

**ANALYSIS OF THE UTILIZATION OF ALTMAN Z-SCORE,  
BENEISH M-SCORE, AND F-SCORE MODEL IN DETECTING  
FRAUDULENT OF FINANCIAL REPORTING:  
A LITERATURE REVIEW**

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**Abstract**

*Financial statement fraud has serious implications, and early detection through methods like Altman Z-Score, Beneish M-Score, and F-Score can help prevent losses. Although each method has strengths and weaknesses, combining them or adding additional measures can enhance fraud detection accuracy. This research aims to explore the use of Altman Z-Score, Beneish M-Score, and F-Score in detecting Fraudulent Financial Reporting. we intend to examine whether Altman Z-Score, Beneish M-Score, or F-Score have influence on detecting financial statement fraud, and what the comparative level is among these methods. The methodology employs a literature review approach using the SINTA and Scopus databases to gather information from scholarly publications in the last 10 years. The choice of these databases is based on the excellence of SINTA as a local Indonesian database and Scopus as a deep international data source. The research objectives include testing the influence of each method in detecting Fraudulent Financial Reporting and analyzing their comparative levels. The theoretical contribution involves enhancing knowledge for readers and researchers, providing references for further research. In practical terms, the research is expected to offer insights to readers, especially investors, for considering the most appropriate analytical method in identifying and preventing Fraudulent Financial Reporting in investment decision-making.*

**Keywords:** Altman Z-Score, Beneish M-Score, Model F-Score, Fraud, Literature Review

## 1. INTRODUCTION

Fraud within financial reporting represents a significant peril to the sustainability of companies and the trust held by stakeholders. The intricacy of manipulating data to blur the line between optimistic reporting and fraudulent activities makes identifying such fraud challenging. The Association of Certified Fraud Examiners (ACFE) notes that, despite its infrequency, financial reporting fraud inflicts the highest median losses upon companies compared to other fraudulent activities. Internal or external pressures, such as the imperative to meet performance targets for bonuses or stock prices, can instigate such fraudulent behaviour. A 2019 report by ACFE Indonesia underscored the substantial average losses incurred annually due to fraudulent financial reporting—prominent financial reporting scandals exemplified by the Enron case in the United States and PT. Kimia Farma Tbk in Indonesia underscores the severe repercussions of fraud on companies' longevity and investors' confidence (CNBC, 2021).

The timely detection of fraud assumes paramount importance, particularly given the recognition of internal reports and media coverage as pivotal elements in unravelling

fraudulent activities. It is evidenced by scandals such as those involving Enron, PT. Kimia Farma Tbk, and PT. Cakra Mineral Tbk, the imperative for early detection becomes evident to avert corporate losses and potential delisting (ACFE, 2019; Handayani, 2022). Various established methods for detecting financial statement fraud include the Altman Z-Score, Beneish M-Score, and F-Score. The Altman Z-Score, synthesizing financial ratios, has demonstrated efficacy in discerning financial fraud, particularly within non-financial state-owned entities (Harpan & Kuntadi, 2023; Putra, 2021). The Beneish M-Score, designed to identify profit manipulation, has proven effective in uncovering fraudulent financial reporting (Widowati & Oktoriza, 2021; Tanusdjaja & Kurniawan, 2018). As a derivative of the Beneish M-Score, the F-Score utilizes a logistic probability approach and has effectively detected financial statement fraud (Hugo, 2019; Ratmono et al., 2020). However, it is noteworthy that the F-Score's applicability in detecting fraudulent financial reporting in the Indonesian context remains limited (Putra, 2021).

The gravity of financial statement fraud necessitates diligent preventive measures, and early detection methods such as the Altman Z-Score, Beneish M-Score, and F-Score contribute significantly to this endeavour. Despite each method's inherent strengths and limitations, their combined or supplementary application holds promise for enhancing the precision of fraud detection. This research scrutinises the affirmative and substantial influence of the Altman Z-Score Method, Beneish M-Score Method, and F-Score Model in detecting Fraudulent Financial Reporting. The research's problem formulation encompasses four primary inquiries, addressing the positive and significant effects of the methods above in identifying financial statement fraud and examining their comparative efficacy. The research objectives encompass evaluating the impact of each method on detecting Fraudulent Financial Reporting and conducting a nuanced comparative analysis. The implications of this research span theoretical contributions to financial statement fraud detection, augmentation of empirical knowledge for scholars and practitioners, and provision of valuable references for future research. In practical terms, the research is poised to furnish insightful considerations for readers, notably investors, guiding them towards the judicious selection of analytical methods for identifying and forestalling instances of Fraudulent Financial Reporting in their investment decision-making processes.

## **2. RESEARCH METHODS**

This research applies a literature review approach using the SINTA and Scopus databases to involve information from scientific publications within the last ten years. This database was selected based on the advantages of SINTA as a local Indonesian database and Scopus as an in-depth international data source. A time span of 10 years was chosen to ensure the research covers the latest developments in Fraudulent Financial Reporting detection. The literature selection process involves reading the abstract, complete reading of the article, and evaluating the quality of the research methodology. Publications that meet the inclusion criteria, namely having relevance to detecting Fraudulent Financial Reporting using the Altman Z-Score Method, Beneish M-Score Method, and F-Score Model, will be included in the review. Literature analysis will focus on the main findings, similarities and differences in research results, and the advantages

and disadvantages of each method. By using the literature review method, this research aims to synthesise the latest information regarding the effectiveness and application of the Altman Z-Score Method, Beneish M-Score Method, and F-Score Model in detecting fraudulent financial statements.

### 3. RESULTS AND DISCUSSION

#### 3.1. Article Identity

**Table 1. Article Identity Summary**

No.	Author & Year	Title	Journal	Citation(s)
1	Nugroho, D.S. and Diyant, V., 2022.	Hexagon Fraud in Fraudulent Financial Statements: The Moderating Role of Audit Committee	S2: Jurnal Akuntansi Dan Keuangan Indonesia, 19(1)	9
2	Dalnial, H., Kamaluddin, A., Sanusi, Z.M. and Khairuddin, K.S., 2014.	Detecting Fraudulent Financial Reporting through Financial Statement Analysis	Q2: Journal of Advanced Management Science, 2(1)	149
3	Kukreja, G., Gupta, S.M., Sarea, A.M. and Kumaraswamy, S., 2020.	Beneish M-score and Altman Z-score as a catalyst for corporate fraud detection	Q4: Journal of Investment Compliance, 21(4)	21
4	Patmawati, P., Rahmawati, M., Hidayat, M. and Sitepu, C.D.S., 2022.	Determinan Deteksi Financial Statement Fraud.	S4: Owner: Riset dan Jurnal Akuntansi, 6(4)	0
5	Husnurrosyidah, H. and Fatihah, I., 2022.	Fraud Detecting Using Beneish M-Score and F-Score: Which is More Effective?	S2: Equilibrium: Jurnal Ekonomi Syariah, 10(1)	0
6	Putra, Y.P., 2021.	Perbandingan Metode Altman Z-Score, Beneish M-Score-Data Mining Dan Springate Dalam Mendeteksi Fraudulent Financial Reporting	S3: Ekombis Review: Jurnal Ilmiah Ekonomi Dan Bisnis, 9(1)	5
7	Widowati, A.I. and Oktoriza, L.A., 2021.	Pendeteksian Kecurangan Laporan Keuangan Dengan Benish M-Score Pada Perusahaan Yang Terdaftar di Bursa Efek Indonesia	S6: SOLUSI, 19(1)	3

8	Hugo, J., 2019.	Efektivitas Model Beneish M-Score Dan Model F-Score Dalam Mendeteksi Kecurangan Laporan Keuangan	S3: Jurnal Muara Ilmu Ekonomi dan Bisnis, 3(1)	49
9	Ratmono, D., Darsono, D. and Cahyonowati, N., 2020.	Financial Statement Fraud Detection with Beneish M-Score and Dechow F-Score Model: An Empirical Analysis of Fraud Pentagon Theory in Indonesia	Q4: International Journal of Financial Research, 11(6)	25

### 3.2. Theory Used

**Table 2. Theory Used**

<b>Theory used</b>	<b>Mention(s)</b>
Agency Theory	2
Signalling Theory	2
Fraud Diamond Theory	5
Fraud Triangle Theory	4
Situational Action Theory	1

The Agency Theory, signaling the potential conflict between management and shareholders, likely frames an exploration of how the Altman Z-Score, Beneish M-Score, and F-Score models serve as monitoring tools to align interests and prevent fraudulent reporting. Signaling Theory is relevant in assessing how these models act as signals, with companies using them to convey information about their financial health and stability or, in the case of fraudulent activities, manipulating signals to appear healthier.

Additionally, Fraud Diamond Theory, an extension of the Fraud Triangle, introduces capability and perceived low risk of detection. In this context, the research may delve into how the three models relate to these five elements, examining their role in reducing opportunities for fraud, enhancing detection capabilities, and influencing the perceived risk of getting caught. The Fraud Triangle Theory, a classic in fraud examination, likely informs an analysis of how these models address or influence the pressure, opportunity, and rationalization elements inherent in fraudulent behavior. Finally, the Situational Action Theory might be applied to understand the contextual factors shaping the utilization and effectiveness of these models, considering regulatory environments, industry specifics, and company-specific conditions. Overall, these theories provide a comprehensive framework to understand the multifaceted dynamics of financial fraud detection in the context of the selected models.

### 3.3. Article Methodology

**Table 3. Article Methodology**

Article no.	Data type	Data source	Sample	Sampling method	Data analysis
1	Secondary	Annual report	Non-financial companies listed in the indonesia stock exchange (idx) 65 samples for fraudulent firms and 65 samples of non-fraudulent firms from the malaysian public listed firms	Purposive sampling	Regression
2	Secondary	Datastream	65 samples for fraudulent firms and 65 samples of non-fraudulent firms from the malaysian public listed firms	Purposive sampling	Regression
3	Secondary	Bloomberg	Comscore's 2012–2018 financial statements	Purposive sampling	Regression
4	Secondary	Annual report	Banking firm bursa efek indonesia periode 2018-2020	Purposive sampling	Regression
5	Secondary	Annual report	10 jakarta islamic index (jii) from 2017-2021	Purposive sampling	Regression
6	Secondary	Annual report	Indonesian stock exchange firm manufacturing Raw material producing and manufacturing sector	Purposive sampling	Regression
7	Secondary	Annual report	companies listed on the Indonesian Stock Exchange (BEI) in 2019	Purposive sampling	Regression
8	Secondary	Annual report	United States issuers who committed financial reporting fraud in 1997 – 2017	Purposive sampling	Regression
9	Secondary	Annual report	Manufacturing companies listed on the indonesia stock exchange in 2014-2018	Purposive sampling	Regression

The table presents a comprehensive summary of key aspects related to the methodologies employed in several research articles focused on analyzing the effectiveness of financial models, including Altman Z-Score, Beneish M-Score, and F-Score, in detecting fraudulent financial reporting. The data types utilized in these studies are uniformly classified as secondary, indicating a reliance on pre-existing data sources. Various sources such as annual reports, Datastream, Bloomberg, and financial statements from specific companies serve as the foundation for data collection.

The samples examined in the studies vary across industries and regions, encompassing non-financial companies listed on the Indonesia Stock Exchange, Malaysian public listed firms, Comscore's financial statements spanning from 2012 to 2018, banking firms on the Indonesia Stock Exchange, Jakarta Islamic Index companies from 2017 to 2021, manufacturing firms on the Indonesia Stock Exchange, and U.S. emitters engaged in fraudulent financial reporting from 1997 to 2017, among others.

Notably, purposive sampling emerges as the predominant technique employed, emphasizing a deliberate selection of samples based on predetermined criteria.

Regarding data analysis, the prevalent method is regression analysis, underlining its significance in evaluating the relationships between variables. In the case of Comscore's financial statements, additional statistical measures such as mean values, standard deviations, independent samples t-tests, and p-values of financial ratios are employed. This table provides a succinct yet informative overview of the diverse data sources, sampling methods, and analytical techniques employed in the realm of fraudulent financial reporting detection research, contributing to a nuanced understanding of the field's methodological landscape.

### 3.4. Result

**Table 4. Results Summary**

Title	Result
Hexagon Fraud in Fraudulent Financial Statements: The Moderating Role of Audit Committee	The results of this research show that the probability of FFS (Fraudulent Financial Statement) occurring is higher when managers have stimulus, opportunities and capabilities. However, manager behavior based on ego, rationalization, and collusion networks does not influence the occurrence of FFS. The Audit Committee (AC) can minimize the manager's stimulus, opportunity and capability to carry out FFS, but cannot minimize the management network of rationalization, ego and collusion. This study also shows that further research is still needed to formulate more relevant measurements in interpreting the elements in the fraud hexagon model and their relationship with the behavior that causes FFS.
Detecting Fraudulent Financial Reporting through Financial Statement Analysis	The results showed that several financial ratios such as total debt to total assets, and receivables to income were found to be significant predictors for detecting fraudulent financial reporting. This shows that financial ratios can help in detecting fraudulent financial reporting. However, this research has several limitations, such as limited sample size and limited sources of information used. Therefore, further research is needed to deepen understanding of how financial ratios can be used to detect fraudulent financial reporting.
Beneish M-score and Altman Z-score as a catalyst for corporate fraud detection	Although the Beneish M-score and Altman Z-score provide an indication of FFR, these findings have previously been reported by regulatory authorities. The Z-score from 2012 to 2016 was in the 'safe' zone or above. Including the 2014-2016 period in which the SEC alleged FFR. However, in 2017, the Z-score suddenly dropped into the crisis zone, indicating the possibility of bankruptcy in the next two years. In general, the Beneish M-score for 2014 and 2015 did not exceed the limit of 2.22. However, the 2016 M-score is higher than this limit, indicating the possibility of overstated revenues. Therefore, it can be concluded that the Altman Z-score and Beneish M-score are indicators of stress and potential manipulation in financial reports. Altman Z-score provides an early indication of bankruptcy. However, the Beneish M-score can only reveal financial statement manipulation after it has occurred. These results for Comscore are consistent with similar studies on the detection of financial stress and potential bankruptcy.

Determinan Deteksi Financial Statement Fraud.	In the Beneish M-Score model, only GMI and AQI have a significant effect on Financial Statement Fraud, while the other variables are not significant. In the F-Score model, only Ch CS has a significant effect, while the other variables do not. In the Altman Z-Score, Z-Score1 and Z-Score3 are significant for Financial Statement Fraud, while Z-Score2 and Z-Score5 are not. The limitations of this study are its focus on the banking sector and a short time span, so further research should involve all companies on the IDX with a minimum time span of 5 years.
Fraud Detecting Using Beneish M-Score and F-Score: Which is More Effective?	Research shows that the scoring model for issuers in JII in 2017-2021 is 32%. Indications of manipulation occurred in 60% of issuers in 2017, 40% in 2018, 30% in 2019, 10% in 2020, and 14% in 2021. Prediction of fraud using F-Score is 34%. Indications of manipulation were seen in 40% of issuers in each year 2017-2020, but no companies were indicated to have carried out manipulation in 2021. Beneish M-Score is more effective than F-Score in detecting fraudulent financial reports in JII issuers 2017-2021, with a level of higher accuracy and lower type error rate. Therefore, Beneish M-Score can help regulators, auditors and investors in detecting fraud in financial reports.
Perbandingan Metode Altman Z-Score, Beneish M-Score-Data Mining Dan Springate Dalam Mendeteksi Fraudulent Financial Reporting	Based on the research results, it can be concluded that the Altman Z-Score Method has a significant impact on fraudulent financial reporting. Meanwhile, the Beneish M-Score - Data Mining method does not show a significant impact on fraudulent financial reporting. The Springate method shows a significant positive effect on fraudulent financial reporting. Overall, the Altman Z-Score Method has a greater impact in detecting fraudulent financial reporting compared to the Beneish M-Score - Data Mining and Springate Methods based on statistical calculation results.
Pendeteksian Kecurangan Laporan Keuangan Dengan Benish M-Score Pada Perusahaan Yang Terdaftar di Bursa Efek Indonesia	Several indicators determine companies as manipulators, for example the Assets Quality Index (AQI) where 61 sample companies are classified as manipulators, showing the potential for increased cost control. Fraudulent financial statements can harm investors and creditors by increasing the risk of low investment returns and the risk of default. Non-manipulator companies reflect a commitment to transparency and can increase investor and creditor confidence. Gray companies, even though they do not meet the criteria for manipulators or non-manipulators, show a potential risk of manipulation that investors and creditors need to be aware of.
Efektivitas Model Beneish M-Score Dan Model F-Score Dalam Mendeteksi Kecurangan Laporan Keuangan	The Beneish M-Score and F-Score models are effective in detecting financial statement fraud in the modern era, although they have weaknesses such as tending to understatement without complete data and not being able to detect material misstatements in disclosures. The positive relationship between the variables in both models and fraud shows an increase in the M Beneish and F-Score values during the fraud period. Study limitations: testing in countries with unknown IFRS, tight sampling, recommended empirical testing in IFRS countries, additional samples, and concurrent testing with non-financial methods such as text mining.
Financial Statement Fraud Detection with	This study concludes that the pentagon fraud model can predict financial statement fraud. The results show that the variables financial targets and CEO narcissism have a significant effect on financial statement fraud,

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Beneish M-Score and Dechow F-Score Model: An Empirical Analysis of Fraud Pentagon Theory in Indonesia	while other variables are not significant. In the F-Score and M-Score models, several companies (284 of 385 samples) were suspected of committing fraud. Analysis using F-Score and M-Score on manufacturing companies from 2012-2016 succeeded in analyzing 284 companies that showed fraud. These results strengthen theoretical concepts, support previous research, and provide improvements. An important theoretical implication is that the pentagon fraud model is useful for explaining fraud, and F-Score and M-Score analyzes are successful in indicating fraud.
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### **3.5. Altman Z-Score method in detecting fraudulent financial statements**

The Altman Z-Score methodology, devised by Professor Edward Altman in 1968, serves the purpose of evaluating the financial well-being of a company and discerning potential conditions that may lead to bankruptcy. While the Z-Score was not expressly formulated for the explicit aim of identifying fraudulent financial statements, pivotal elements within this model offer prospective indications of such malfeasance. Despite affording a comprehensive overview of a company's overall financial vigor, a more precise methodology may be requisite to effectively discern instances of fraudulent financial statement practices.

The Altman Z-Score formula, conceptualized by Professor Edward Altman in 1967 and subsequently refined with the introduction of Altman Z-Score Plus in 2012, exhibits adaptability for evaluating diverse company types and credit risk scenarios. Demonstrated by its application in predicting probabilities (Dalnial et al., 2014), the Altman Z-Score manifests a noteworthy influence in the identification of fraudulent financial reporting. This model employs an array of financial ratios encompassing liquidity, profitability, leverage, solvency, and productivity to gauge a company's financial robustness (Kukreja et al., 2020; Putra, 2021). Acknowledged for its capability to mitigate the shortcomings inherent in individual financial ratio analyses, the Altman Z-Score engenders outcomes that are both more specific and dependable in the evaluation of corporate performance.

While the Altman Z-Score method, originally conceived to evaluate financial health and predict conditions leading to bankruptcy, may offer incipient indications of fraudulent financial statements, it is underscored that a more nuanced approach is requisite for precise fraud detection, given that the Z-Score was not explicitly tailored for such a purpose. Despite the acknowledged potency of the Altman Z-Score in fraud detection, users are encouraged to recognize the potential disconnect between conventional financial ratios and nuanced fraudulent practices. The incorporation of Altman Z-Score Plus in 2012 epitomizes an ongoing endeavor to refine the model, enhancing its applicability across various corporate archetypes and credit risk scenarios. Consequently, the Z-Score evolves as a versatile instrument for gauging a company's financial health and risk. In the realm of fraud detection, the deployment of these models necessitates a judicious understanding of their constraints, prompting consideration for supplemental, contextually informed methodologies.

### **3.6. Beneish M-Score method for detecting fraudulent financial statements**

The Beneish M-Score technique, devised by Messod Daniel Beneish, serves as a tool to identify potential fraud in a company's financial statements. M-Score utilizes eight financial variables extracted from financial reports, such as net profit and net sales ratios,

to compute a score indicative of potential fraud. Scores surpassing a specified threshold suggest potential fraud that warrants further investigation. While M-Score doesn't offer certainty regarding the presence of fraud, it proves valuable for financial analysts and auditors in appraising the trustworthiness of a company's financial reporting (Hugo, 2019; Husnurrosyidah & Fatihah, 2022).

This model operates as a predictive tool for identifying fraudulent financial statements or earnings management, constructed using logit regression. In its development, eight financial ratios underwent determination and examination through principal component analysis. These ratios, including days sales receivable index (DSRI), gross margin index (GMI), depreciation index (DEPI), sales growth index (SGI), leverage index (LVGI), total accruals to total assets (TATA), asset quality index (AQI), and sales general administrative index (SGAI), form the basis of the model. Suspicions of fraud arise if the M Beneish value in the financial report exceeds -2.22 (Husnurrosyidah & Fatihah, 2022; Patmawati et al., 2022). All variables exhibit a significant positive association with financial statement fraud (Ratmono et al., 2020).

The Beneish M-Score method plays a crucial role in identifying potential fraud in a company's financial reports. Leveraging eight financial variables from these reports, such as net profit and net sales ratios, M-Score generates a score providing insight into the likelihood of fraud. An elevated score beyond a specific threshold raises suspicions of fraud, necessitating further inquiry. Despite M-Score not offering absolute certainty regarding fraud, it stands as a vital tool for financial analysts and auditors in evaluating the soundness of a company's financial reporting. This model has the potential to enhance stakeholders' capacity to recognize and prevent deceptive financial reporting practices, ultimately fostering transparency and confidence in the business environment.

### **3.7. F-Score model in detecting fraudulent financial statements**

This F-Score was developed by Dechow on 2011, which used the sum of accrual quality and financial performance. This model was developed to detect material misstatements calculated directly from the financial statements. It employs nine specifically chosen financial criteria to measure a company's performance and integrity, including alterations in net income, changes in net cash from operating activities, and shifts in investment returns. Each criterion is assigned a binary score (0 or 1), contributing to an aggregate score ranging from 0 to 9. A lower score may indicate potential fraud or financial instability in the company. The F-Score model provides financial analysts and auditors with an objective framework to assess the risk of fraud in financial reports, offering warning signals that may necessitate further scrutiny (Nugroho et al., 2022).

As a derivative of the Beneish M-Score model, the F-Score is intentionally designed to provide users with direct scores without needing additional indices in their computations. The F-Score formulation encompasses seven ratios, including RSST Accrual, change in receivables, Change in inventory, Soft assets, Change in cash sales, Return on assets, and Actual issuance of stock. According to Patmawati et al. (2022), the F-Score utilizes a scaled logistic probability technique to identify fraud, and studies conducted by Ratmono et al. (2020) and Widowati & Oktoriza (2021) demonstrate the F-Score's efficacy in identifying and mitigating the presentation of inaccurate information in financial reports and detecting fraudulent financial statements. Through its nine chosen

financial criteria, the F-Score model has proven to be an effective tool for financial analysts and auditors to objectively evaluate the risk of fraud in financial statements, with a low score serving as a potential warning signal for further investigation. The model, stemming from the Beneish M-Score, allows users to obtain direct scores without relying on additional indices in their calculations. This implies that the F-Score method significantly contributes to identifying and reducing activities that present inaccurate information in financial reports and has demonstrated effectiveness in detecting fraudulent financial statements.

### **3.8. Which model for detecting the fraudulent financial reporting?**

Each model—Altman Z-Score, Beneish M-Score, and F-Score—serves as a valuable tool in detecting potential financial statement fraud, offering unique approaches and perspectives. The Altman Z-Score, introduced by Professor Edward Altman, focuses on assessing overall financial health and predicting the likelihood of bankruptcy. While not explicitly designed for fraud detection, it may provide indications of potential fraud through key elements. Altman Z-Score Plus, introduced in 2012, enhances the model's applicability across various types of companies and credit risks. On the other hand, the Beneish M-Score, developed by Messod Daniel Beneish, plays a crucial role in detecting potential fraud by utilizing eight financial variables from financial statements. This model produces a score indicating the likelihood of fraud, with scores above a certain threshold warranting further investigation. Although it doesn't guarantee the presence of fraud, the M-Score serves as a vital instrument for financial analysts and auditors in evaluating the integrity of a company's financial reporting.

Finally, the F-Score, crafted by Dechow on 2011, is a tool designed to assess and detect potential fraud using nine selected financial criteria. Factors such as changes in net income, cash flow, and return on investment are examined, with each criterion scored as 0 or 1. A low overall score signals potential fraud or financial distress, acting as an objective foundation for financial analysts and auditors to evaluate fraud risks and issue warning signals. In conclusion, the choice of which model to use depends on various factors, including the specific context of the analysis, the type of company being evaluated, and the preferences of financial analysts or auditors. Each model provides valuable insights into different aspects of financial health and fraud potential, contributing to a comprehensive approach in assessing the integrity of financial statements.

## **4. CONCLUSION**

The identification of fraudulent financial statements holds paramount significance in the preservation of corporate sustainability and the cultivation of stakeholder trust. The gravity of such fraudulent activities is underscored by the profound repercussions witnessed in historical corporate scandals. The three methodologies delineated, namely the Altman Z-Score, Beneish M-Score, and F-Score, proffer distinct yet complementary approaches to this intricate issue. The Altman Z-Score, initially devised for the assessment of financial conditions and bankruptcy prediction, discerns potential indications of fraud through the scrutiny of pertinent financial ratios. The Beneish M-Score, centering on eight financial variables to unveil potential profit manipulation, has

effectively detected fraudulent financial reporting. While it does not furnish absolute certainty about fraud, the M-Score constitutes a pivotal instrument in evaluating financial reporting integrity. The F-Score, an evolutionary derivative of the Beneish M-Score, accentuates nine financial criteria for comprehensively evaluating a company's performance and integrity. This model has substantiated its efficacy in signalling potential fraud, serving as a valuable tool in assessing fraud risk. In conclusion, the amalgamation or concurrent application of these three methodologies affords a more holistic comprehension of the latent existence of fraudulent financial statements. The selection of a specific methodology hinges on the contextual nuances of the analysis and the predilections of the analyst or auditor. The timely deployment of these methodologies contributes to preemptive loss mitigation and the sustenance of stakeholder trust within the business milieu.

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