issues	Code	Company without Legal Issues	Sector
1	BEBS	PT Berkah Beton Sadaya Tbk	SMGR	Semen Indonesia (Persero) Tbk	Basic Materials
2	KAYU	PT Darmi Bersaudara Tbk	INTP	Indocement Tungal Prakarsa Tbk	Basic Materials
3	SIMA	PT Siwani Makmur Tbk	ANTM	Aneka Tambang Tbk	Basic Materials
4	IIKP	PT Inti Agri Resources Tbk	ACES	Aspirasi Hidup Indonesia Tbk	Consumer Cyclical
5	MABA	PT Marga Abhinaya Abadi Tbk	AUTO	Astra Otoparts Tbk	Consumer Cyclical
6	NUSA	PT Sinergi Megah Internusa Tbk	MAPI	Mitra Adiperkasa Tbk	Consumer Cyclical
7	IPPE	PT Indo Pureco Pratama Tbk	ICBP	Indofood CBP Sukses Makmur	Consumer non-Cyc
8	TGUK	PT Platinum Wahab Nusantara Tbk	MYOR	Mayora Indah Tbk	Consumer non-Cyc

No	Code	Company with Legal Issues	Code	Company without Legal Issues	Sector
9	JSKY	PT Sky Energy Indonesia Tbk	ADRO	Adaro Energy Indonesia Tbk	Energy
10	SMRU	PT SMR Utama Tbk	PTBA	Bukit Asam Tbk	Energy
11	SUGI	PT Sugih Energy Tbk	AKRA	AKR Corporindo Tbk	Energy
12	TRAM	PT Trada Alam Minera Tbk	PGAS	Perusahaan Gas Negara Tbk	Energy
13	INAF	PT Indofarma Tbk	KLBF	Kalbe Farma Tbk	Healthcare
14	TOPS	PT Totalindo Eka Persada Tbk	JSMR	Jasa Marga (Persero) Tbk	Infrastructures
15	WIKA	PT Wijaya Karya (Persero) Tbk	TOTL	Total Bangun Persada Tbk	Infrastructures
16	WSKT	PT Waskita Karya (Persero) Tbk	NRCA	Nusa Raya Cipta Tbk	Infrastructures
17	ARMY	PT Armidian Karyatama Tbk	BSDE	Bumi Serpong Damai Tbk	Properties

Source: Data in process (Indonesia Stock Exchange, 2025)

The table above presents the population of companies involved in legal cases alongside those free of legal issues. This research aims to empirically demonstrate the effectiveness of the Beneish model within the context of legal cases in Indonesia. Furthermore, this study moves beyond calculating the final M-Score value; it interprets each component ratio comprising the score to map the characteristic patterns appearing in troubled companies. This allows for the identification of specific fraud indicators, such as rising receivables, abnormal sales growth, declining gross profit margins, or increasing accruals.

The novelty of this research lies in its empirical approach, which not only tests the Beneish M-Score method's ability to detect financial statement fraud, but also specifically links it to companies involved in real legal cases in Indonesia and compares them directly with companies that have not experienced legal problems in the 2019–2025 period. Thus, this study presents a new perspective by using a company's legal status as the basis for fraud classification, thus providing contextual validation of the model's accuracy in a law enforcement environment. The purpose of this study is to analyze financial statement fraud using the Beneish M-Score method between companies involved in legal cases (fraud) and those without legal cases (non-fraud).

METHOD

This study employs a quantitative approach utilizing a comparative descriptive design to evaluate the effectiveness of the Beneish M-Score model in detecting financial statement fraud. The population encompasses all companies listed on the Indonesia Stock Exchange (IDX), with the sample selected via purposive sampling. This technique aligns with (Widowati & Oktoriza, 2021), who emphasize the importance of selecting samples based on specific criteria to ensure valid ratio analysis results.

Based on the research methodology, data were categorized into two primary observation groups: a group of 20 companies with legal issues defined as those experiencing trading suspensions exceeding six months or involvement in criminal or capital market legal cases between 2019 - 2025, and a control group of 20 companies without legal issues (non-fraud) operating within the same industrial sectors. The study utilizes secondary data comprising audited financial statements published one to two years prior to the occurrence of the legal case or suspension. The selection of 40 sample companies is to represent all companies that meet the purposive sampling criteria related to legal case involvement and the availability of financial reports in the 2019–2025 period, thus ensuring empirical relevance to the actual fraud context in the Indonesian capital market. Thus, the selection of 40 companies is not merely a consideration of quantity, but a methodological consequence of the comparative research design that aims to obtain a fair, representative comparison and is able to test the effectiveness of the Beneish M-Score in statistically differentiating fraudulent and non-fraudulent companies.

The primary variable analyzed is the fraud score derived from the Beneish (1999) model, which integrates eight key financial ratios DSRI, GMI, AQI, SGI, DEPI, SGAI, LVGI, and TATA to generate the M-Score. Companies are classified as manipulators if their M-Score exceeds -2.22, and as non-manipulators if the score falls below this threshold.

Hypothesis testing was conducted using the Independent Sample T-Test. This comparative statistical method adopts the approach of (Syahbani *et al.*, 2025), utilizing a mean difference test to demonstrate significant disparities in financial characteristics between the two company groups. This study formulates the following hypotheses to test the discriminatory power of the Beneish model:

1. H_0 (Null Hypothesis)

There is no significant difference in the Beneish M-Score calculation results between companies involved in legal cases (fraud) and those without legal cases (non-fraud).

2. H_a (Alternative Hypothesis)

There is a significant difference in the Beneish M-Score calculation results between companies involved in legal cases (fraud) and those without legal cases (non-fraud).

Specifically, this study predicts that the group of companies with legal issues will exhibit a higher average M-Score compared to the non-fraud group, indicating a greater probability of manipulation. Furthermore, an in-depth analysis is performed on each individual ratio component to identify dominant patterns serving as early warning signals of manipulation within the companies facing legal action.

RESULT AND DISCUSSION

Statistical Description of M-Score Results

Calculations using the Beneish M-Score model for the two sample groups companies involved in legal cases (Fraud/Suspension) and those without legal issues (Non-Fraud) reveal distinct differences in their mean scores. This section must answer the problems or research hypotheses that have been formulated previously.

Table 2. Beneish M-Score Statistical Description

Sample Group	N	Mean	Mean Category	Interpretation
Companies with Legal Issues (Fraud)	20	-1,13	> -2.22	Indicated Manipulator
Companies without Legal Issues (non-fraud)	20	-2,54	< -2.22	Non-Manipulator

Source: Data in process (2026)

The descriptive results indicate that the group of companies experiencing legal issues recorded an average M-Score of -1.13. This figure exceeds the cut-off threshold of -2.22, indicating that, in aggregate, these companies possessed a high probability of engaging in financial statement manipulation prior to the legal case or during the period of alleged fraud. In contrast, the group of companies free from legal issues recorded an average score of -2.54; falling below the threshold, this reflects a more reasonable quality of financial reporting.

Difference Test Results

Hypothesis testing was conducted utilizing the Independent Sample T-Test to determine the significance of the difference in M-Score values between companies implicated in legal cases (fraud) and those free of legal issues (non-fraud).

Table 3. Independent Sample T-Test Beneish M-Score

		Independent Samples Test								
		Test for		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Interval of the	
									Lower	Upper
Beneish	Equal variances assumed	20,863	0	2,218	38	0,033	1,408	0,63489	0,12273	2,69327
	Equal variances not assumed			2,218	19,619	0,039	1,408	0,63489	0,08199	2,73401

Source: Data in Process (2026)

The results of Levene's Test for Equality of Variances yielded a significance value of 0.033 (< 0.05), indicating that the variances of the data across the two groups are non-homogeneous. Consequently, the interpretation of the difference test results relies on the values for Equal Variances Not Assumed.

The calculation results reveal a t-statistic of 2.218 with a Sig. (2-tailed) value of 0.039. As the significance value of 0.039 is less than the significance level of 0.05, the null hypothesis (H_0) is rejected. This demonstrates a significant difference between the mean Beneish M-Scores of companies indicated to have legal issues and those without legal cases.

The Mean Difference of 1.408 further indicates a positive direction of disparity, wherein the average score of troubled companies is significantly higher than that of companies free from legal issues. These findings suggest that the Beneish M-Score model effectively distinguishes the financial reporting characteristics of manipulator and non-manipulator firms on the Indonesia Stock Exchange. Specifically, companies subsequently involved in legal issues tended to exhibit M-Scores exceeding reasonable thresholds prior to the exposure of such cases.

Comparison of Financial Characteristics (Fraud vs. Non-Fraud)

To illustrate the distinct financial characteristics between companies implicated in legal cases (Fraud) and those free from legal issues (Non-Fraud), a visualization comparing the average ratio components of the Beneish M-Score model is presented below. This chart highlights patterns that serve as early warning signals of fraud.



Source: Data in process (2026)

Figure 1. Comparison Chart of Beneish M-Score Variables

As illustrated in the figure, striking disparities are evident across several key ratios. The red radar plot, representing the Fraud group, demonstrates significant spikes in the DSRI, SGI, and SGAI ratios, in contrast to the Non-Fraud group, which exhibits stability near the 1.0 mark. This visualization confirms that companies subsequently entangled in legal issues generally tend to report abnormal increases in receivables and overly aggressive sales growth during the period preceding the case disclosure. The distinct upward spikes observed in the fraud group serve as primary visual indicators of attempts to artificially inflate financial statements.

Implications of Findings on Legal Aspects

These findings hold significant implications for both criminal law enforcement and capital market regulation. The elevated M-Scores observed in companies prior to their suspension provide evidence that their published financial statements contained material misrepresentations.

Under Article 263 of the Criminal Code (KUHP) concerning document forgery and Capital Market Law No. 8 of 1995, the observed spikes in DSRI, SGI, and SGAI ratios can serve as preliminary grounds for investigators or regulators to initiate investigative audits. Should auditors and investors utilize the M-Score as a preliminary screening mechanism, the investment risks associated with stocks prone to future suspension could be mitigated at an earlier stage.

The legal implications of this research's findings not only demonstrate the practical relevance of using the Beneish M-Score as an early detection tool, but can also be explained theoretically through Agency Theory and Fraud Triangle Theory. From an agency theory perspective, conflicts of interest between management (agent) and shareholders or the public (principal) drive information asymmetry, where management has an incentive to present better performance than actual conditions to maintain its reputation, access funding, and achieve performance-based improvements. Elevated ratios such as DSRI, SGI, and SGAI found in companies facing legal challenges reflect this opportunistic behavior, including manipulation of revenue recognition, aggressive sales growth, and improper cost management, all of which distort financial information. Therefore, this research's findings strengthen the theoretical argument that the financial reporting situation is a logistical consequence of the failure of oversight mechanisms within the agency relationship.

Furthermore, these findings align with the Fraud Triangle Theory, which explains that incidents arise from pressure, opportunity, and rationalization. A spike in the Beneish indicator in companies that subsequently face legal cases indicates financial pressure and high market expectations, while internal control weaknesses and delays in regulatory detection create opportunities for manipulation.

The results of this study are strongly supported by several previous studies that confirm the relevance of the Beneish M-Score model in the context of law enforcement and fraud detection. Research by Buljubasic & Halilbegovic (2017) demonstrated that the Beneish model is capable of identifying financial statement anomalies as early indications of fraud that then require follow-up through forensic investigations, thus serving as an initial screening tool before legal proceedings are initiated. These findings align with the results of this study, which showed that companies with legal cases have more abnormal Beneish ratio patterns than companies without cases, thus strengthening the argument that quantitative analysis of financial statements can serve as indicative evidence (red flags) in the early stages of capital market legal supervision.

Furthermore, research by (Kamal et al., 2016) on public companies in Malaysia found that the Beneish M-Score was able to detect up to 82% of companies that were later found to have committed fraudulent financial reporting and were subject to legal enforcement action

by regulators. The results of Adoboe-Mensah et al. (2023) study are consistent with this study, linking manipulation indicators to the status of corporate legal cases, thus expanding cross-country empirical evidence that the Beneish model is not only relevant in an academic context but also has legal implications as a predictive tool before announcements or prosecutions are carried out. Thus, this study strengthens the previous literature by providing a novel contribution in the form of a direct examination of the relationship between accounting manipulation signals and the reality of corporate legal consequences, thus bridging forensic accounting analysis with corporate law enforcement practices in the capital markets.

CONCLUSION

This study concludes that the Beneish M-Score model proves statistically effective in detecting corporate financial statement fraud in Indonesia. The testing results demonstrate a significant disparity between companies involved in legal cases and those free from legal issues. The group of troubled companies exhibited an average score of -1.13, surpassing the threshold of reasonableness, in sharp contrast to the non-fraud group, which maintained a score of -2.54.

An analysis of the model's constituent components reveals specific manipulation patterns among manipulator firms, characterized by marked elevations in DSRI, SGI, and SGAI. Visualizations from the radar chart confirm that the modus operandi of fraud is dominated by efforts to inflate receivables unreasonably and record overly aggressive sales growth during the period preceding the legal case or suspension.

The implications of these findings underscore the relevance of the Beneish M-Score as an early detection tool for auditors and regulators in identifying material misrepresentations that violate criminal and capital market laws. Elevations in the model's ratios serve as valid preliminary indicators for mitigating investment loss risks at an earlier stage and assisting in the legal substantiation of financial manipulation practices.

This study contributes theoretically to the development of fraud detection literature by extending the application of the Beneish M-Score model within a legal enforcement context rather than solely within financial performance or sector-based analysis. By integrating agency theory and fraud triangle theory with empirical evidence from companies involved in legal cases, this research demonstrates that financial ratio anomalies reflected in the Beneish indicators can serve not only as statistical signals of earnings manipulation but also as behavioral manifestations of managerial pressure, opportunity, and rationalization.

Management should utilize analytical tools such as the Beneish M-Score as an early warning system to evaluate financial reporting risks before they escalate into legal consequences. From a regulatory standpoint, the results provide practical implications for capital market authorities, auditors, and law enforcement institutions to incorporate ratio-based analytical screening into supervisory procedures. Regulators may employ the model as a preliminary risk assessment tool to prioritize audit inspections, detect potential manipulation earlier, and enhance market transparency, thereby improving investor protection and reinforcing confidence in Indonesia's capital market governance system.

Future research may expand this study by incorporating larger cross-sector samples and longitudinal data to evaluate the consistency of Beneish M-Score effectiveness across different economic cycles. Subsequent studies could also integrate qualitative governance variables, such as board characteristics, audit quality, or ownership structure, to examine how corporate governance moderates' fraud risk indicators. Additionally, comparative analyses between multiple fraud detection models, such as the Beneish M-Score, F-Score, or machine learning approaches, would provide deeper insights into predictive accuracy within emerging market environments. Exploring these directions would contribute to developing a more

comprehensive fraud detection framework that combines financial analytics, governance mechanisms, and technological innovation.

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