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# Detection of Fraud and Bankruptcy Using The Beneish M-Score and Altman Z-Score Models (Case Study on PT Envy Technologies Indonesia Tbk for the Period 2019–2024)

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**Abstract**

Financial statements are the primary source of a company financial information which can be the basis for detecting fraud and predicting potential bankruptcy. Financial statement fraud can obscure a company's true financial condition and it has close relationship with bankruptcy risk, thus it was required comprehensive analysis for identification. This research aims to predict fraud using Beneish M-Score model and to analyze bankruptcy prediction using Altman Z-Score model to the financial statements of PT Envy Technologies Indonesia Tbk in 2019-2024. This research used quantitative approach with applied research objective. The data which was in the form of the company's financial statements of PT Envy Technologies Indonesia Tbk in 2019-2024. The research results showed that based on M-Score, the company was indicated to do financial statement manipulation in 2019-2020, but there were improvements in 2021-2024. Z-Score value showed that the company was in healthy category in 2019-2020, but it included bankrupt in 2021-2024. These findings indicated that manipulation financial statements could conceal the actual financial condition, so the company appeared healthy. When manipulation was ceased, the poor financial condition to be seen. This research provided valuable insights for management, investors and stakeholders in making strategic decisions and increasing awareness of financial risk.

## 1. Introduction

Rapid technological developments in the modern era have brought about changes in various aspects of life, including economics, social affairs, education, and industry. Technology no longer serves merely as a tool, but has become a key component in driving efficiency, effectiveness, and innovation in daily activities and company operations. Amidst increasingly fierce global competition, the utilisation of technology has become a determining factor in enhancing the competitiveness and sustainability of an entity (Sahir et al., 2024, p. 51). Technology companies play a strategic role in driving efficiency, innovation, and digital transformation through the provision of digital solutions and infrastructure. In Indonesia, the presence of technology companies such as PT Envy Technologies Indonesia Tbk reflects the significant potential to strengthen national competitiveness. However, amid intense competition and market demands, technology companies also face risks and challenges, such as rapid technological changes and fierce competition. Risks that arise include system failures, cyber security threats

software errors, and regulatory uncertainty (Fahmi et al.., 2024 , p.. 4 . The pressure to continue to show positive performance to investors can also encourage financial statement manipulation. This risks misleading stakeholders due to inaccurate financial information, which can harm various parties (Suwastika et al.., 2023 , p.. 43 ) .
Business scandals are often linked to agency theory, whereby financial statement fraud occurs because agents conceal important information from principals. Pressure from company owners to maintain optimal performance can encourage agents to manipulate financial statements in order to create the impression that the company is in good condition. Therefore, transparency and accuracy of information are very important to prevent financial statement fraud. Financial reports that are not prepared accurately can disrupt the stability of the capital market and the economy. According to the ACFE Global (2024) report, as the world's largest anti-fraud organisation, it regularly conducts in-depth research on fraud. The results of this research are known as *the Report to the Nation (RTTN) on Occupational Fraud and Abuse,* which is published every two years. There are three main types of fraud: asset misappropriation, corruption, and financial statement manipulation. Although financial statement manipulation cases only account for 5% of the total, the losses are the greatest, averaging $766,000 per case, far exceeding the losses from asset misappropriation and corruption.

PT Envy Technologies Indonesia Tbk is an information technology company engaged in cyber security, telecommunications system integration, and information system management. Founded on 27 September 2004 under the name PT Scan Nusantara, the company began commercial operations in 2004 and changed its name to PT Envy Technologies Indonesia Tbk on 11 January 2018. The company's head office is located at Satrio Tower, 24th Floor, Jl. Prof. Dr. Satrio Blok C-4, Kel. Kuningan Timur, Kec. Setiabudi, South Jakarta 12950, Indonesia. By the end of 2019, Envy had three subsidiaries, namely PT Ritel Global Solusi, PT Envy Kapital Internasional, and PT Envy Unity Indonesia, which played an important role in supporting the parent company's operations. In 2021, Envy faced allegations of financial statement manipulation involving its subsidiary PT Ritel Global Solusi (RGS). PT RGS was suspected of not preparing its 2019 financial statements independently, but RGS's financial data was still included in Envy's consolidated financial statements. The Indonesia Stock Exchange (IDX) then requested official clarification on this matter through a letter in July 2021. In response, Envy's management stated that it was reviewing the validity of the 2019 report with external auditors. Although meetings have been held and clarification letters have been sent to the auditors, no response has been received to date. This situation has the potential to cause ENVY shares *to be delisted* from trading on the IDX since 1 December 2020 by the IDX.

This phenomenon shows that financial statement manipulation remains a serious issue that needs to be investigated. Early detection of fraud is crucial to maintain the integrity and operational continuity of a company, as well as to protect the interests of investors, creditors, and other related parties. Fraudulent acts are also linked to the bankruptcy of a company. Manipulation is generally carried out by management to cover up the company's actual deteriorating financial condition. This practice can mask early symptoms so that the company does not appear to be bankrupt. According to Abadi & Misidawati (2023), bankruptcy occurs when a company experiences financial difficulties, ranging from liquidity problems to the inability to meet debt obligations. Examples of this are the cases of Worldcom in the United States and PT Sunprima Nusantara in Indonesia, both of which went bankrupt due to financial statement manipulation scandals.

This study uses the *Beneish M-Score* model to detect indications of financial statement fraud at PT Envy Technologies Indonesia Tbk during the period 2019–2024. *The Beneish M-Score* is a quantitative model developed by Messod D. Beneish in 1999 to detect *financial statement fraud* through quantitative data. According to Patmawati & Rahmawati (2023) , it is known that the most effective model for detecting *financial statement fraud* is the *Beneish M-Score* model. In addition, this study also uses the *Altman Z-Score* model to predict the possibility of corporate bankruptcy. The *Altman Z-Score,* introduced by Edward Altman in 1968, is able to measure a company's financial health quickly and accurately using financial statement data (Abadi & Misidawati, 2023). According to Wahyuni & Rubiyah (2021), this model is considered the most accurate in predicting *financial distress* and provides useful early warnings for investors, creditors, and company management. Based on the above background information, the researcher will conduct a study entitled "Detection of Corporate Fraud and Bankruptcy using *the Beneish M-Score* and *Altman Z-Score (*Case Study of PT Envy Technologies Indonesia Tbk in 2019-2024)".

## 2. Literature Review

### 2.1 Agency Theory

According to Purba (2023, p. 24) , Agency Theory was first introduced by Jensen and Meckling in 1976. According to Jensen, an agency relationship occurs when one or more parties (*principals*) hire another party (*agent*) to provide certain services and delegate decision-making authority. Agency theory explains the relationship between company management as *the agent* and company owners as *the principal. The principal* is the party that authorises the agent to carry out various activities on its behalf. Company owners always want to obtain information related to company operations, including how management manages the funds that have been invested. Through

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accountability reports prepared by management as agents, *principals* can obtain the information they need and assess the performance of agents in a given period. However, in practice, there is a possibility that management will commit fraud so that the reports presented appear favourable and beneficial *to the principal,* making their performance look better than it actually is. To reduce this risk, an independent third party, namely an auditor, is needed. With an auditor, the financial reports prepared by agents become more reliable.

## 2.2 Financial Statements

According to Kasmir, (2019, p. 6), financial statements are reports that show the current financial condition of a company or its condition over a certain period. Financial statements that reflect the current condition of a company show its latest financial situation. This condition describes the company's financial position on a certain date in the balance sheet and its financial performance during a certain period in the income statement. Financial statements consist of five main types, namely the balance sheet, income statement, statement of changes in equity, cash flow statement, and notes to the financial statements. Each report has a different function and purpose but complements each other to provide a comprehensive picture of the financial condition, operational performance, changes in equity, cash flows, and other important additional information.

## 2.3 *Fraudulent Financial Statement*

According to Ferina et al. (2023, p. 9) , *fraudulent financial statements* are intentional acts or omissions that can result in the presentation of materially incorrect and misleading financial information. This fraud aims to create a financial picture that does not correspond to reality in order to serve certain interests, such as improving the company's image, attracting investors, or avoiding failure to meet debt agreements. *The Association of Certified Fraud Examiners* (ACFE) defines financial statement fraud as intentional misrepresentation of a company's financial condition through manipulation or omission in the recording of amounts or disclosures in financial statements with the intent to deceive users of those statements.

## 2.4 Beneish M-Score

According to Beneish (1999) , *the Beneish M-Score* is a quantitative model developed by Messod D. Beneish in 1999. *The Beneish M-Score* is one of the methods or models that can be used to detect fraud occurring in a company by using data from financial statements. This model combines various ratios to provide an indication of whether a company may be involved in financial statement manipulation, such as inflating revenue or reducing costs. According to Beneish (1999) , there are eight ratios used in the *Beneish M-Score* analysis model, namely as follows:

### 2.4.1 Days Sales in Receivables Index (DSRI)

The Days Sales in Receivables Index (DSRI) is a ratio that measures the condition of a company's accounts receivable and revenue over two consecutive years to determine whether there has been a balanced change or not. This ratio is calculated using the following formula:

$$DSRI = \frac{Receivables\ Account_t\ /\ Sales_t}{Receivables\ Account_{t-1}\ /\ Sales_{t-1}}$$

Source: Beneish (1999)

### 2.4.2 Gross Margin Index (GMI)

*The Gross Margin Index* (GMI) is one of the ratios used to detect potential financial statement manipulation, particularly in the context of a decline in gross margin.

This ratio is calculated using the following formula:

$$GMI = \frac{Gross\ Income_t / Sales_t}{Gross\ Income_{t-1} / Sales_{t-1}}$$

Source: Beneish (1999)

### 2.4.3 Asset Quality Index (AQI)

*The Asset Quality Index* (AQI) measures the proportion of total assets to future profits. Increased risks related to asset recording and declining asset quality are signs of profit manipulation. This ratio is calculated using the following formula:

$$AQI = \frac{(1 - Current\ Assets + Fixed\ Assets)_t / Total\ Assets_t}{(1 - Current\ Assets + Fixed\ Assets)_{t-1} / Total\ Assets_{t-1}}$$

Source: Beneish (1999)

### 2.4.4 Sales Growth Index (SGI)

The Sales Growth Index (SGI) is an indicator that shows the difference between net sales in the current year compared to the previous year. This ratio is used to measure a company's sales growth rate. This ratio is calculated using the following formula:

$$\boldsymbol{SGI = \frac{Sales_t}{Sales_{t-1}}}$$

Source: Beneish (1999)

### 2.4.5 Depreciation Index (DEPI)

*The Depreciation Index* (DEPI) is a ratio used to measure changes in a company's depreciation from year to year, providing an overview of the depreciation policy applied by the company. This ratio is calculated using the following formula:

$$\boldsymbol{DEPI = \frac{Depretiation_{t-1}/(Depreciation_{t-1} + Fixed\ Assets_{t-1})}{Depretiation_t/(Depreciation_t + Fixed\ Assets_t)}}$$

Source: Beneish (1999)

### 2.4.6 Sales, General, and Administrative Expenses Index (SGAI)

*The Sales, General, and Administrative Expenses Index* (SGAI) is used to measure the ratio of sales expenses, general expenses, and administrative expenses to sales in the current year compared to the previous year. This ratio is calculated using the following formula:

$$\boldsymbol{SGAI = \frac{(SGA\ Expense_t / Sales_t)}{(SGA\ Expense_{t-1} / Sales_{t-1})}}$$

Source: Beneish (1999)

### 2.4.7 Leverage Index (LVGI)

*The Leverage Growth Index* (LVGI) is an index used to measure changes in a company's debt level from one period to the next. This ratio compares a company's leverage or use of debt between two different periods to evaluate how much the company relies on debt in its capital structure. This ratio is calculated using the following formula:

$$LVGI = \frac{(Total\ Liabilities_t / Total\ Aset_t)}{(Total\ Liabilities_{t-1} / Total\ Aset_{t-1})}$$

Source: Beneish (1999)

### 2.4.8 Total Accruals to Total Assets (TATA)

*Total Accruals to Total Assets* (TATA) is an index used to measure the ratio of changes in working capital accounts, other than cash, after depreciation. This index includes the company's accrual elements, which are important to include in the ratio calculation because accruals have great potential for manipulation. This ratio is calculated using the following formula:

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$$TATA = \frac{(Earning\ After\ Tax_t - Cash\ Flows\ from\ Operating_t)}{Total\ Assets_t}$$

Source: Beneish (1999)

The results of the calculation of each variable are compared using the *Beneish M-Score* parameter index. The *Beneish M-Score* parameter index is shown in Table 1.

**Table 1** *Beneish M-score parameter index*

| *Index* | *Non-Manipulator* | *Grey Company* | *Manipulator* |
|---|---|---|---|
| DSRI | ≤ 1.031 | 1.031<Index<1.465 | ≥1.465 |
| GMI | ≤ 1.014 | 1.014<Index<1.193 | ≥1.193 |
| AQI | ≤ 1.039 | 1.039<Index<1.254 | ≥1.254 |
| SGI | ≤ 1.134 | 1.134<Index<1.607 | ≥1.607 |
| DEPI | ≤ 1.001 | 1.001<Index<1.077 | ≥1.077 |
| SGAI | ≤ 1.054 | 1.054<Index<1.041 | ≥1.041 |
| LVGI | ≤ 1.037 | 1.037<Index<1.111 | ≥1.111 |
| TATA | ≤ 0.018 | 0.018<Index<0.031 | ≥0.031 |

Source: Beneish (1999)

After obtaining the results from the calculation of the eight items above, they are then entered into the following formula:

$$Beneish\ M\ Score = -4{,}48 + 0{,}92\ DSRI + 0{,}528\ GMI + 0{,}404\ AQI + 0{,}892\ SGI + 0{,}115\ DEPI - 0{,}172\ SGAI - 0{,}327\ LVGI + 4{,}697\ TATA$$

Source: Beneish (1999)

The following is a classification of companies that can be said to manipulate their financial statements based on their *M-Score,* as follows:

a. If the *M-Score* result is greater than -2.22, this indicates that the company has been detected of financial statement fraud (*Manipulator*).
b. If the *M-Score* result is < -2.22, this indicates that the company has not been detected as engaging in financial statement fraud (*Non-Manipulator*).
c. If the M-Score result is -2.22, the company is classified as a *grey company* (*Grey Company*).

## 2.5 Company Bankruptcy

According to Abadi & Misidawati (2023, p. 1) , a company can be categorised as bankrupt if it faces various difficulties, ranging from liquidity problems to more serious issues such as insolvency, where debts exceed assets. When a company faces liquidity problems, this can be an early indication that the company is heading towards financial distress. Financial distress is a serious liquidity crisis that cannot be resolved without making significant changes to the scale of operations or the structure of the company. Information about this condition is very important because it can serve as an early warning system, allowing management to immediately take anticipatory measures to prevent bankruptcy.

## 2.6 *Altman Z-Score*

According to Abadi & Misidawati (2023, p. 1) , a company can be categorised as bankrupt if it faces various difficulties, ranging from liquidity problems to more serious problems such as insolvency, i.e. debts greater than assets. When a company faces liquidity problems, this can be an early indication that the company is heading towards financial distress. There are five financial ratios used to predict the likelihood of bankruptcy in a company in the Altman Z-Score
model:

### 2.6.1 Net Working Capital to Total Asset

This ratio indicates the company's ability to generate net working capital from its total assets. This ratio is obtained by dividing net current assets by total assets. This ratio is calculated using the following formula:

$$X1 = \frac{\text{Working Capital}}{\text{Total Asset}}$$

Source: Abadi & Misidawati (2023, *p.* 39)

### 2.6.2 Retained Earnings to Total Asset

This ratio measures the accumulation of profits earned by the company during its operations, while also reflecting the strength of its income. This ratio shows the extent to which the company can generate retained earnings compared to its total assets. This ratio is calculated using the formula:

$$\mathbf{X2} = \frac{\boldsymbol{Retained\ Earnings}}{\mathbf{Total\ Asset}}$$

Source: Abadi & Misidawati (2023, *p.* 39)

### 2.6.3 Earning Before Interest and Tax to Total Asset

This financial ratio measures a company's efficiency in generating operating profit compared to its total assets. This ratio shows the company's ability to utilise its assets to generate profits before taking into account interest and tax expenses. This ratio is calculated using the following formula:

$$\mathbf{X3} = \frac{\boldsymbol{Earnings\ Before\ Interest\ and\ Tax}}{\mathbf{Total\ Asset}}$$

Source: Abadi & Misidawati (2023, *p.* 39)

### 2.6.4 Book Value of Equity to Book Value of Total Liabilities

A financial ratio used to measure a company's leverage by comparing the book value of equity to total debt. This ratio reflects how much of the company's assets are financed by shareholders compared to creditors. This ratio is calculated using the following formula:

$$\mathbf{X4} = \frac{\boldsymbol{Equity\ Book\ Value}}{\mathbf{Total\ Debt\ Book\ Value}}$$

Source: Abadi & Misidawati (2023, *p.* 39)

After obtaining the results from the calculation of the four ratios above, they are then entered into the *Altman Z-Score* formula as follows:

$$Z'' = 6{,}56X1 + 3{,}26X2 + 6{,}72X3 + 1{,}05X4$$

Source: Abadi & Misidawati (2023, *p.* 39)

The following is a classification of healthy and bankrupt companies based on the Altman *Z-Score* value:

a. If the Z" value is less than 1.1, the company is considered bankrupt (danger zone).
b. If the value is between 1.1 and 2.6, then it is impossible to determine whether the company is healthy or bankrupt (grey zone).
c. If the Z" value is greater than 2.6, then the company is not bankrupt (safe zone).

## 2.7 Framework

The conceptual framework is the part that describes the logical flow or systematic relationship between the concepts, theories, and variables used in the research. The conceptual framework of this study is shown in Figure 1.

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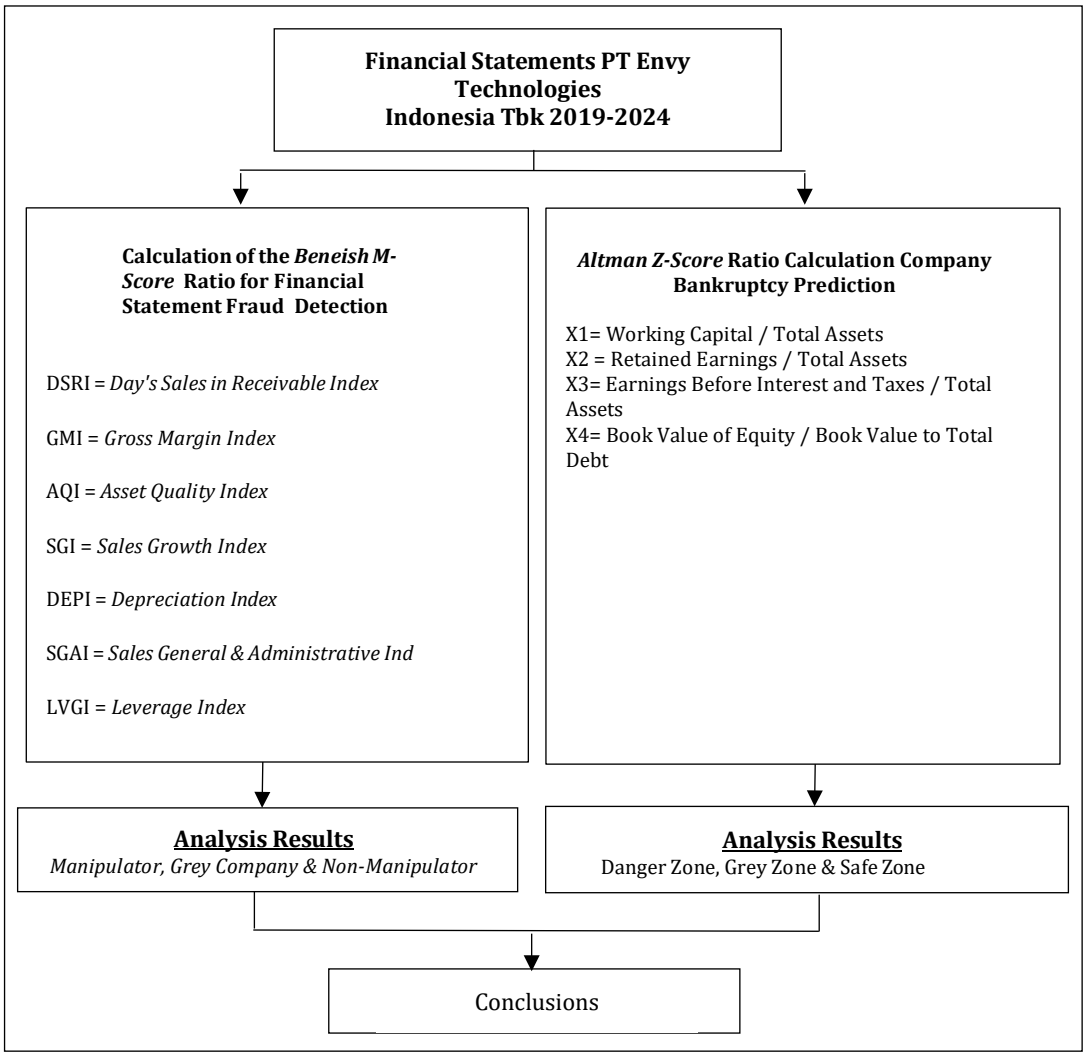


**Fig. 1** *Conceptual framework*

## 3. Research Method

The object of this study is focused on analysing corporate fraud and bankruptcy using the Beneish M-Score and Altman Z-Score models at PT Envy Technologies Indonesia Tbk for the period 2019-2024. The approach used is quantitative with applied research. This study uses secondary data sources in the form of PT Envy Technologies Indonesia Tbk's financial reports for 2019-2024, which were officially published on the Indonesia Stock Exchange and then analysed using the Beneish M-Score method to detect indications of financial statement fraud and the Altman Z-Score to assess the company's potential for bankruptcy. The data collection methods in this study included literature review and documentation. The literature review was conducted by examining relevant literature such as books, scientific journals, and articles that supported the research topic. Meanwhile, documentation was carried out by collecting data from the 2019–2024 financial reports of PT Envy Technologies Indonesia Tbk. The data analysis technique in this study was carried out in several stages, namely sampling, namely PT Envy Technologies Indonesia Tbk, collecting secondary data in the form of company financial reports for the 2019–2024 period, and calculating financial ratios using the Beneish M-Score and Altman Z-Score models. The Beneish M-Score analysis was conducted by calculating eight financial ratios for to detect indications of financial statement fraud, while the Altman Z-Score was used to assess the potential for bankruptcy through four financial ratios. The results of the calculations from both models were analysed and classified according to their respective scores, then used to draw conclusions and provide recommendations to the company and stakeholders.

# 4. Results and Discussion

## 4.1 *Beneish M-Score* Calculation Analysis

### 4.1.1 Days Sales in Receivables Index (DSRI)

The calculation of the *Days Sales Receivable Index* (DSRI) ratio for PT Envy Technologies Indonesia Tbk for 2019-2024 is shown in Table 2.

**Table 2** *Calculation of the Days Sales Receivable Index (DSRI) ratio for 2019-2024 (in Rupiah IDR)*

| Year | (a) Trade Receivables Current Period | (b) Sales for the Current Period | (c) Accounts Receivable Previous Period | (d) Sales for the Previous Period | (e) $\frac{(a/b)}{(c/d)}$ | Note |
|---|---|---|---|---|---|---|
| 2019 | 141.826.395.769 | 188.583.796.943 | 56.437.438.370 | 80.351.640.464 | 1,071 | *Grey Company* |
| 2020 | 34.346.182.087 | 674.900.203 | 141.826.395.769 | 188.583.796.943 | 67,668 | *Manipulator* |
| 2021 | 34.246.182.087 | 272.500.002 | 34.346.182.087 | 674.900.203 | 2,469 | *Manipulator* |
| 2022 | 1.332.444.000 | 1.944.900.000 | 34.246.182.087 | 272.500.002 | 0,005 | *Non-Manipulator* |
| 2023 | 3.417.730.000 | 2.493.050.451 | 1.332.444.000 | 1.944.900.000 | 2,001 | *Manipulator* |
| 2024 | 436.432.000 | 5.537.880.001 | 3.417.730.000 | 2.493.050.451 | 0,057 | *Non-Manipulator* |

Source: Data processed by the author, 2025

### 4.1.2 Gross Margin Index (GMI)

The calculation of the *Gross Margin Index* (GMI) ratio for PT Envy Technologies Indonesia Tbk for 2019-2024 is shown in Table 3.

**Table 3** *Calculation of Gross Margin Index (GMI) ratio for 2019-2024 (in Rupiah)*

| Year | (a) Current Period Gross Profit | (b) Sales Current Period | (c) Gross Profit for the Previous Period | (d) d Sales for the Previous Period | (e) $\frac{a/b}{c/d}$ | Note |
|---|---|---|---|---|---|---|
| 2019 | 46,688,975,694 | 188,583,796,943 | 15,954,908,534 | 80,351,640,464 | 1,247 | *Manipulator* |
| 2020 | -7,378,340,721 | 674,900,203 | 46,688,975,694 | 188,583,796,943 | -44,158 | *Non-Manipulator* |
| 2021 | -3,178,933,332 | 272,500,002 | -7,378,340,721 | 674,900,203 | 1,067 | *Grey Company* |
| 2022 | -1,920,464,193 | 1,944,900,000 | -3,178,933,332 | 272,500,002 | 0.085 | *Non-Manipulator* |
| 2023 | -2,131,144,987 | 2,493,050,451 | -1,920,464,193 | 1,944,900,000 | 0.866 | *Non-Manipulator* |
| 2024 | 2,470,901,401 | 5,537,880,001 | -2,131,144,987 | 2,493,050,451 | -0.522 | *Non-Manipulator* |

Source: Data processed by the author, 2025

### 4.1.3 Asset Quality Index (AQI)

The calculation of the Asset Quality Index (AQI) ratio for PT Envy Technologies Indonesia Tbk for the years 2019-2024 is shown in Table 4.

**Table 4** *Calculation of the Asset Quality Index (AQI) ratio for 2019-2024 (in Rupiah IDR)*

| Year | (a) Current Assets + Fixed Assets for the Current Period | (b) Total Assets for the Current Period | (c) Current Assets + Fixed Assets for the Previous Period | (d) Total Assets for the Previous Period | (e) $\frac{\frac{(1-a)}{b}}{\frac{(1-c)}{d}}$ | Note |
|---|---|---|---|---|---|---|
| 2019 | 304,122,912,106 | 400,301,677,599 | 168,482,222,201 | 170,646,994,564 | 18,940 | *Manipulator* |
| 2020 | 177,076,459,381 | 323,550,091,740 | 304,122,912,106 | 400,301,677,599 | 1,884 | *Manipulator* |
| 2021 | 46,639,439,591 | 66,961,982,562 | 177,076,459,381 | 323,550,091,740 | 0.670 | *Non-Manipulator* |
| 2022 | 28,650,368,462 | 35,360,143,895 | 46,639,439,591 | 66,961,982,562 | 0.625 | *Non-Manipulator* |
| 2023 | 15,319,298,494 | 15,431,078,494 | 28,650,368,462 | 35,360,143,895 | 0.038 | *Non-Manipulator* |
| 2024 | 16,158,784,117 | 16,270,564,117 | 15,319,298,494 | 15,431,078,494 | 0.948 | *Non-Manipulator* |

Source: Data processed by the author, 2025

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### 4.1.4 Sales Growth Index (SGI)

The calculation of the Sales Growth Index (SGI) ratio for PT Envy Technologies Indonesia Tbk for the years 2019-2024 is shown in Table 5.

**Table 5** *Sales Growth Index (SGI) calculation for 2019-2024 (in Rupiah IDR)*

| Year | (a) Sales Current Period | (b) Sales for the Previous Period | (c) $a/b$ | Note |
|---|---|---|---|---|
| 2019 | 188,583,796,943 | 80,351,640,464 | 2,347 | *Manipulator* |
| 2020 | 674,900,203 | 188,583,796,943 | 0.004 | *Non-Manipulator* |
| 2021 | 272,500,002 | 674,900,203 | 0.404 | *Non-Manipulator* |

Source: Data processed by the author, 2025

### 4.1.5 Depreciation Index (DEPI)

The calculation of the *Depreciation Index* (DEPI) ratio for PT Envy Technologies Indonesia Tbk for the years 2019-2024 is shown in Table 6.

**Table 6** *Calculation of the Depreciation Index (DEPI) Ratio for 2019-2024 (in Rupiah IDR)*

| Year | (a) Depreciation for the Previous Period | (b) Depreciation + Fixed Assets from the Previous Period | (c) Depreciation for the Current Period | (d) Depreciation + Fixed Assets for the Current Period | (e) $\frac{(a/b)}{(c/d)}$ | Note |
|---|---|---|---|---|---|---|
| 2019 | 314,561,526 | 27,446,388,465 | 784,130,968 | 27,137,420,140 | 0.397 | *Non-Manipulator* |
| 2020 | 784,130,968 | 27,137,420,140 | 509,551,354 | 21,035,427,931 | 1,193 | *Manipulator* |
| 2021 | 509,551,354 | 21,035,427,931 | 514,665,326 | 17,040,899,438 | 0.802 | *Non-Manipulator* |
| 2022 | 514,665,326 | 17,040,899,438 | 333,391,845 | 12,951,541,794 | 1,173 | *Manipulator* |
| 2023 | 333,391,845 | 12,951,541,794 | 234,545,482 | 1,896,719,037 | 0.208 | *Non-Manipulator* |
| 2024 | 234,545,482 | 1,896,719,037 | 243,993,525 | 2,754,823,927 | 1,396 | *Manipulator* |

Source: Data processed by the author, 2025

### 4.1.6 Sales, General, and Administrative Expenses Index (SGAI)

The calculation of the *Sales, General, and Administrative Expenses Index* (SGAI) for PT Envy Technologies Indonesia Tbk for the years 2019-2024 is shown in Table 7.

**Table 7** *Calculation of the Sales, General, and Administrative Expenses Index (SGAI) ratio years 2019-2024 (in Rupiah IDR)*

| Year | (a) Sales, General, and Administrative Expenses Current Period | (b) Sales Current Period | (c) Selling, General, and Administrative Expenses Previous Period | (d) Sales Previous Period | (e) $\frac{(a/b)}{(c/d)}$ | Note |
|---|---|---|---|---|---|---|
| 2019 | 37,655,490,984 | 188,583,796,943 | 11,117,730,678 | 80,351,640,464 | 1,443 | *Manipulator* |
| 2020 | 20,029,274,979 | 674,900,203 | 37,655,490,984 | 188,583,796,943 | 148,628 | *Manipulator* |
| 2021 | 35,885,936,469 | 272,500,002 | 20,029,274,979 | 674,900,203 | 4,437 | *Manipulator* |
| 2022 | 17,137,026,209 | 1,944,900,000 | 35,885,936,469 | 272,500,002 | 0.067 | *Non-Manipulator* |
| 2023 | 18,546,748,369 | 2,493,050,451 | 17,137,026,209 | 1,944,900,000 | 0.844 | *Non-Manipulator* |
| 2024 | 12,028,254,807 | 5,537,880,001 | 18,546,748,369 | 2,493,050,451 | 0.292 | *Non-Manipulator* |

Source: Data processed by the author, 2025

### 4.1.7 Leverage Growth Index (LVGI)

The calculation of the Leverage Growth Index (LVGI) ratio for PT Envy Technologies Indonesia Tbk for the years 2019-2024 is shown in Table 8.

**Table 8** *Calculation of the Leverage Index Ratio (LVGI) for 2019-2024 (in Rupiah IDR)*

| Year | (a) Total Liabilities for the Current Period | (b) Total Assets for the Current Period | (c) Total Liabilities for the Previous Period | (d) Total Assets for the Previous Period | (e) $\frac{(a/b)}{(c/d)}$ | Note |
|---|---|---|---|---|---|---|
| 2019 | 83,874,873,975 | 400,301,677,599 | 66,850,156,226 | 170,646,994,564 | 0.535 | *Non-Manipulator* |
| 2020 | 48,460,946,384 | 323,550,091,740 | 83,874,873,975 | 400,301,677,599 | 0.715 | *Non-Manipulator* |
| 2021 | 44,234,971,123 | 66,961,982,562 | 48,460,946,384 | 323,550,091,740 | 4,410 | *Manipulator* |

Source: Data processed by the author, 2025

### 4.1.8 Total Accruals to Total Assets (TATA)

The calculation of the Total Accruals to Total Assets (TATA) ratio for PT Envy Technologies Indonesia Tbk for the years 2019-2024 is shown in Table 9.

**Table 9** *Calculation of the Total Accruals to Total Assets (TATA) ratio 2019-2024 (in Rupiah IDR)*

| Year | (a) Profit After Tax for the Current Period | (b) Operating Cash Flow for the Current Period | (c) Total Assets for the Current Period | (d) $\frac{a-b}{c}$ | Note |
|---|---|---|---|---|---|
| 2019 | 6,009,546,634 | -168,249,581,403 | 400,301,677,599 | 0.435 | *Manipulator* |
| 2020 | -27,795,052,341 | 46,754,925,522 | 323,550,091,740 | -0.230 | *Non-Manipulator* |
| 2021 | -252,037,077,953 | -74,541,155 | 66,961,982,562 | -3,763 | *Non-Manipulator* |
| 2022 | -33,742,870,300 | -76,021,530 | 35,360,143,895 | -0.952 | *Non-Manipulator* |
| 2023 | -30,878,971,139 | -2,924,286,641 | 15,431,078,494 | -1,812 | *Non-Manipulator* |
| 2024 | -14,496,913,957 | -3,507,505,419 | 16,270,564,117 | -0.675 | *Non-Manipulator* |

Source: Data processed by the author, 2025

Based on the data from the index ratio calculations using the *Beneish M-Score* model in the financial statements of PT Envy Technologies Indonesia Tbk for the period 2019-2024, after obtaining the results from the calculation of the eight *Beneish M-Score* ratios, the eight ratios were then entered into the *Beneish M-Score* formula, which is calculated for each period. The results of the *Beneish M-Score* calculation for PT Envy Technologies Indonesia Tbk for the 2019-2024 period are shown in Table 10.

**Table 10** *Beneish M-Score calculation for PT Envy Technologies Indonesia Tbk Years 2019-2024 (in Indonesian Rupiah IDR)*

| Year | DSRI | GMI | AQI | SGI | DEPI | SGAI | LVGI | TATA | *Beneish M-Score* Results | Description |
|---|---|---|---|---|---|---|---|---|---|---|
| 2019 | 1,071 | 1,247 | 18,940 | 2,347 | 0.397 | 1,443 | 0.535 | 0.435 | 8.57 | *Manipulator* |
| 2020 | 67,668 | -44,158 | 1,884 | 0.004 | 1,193 | 148,62 | 0.715 | -0.230 | 8.49 | *Manipulator* |
| 2021 | 2,469 | 1,067 | 0.670 | 0.404 | 0.802 | 4,437 | 4,410 | -3.763 | -20.73 | *Non-Manipulator* |
| 2022 | 0.005 | 0.085 | 0.625 | 7.137 | 1.173 | 0.067 | 2.003 | -0.952 | -2.80 | *Non-Manipulator* |
| 2023 | 2,001 | 0.866 | 0.038 | 1,282 | 0.208 | 0.844 | 2,808 | -1.812 | -10.54 | *Non-Manipulator* |
| 2024 | 0.057 | -0.522 | 0.948 | 2.221 | 1.396 | 0.292 | 1.098 | -0.675 | -5.75 | *Non-Manipulator* |

Source: Data processed by the author, 2025

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Based on the results of the Beneish M-Score analysis shown in Table 12, it can be concluded that PT Envy Technologies Indonesia Tbk in 2019 showed an M-Score value of 8.57, which far exceeded the limit of -2.22, so that the company was categorised as a manipulator. This indicates strong evidence of financial statement manipulation. The high GMI value of 1.247 indicates the possibility of revenue manipulation and a decline in profitability, which in the context of agency theory could trigger management to present profits that do not reflect the actual conditions in order to maintain a good performance image. The AQI value of 18.940 shows a significant increase in intangible assets, which could indicate an attempt to hide costs or losses. The SGAI value of 1.443 and TATA value of 0.435 also indicate aggressive patterns in revenue recognition and cost inflation. The combination of these high ratios confirms strong suspicions of financial statement manipulation, consistent with agency theory regarding conflicts of interest between management and shareholders. In 2020, the *M-Score* stood at 8.49, still well above the threshold of -2.22, meaning that the company remained in the manipulator category. Several indicators experienced drastic changes, such as DSRI, which jumped to67.668, indicating a large increase in accounts receivable compared to sales, which often occurs due to the recognition of revenue that has not yet been received in cash. GMI became negative (-44.158), reflecting unstable gross margins. In addition, SGAI experienced an extreme increase to 148.62, indicating a large surge in sales and administrative expenses, which may be part of profit manipulation efforts. This phenomenon reflects the opportunistic behaviour of management who are trying to maintain the company's reputation amid performance pressures by manipulating financial accounts.

The year 2021 showed significant improvement, with the *M-Score* falling sharply to -20.73, categorising the company as a non-manipulator. Almost all ratios declined, indicating the company's tendency to return to more realistic reporting practices. The DSRI stood at 2.469 and the SGAI at 4.437, still showing an increase in accounts receivable and selling expenses, but within more reasonable limits. The AQI fell to 0.670, and the TATA was negative at -3.763, indicating no aggressive accrual recognition. These indicators show improvements in internal control systems and increased oversight from external parties such as auditors or boards of commissioners.

In 2022, *the M-Score* of -2.80 continued to indicate that the company was not engaged in manipulation. Financial ratios showed healthier and more stable trends, such as DSRI falling to 0.005 and SGAI to 0.067, indicating efficient cost and receivables management. Although the SGI rose sharply to 7.137, indicating an increase in revenue, the negative TATA value of -0.952 still indicates low accrual aggressiveness. This reinforces the assumption that management is more transparent in communicating information to shareholders.

In 2023, the company again recorded *a* negative *M-Score* of -10.54, well below the threshold of -2.22. This indicates that the financial statements are becoming more stable. The DSRI stood at 2.001, the AQI was very low at 0.038, and the TATA remained negative at -1.812, all indicating that there were no signs of significant manipulation. This situation reflects the effectiveness of internal controls and management's awareness of the need to maintain the integrity of financial reports.

In 2024, the *M-Score* value of -5.75 reaffirmed the company's position as *a non-manipulator*. All ratios remain within reasonable limits, such as DSRI at 0.057, GMI at -0.522, which continues to show stable gross margins, and a negative TATA of -0.675. All these indicators reinforce that there is no financial statement manipulation, and the company demonstrates consistency in sound and transparent reporting practices.

Overall, PT Envy Technologies Indonesia Tbk experienced significant changes in the quality of its financial reporting during the period from 2019 to 2024. Strong indications of manipulation were found in 2019 and 2020, where *the M-Score* was very high and well above the threshold of -2.22. These findings are closely related to issues that occurred at the company's subsidiary, PT Ritel Global Solusi (RGS), which in 2019 did not prepare its own financial statements but was still included in Envy's consolidated financial statements. This raised suspicions about the validity of the financial data presented. This manipulative practice appears to have continued into 2020, as reflected in the high *M-Score* for that year. This situation indicates that the company was still attempting to maintain its performance image in a non-transparent manner. From 2021 to 2024, there was a noticeable improvement, with the *M-Score* consistently below -2.22. This indicates that the company has stopped its manipulative practices and started to implement healthier and more honest reporting principles. This positive change is most likely supported by improvements in the effectiveness of internal controls, the role of external auditors, and the implementation of stricter corporate governance principles. Thus, it can be concluded that the 2019-2020 period was a suspicious time in terms of financial statement integrity, while 2021-2024 shows continuous improvement and a commitment to financial transparency.

## 4.2 *Altman Z-Score* Calculation Analysis

The results of the index ratio analysis using the Altman Z-Score model were obtained from the calculation of a number of specific financial ratios calculated to predict the potential bankruptcy of a company based on the financial statements of PT Envy Technologies Indonesia Tbk for 2019-2024. The ratio calculations are as follows:

### 4.2.1 Net Working Capital to Total Assets

The calculation of Ratio (X1) *Net Working Capital to Total Assets* for PT Envy Technologies Indonesia Tbk for the years 2019-2024 is shown in Table 11.

**Table 11** *Calculation of ratio (X1) net working capital to total assets (net working capital to total assets) for the years 2019-2024 (in Rupiah IDR)*

| Year | (a) Working Capital | (b) Total Assets | (c) a/b |
|---|---|---|---|
| 2019 | 198.255.188.040 | 400.301.677.599 | 0,495 |
| 2020 | 109.304.023.756 | 323.550.091.740 | 0,338 |
| 2021 | -12.631.079.135 | 66.961.982.562 | -0,189 |
| 2022 | -30.162.637.651 | 323.550.091.740 | -0,093 |
| 2023 | -43.614.927.519 | 323.550.091.740 | -0,135 |
| 2024 | -51.415.703.192 | 16.270.564.117 | -3,160 |

Source: Data processed by the author, 2025

### 4.2.2 Retained Earnings to Total Asset

The calculation of the Retained Earnings to Total Assets Ratio (X2) for PT Envy Technologies Indonesia Tbk for the years 2019-2024 is shown in Table 12.

**Table 12** *Calculation of the retained earnings to total assets ratio (X2) (retained earnings to total assets) for the years 2019-2024 (in Rupiah IDR)*

| Year | (a) Retained Earnings | (b) Total Assets | (c) a/b |
|---|---|---|---|
| 2019 | -16,964,725,943 | 400,301,677,599 | -0.042 |
| 2020 | -50,348,914,827 | 323,550,091,740 | -0.156 |
| 2021 | -301,987,328,873 | 66,961,982,562 | -4,510 |
| 2022 | -336,151,947,200 | 35,360,143,895 | -9,507 |
| 2023 | -366,528,815,589 | 15,431,078,494 | -23,753 |
| 2024 | -381,025,729,545 | 16,270,564,117 | -23,418 |

Source: Data processed by the author, 2025

### 4.2.3 Earning Before Interest and Tax to Total Asset

The calculation of the ratio (X3) of Earnings Before Interest and Tax to Total Assets for PT Envy Technologies Indonesia Tbk for the years 2019-2024 is shown in Table 13.

**Table 13** *Calculation of the ratio (X3) of earnings before interest and tax to total assets (earnings before interest and tax to total assets) for the years 2019-2024 (in Rupiah IDR)*

| Year | (a) Earnings Before Interest and Tax | (b) Total Assets | (c) a/b |
|---|---|---|---|
| 2019 | 9,714,375,108 | 400,301,677,599 | 0.024 |
| 2020 | -27,902,381,864 | 323,550,091,740 | -0.086 |
| 2021 | -252,006,181,320 | 66,961,982,562 | -3,763 |
| 2022 | -33,428,600,881 | 35,360,143,895 | -0.945 |
| 2023 | -30,887,288,064 | 15,431,078,494 | -2,002 |
| 2024 | -14,496,489,224 | 16,270,564,117 | -0.891 |

Source: Data processed by the author, 2025

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### 4.2.4 Book Value of Equity to Book Value of Total Liabilities

The calculation of the ratio (X4) of book value of equity to book value of total liabilities for PT Envy Technologies Indonesia Tbk for the years 2019-2024 is shown in Table 14.

**Table 14** *Calculation of ratio (X4) of Book Value of Equity to Book Value of Total Liabilities for the Years 2019-2024 (in Rupiah IDR)*

| Year | (a) Book Value of Equity | (b) Book Value of Total Liabilities | (c) a/b |
|---|---|---|---|
| 2019 | 316,426,803,624 | 83,874,873,975 | 3,773 |
| 2020 | 275,089,145,356 | 48,460,946,384 | 5,677 |
| 2021 | 22,727,011,439 | 44,234,971,123 | 0.514 |
| 2022 | -11,437,617,088 | 46,797,760,983 | -0.244 |
| 2023 | -41,915,460,777 | 57,346,539,271 | -0.731 |
| 2024 | -50,145,605,264 | 66,416,169,381 | -0.755 |

Source: Data processed by the author, 2025

Based on the data from the ratio calculations using the Altman Z-Score model in the financial statements of PT Envy Technologies Indonesia Tbk for the period 2019-2024, after obtaining the results from the calculation of the four Altman Z-Score ratios, the four ratios are then entered into the Altman Z-Score formula, which will be calculated for each period. The results of the *Altman Z-Score* calculation for PT Envy Technologies Indonesia Tbk for the period 2019-2024 are shown in Table 15.

**Table 15** *Altman Z-score calculation for PT Envy Technologies Indonesia Tbk for the years 2019-2024*

| Year | (X1) | (X2) | (X3) | (X4) | *Altman Z-Score* Results | Description |
|---|---|---|---|---|---|---|
| 2019 | 0.495 | -0.042 | 0.024 | 3.773 | 7.23 | Safe Zone |
| 2020 | 0.338 | -0.156 | -0.086 | 5.677 | 7.09 | Safe Zone |
| 2021 | -0.189 | -4.510 | -3.763 | 0.514 | -40.69 | Danger Zone |
| 2022 | -0.093 | -9.507 | -0.945 | -0.244 | -38.21 | Danger Zone |
| 2023 | -0.135 | -23.753 | -2.002 | -0.731 | -92.54 | Danger Zone |
| 2024 | -3,160 | -23.418 | -0.891 | -0.755 | -103.85 | Danger Zone |

Source: Data processed by the author, 2025

Based on the data in Table 17, the results of the Altman Z-Score analysis of PT Envy Technologies Indonesia Tbk during the period 2019 to 2024 show significant dynamics in its financial condition. In 2019, the company recorded a Z-Score of 7.23, which was well above the threshold of 2.6 and was therefore classified as being in the safe zone. This figure reflects excellent financial performance and low bankruptcy risk. The X1 ratio (working capital to total assets) was recorded at 0.495, indicating efficient management of current assets, while the X4 ratio (equity to total liabilities) of 3.773 indicates a fairly strong capital structure. Although the X2 ratio, which is retained earnings to assets, is negative, its impact is not significant on the overall score. This balanced ratio composition shows the company's financial stability. However, from an agency theory perspective, there is a possibility that management presents overly optimistic financial reports in order to maintain their reputation and position, which indicates a conflict of interest between managers and shareholders.

In 2020, the company's Z-Score value declined slightly to 7.09, but it is still considered very safe. This decline was mainly due to the decrease in X1 to 0.338, which indicates a decline in the effectiveness of working capital utilisation. Meanwhile, X2 and X3 still show negative values, indicating that the company is still facing pressure on profitability. However, a significant increase in X4 to 5.677 indicates a strengthening of equity relative to debt. Overall, although the Z-Score value is still high, the company appears to be more focused on strengthening its equity position than improving profitability, which may reflect a short-term strategy that is more beneficial to management than to the long-term interests of shareholders.

In 2021, the company faced a drastic decline in its financial condition, as seen from the Z-Score value which fell sharply to -40.69, indicating that the company was entering bankruptcy. Almost all ratios reflected a deteriorating financial condition. The X2 value fell to -4.510 and X3 to -3.763, signifying significant losses and declining operational effectiveness. X1 also became negative at -0.189, indicating a working capital deficit, and X4 fell to 0.514. This decline was most likely the result of shrinking revenues and increased operating expenses. This situation reinforces the indication that the seemingly healthy financial reports of previous years may have masked the real problems, and this year, the true situation has begun to unfold.

In 2022, the company has not yet managed to emerge from the crisis, with a Z-Score of -38.21. Working capital has not yet improved, as seen from X1 at -0.093, retained losses are increasing, X2 has fallen to -9.507, and

operational efficiency remains low, with X3 still negative. The decline in X4 to -0.244 also indicates a worsening capital structure. This reflects that no concrete steps or restructuring have been taken to improve the company's financial situation.

Conditions worsened in 2023, when the Z-Score fell sharply to -92.54, indicating a very high risk of bankruptcy. The X2 value, which fell dramatically to -23.753, reflects the accumulation of significant losses ( ). X1 fell to -0.135 and X4 dropped to -0.731, indicating weak liquidity and high pressure on the company's capital. This situation shows that the company's financial structure is highly unstable, with mounting debt and declining operational performance with no signs of recovery.

In 2024, the company reached its most critical point in the analysis period, with a Z-Score of -103.85. All financial indicators showed extremely negative values. The X1 value fell dramatically to -3.160, indicating a significant working capital deficit. The X2 value remained at a very negative -23.418, indicating a continued increase in retained losses. The X3 and X4 values were -0.891 and -0.755, respectively, confirming the company's weak operational performance and poor capital structure. This indicates that the company is experiencing a comprehensive financial crisis. Without measures such as restructuring or management replacement, the company is at great risk of bankruptcy. This situation illustrates the peak of failure in agency relationships, where management has lost the trust of shareholders, and oversight of managerial decisions has become ineffective.

Overall, the Altman Z-Score analysis from 2019 to 2024 shows that PT Envy Technologies Indonesia Tbk experienced a drastic decline in its financial condition. At the beginning of the period, specifically in 2019 and 2020, the company appeared to be in a healthy financial condition based on its high Z-Score. However, these findings did not reflect the company's real condition, as revealed in the PT Envy case, which involved allegations of financial statement manipulation involving its subsidiary, PT Ritel Global Solusi (RGS). RGS did not prepare its own financial statements in 2019, but its data was still included in Envy's consolidated financial statements. This raises indications of financial data manipulation that resulted in a misleading *Z-Score*. In other words, the manipulated financial statements created the illusion that the company was in a safe condition and far from bankruptcy, when in fact there were underlying problems. This finding is in line with agency theory, which explains that management may present misleading reports to maintain its reputation and investor confidence. From 2021 to 2024, the *Z-Score* value continued to decline and consistently placed the company in the danger zone, reflecting a sharp decline in operational performance, working capital deficits, and an increasingly weak capital structure. Without significant efforts such as capital strengthening, cost efficiency, and debt restructuring, the company's business continuity is highly questionable. This highlights the importance of strict supervision to prevent management from abusing their authority and acting to the detriment of shareholders.

## 4.3 Comparative Analysis of Beneish M-Score and Altman Z-Score

Based on the data calculated using the Beneish M-Score and Altman Z-Score models in the financial statements of PT Envy Technologies Indonesia Tbk for the period 2019-2024, the following is a comparison of the Beneish M-Score and Altman Z-Score calculations, as shown in Table 16.

**Table 16** *Comparison of Beneish M-score and Altman Z-score PT Envy Technologies Indonesia Tbk 2019-2024*

| Year | *Beneish M-Score* Results | Description | *Altman Z-Score* Result | Description |
|---|---|---|---|---|
| 2019 | 8.57 | *Manipulator* | 7.23 | Safe Zone |
| 2020 | 8.49 | *Manipulator* | 7.09 | Safe Zone |
| 2021 | -20.73 | *Non-Manipulator* | -40.69 | Danger Zone |
| 2022 | -2.80 | *Non-Manipulator* | -38.21 | Danger Zone |
| 2023 | -10.54 | *Non-Manipulator* | -92.54 | Danger Zone |
| 2024 | -5.75 | *Non-Manipulator* | -103.85 | Danger Zone |

Source: Data processed by the author, 2025

The following is a graph comparing the *Beneish M-Score* and *Altman Z-Score* calculations for PT Envy Technologies Indonesia Tbk for 2019–2024, as shown in Figure 2.

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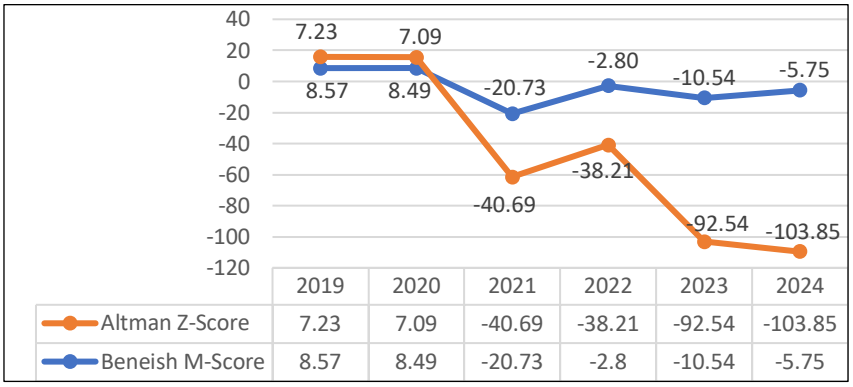


**Fig. 2** *Comparison chart of Beneish M-score and Altman Z-score Results PT Envy Technologies Indonesia Tbk 2019–2024*

Based on an analysis of the Beneish M-Score and Altman Z-Score during the period from 2019 to 2024, it was found that there was a significant difference between indications of financial statement manipulation and corporate bankruptcy. In 2019 and 2020, PT Envy Technologies Indonesia Tbk was categorised as a company that engaged in manipulation, as indicated by very high *Beneish M-Scores* of 8.57 and 8.49, respectively. These values far exceed the threshold of -2.22, which indicates a strong possibility that the financial statements have been manipulated. However, the *Altman Z-Score* indicates that the company is in the safe zone, with scores of 7.23 in 2019 and 7.09 in 2020. This manipulation appears to be aimed at making financial performance appear better, such as by overstating revenue, deferring the recognition of expenses, and aggressively increasing current assets. Since the *Z-Score* calculation is based on financial statement components such as working capital, operating profit, and equity, this manipulation causes these ratios to remain high. As a result, the company appears to have positive working capital, equity that exceeds liabilities, and earnings before interest and taxes that remain positive. This indicates that the manipulated financial statements successfully create the image that the company is in a healthy financial condition and far from potential bankruptcy.

Conversely, from 2021 to 2024, the *Beneish M-Score* value shows results below the -2.22 threshold, indicating that the company is no longer manipulating its financial statements. When the manipulation practices ceased, the actual financial condition began to appear in the financial statements. EBIT became negative, retained earnings reflected accumulated losses, working capital declined to negative levels, and equity shrank significantly to near deficit. As a result, the *Altman Z-Score* immediately fell into the danger zone to an extreme negative point, namely -40.69 in 2021, -38.21 in 2022, -92.54 in 2023, and -103.85 in 2024. This indicates that after the company stopped manipulating its financial statements, its true financial condition began to emerge, revealing a serious crisis. This decline was influenced by various factors, including declining profitability, increasing debt, and declining asset utilisation efficiency.

*The Beneish M-Score* is designed to detect possible financial statement manipulation, such as inflated revenues, suppressed depreciation, or significant changes in costs and intangible assets. Thus, a high value > -2.22 is an indication *of manipulation,* an *M-Score* value = -2.22 means the company is classified as *a grey company,* while a low value < -2.22 means the financial statements are *not manipulated.* Conversely, *the Altman Z-Score* is used to assess bankruptcy risk based on financial ratios such as liquidity, profitability, leverage, and activity. If the *Z-Score* is high (> 2.6), the company is classified as non-bankrupt or healthy; if the score is between 1.1 < Z" < 2.6, it is uncertain whether the company is healthy or facing bankruptcy; and if the score is low ( < 1.1), the company is at risk of bankruptcy. Since *the Altman Z-Score* uses raw financial data, manipulation of this data can make the calculation results appear favourable even though the company is actually in difficulty. Therefore, effective manipulation can produce a high *Z-Score*, while concealing the actual financial condition. This confirms that *the Beneish M-Score* detects the presence or absence of indications of manipulation, while *the Altman Z-Score* only reads the data as it is, without considering the validity of the data. When linked to agency theory, these findings reveal a conflict of interest between management as agents and shareholders as principals. Agency theory explains that because management has more information than owners, they can use this information advantage for their own benefit. This was evident in the 2019–2020 period, when management allegedly manipulated the company's financial statements to make it appear to be in good financial condition, even though this may not have been the case. The motivation behind this action could have been to maintain the company's image in the eyes of investors, obtain funds from external parties, or meet short-term performance targets.

Conversely, from 2021 to 2024, when companies no longer manipulated their financial statements, their financial condition actually deteriorated dramatically. This indicates that the cessation of manipulation allowed management to convey a more transparent and accurate picture of the company's condition to its owners,

reflecting that the company was in a position of extreme vulnerability to bankruptcy. This condition can also be interpreted as the result of increased internal and external supervision of management performance. Therefore, these findings confirm that information asymmetry and the potential for abuse of authority by agents can have a direct impact on the transparency and accuracy of financial statements. Therefore, the combined use of the *Beneish M-Score* and *Altman Z-Score* models is essential to obtain a comprehensive picture of the accuracy of financial statement presentation and the financial health of a company.

## 4.4 Managerial Aspects (Decision Making)

The managerial aspect reflects management's ability to make data-driven strategic decisions and risk analyses to achieve company objectives efficiently. The implications of the managerial aspect are practical recommendations from the research results that can be used as a basis for decision-making by relevant parties, particularly company management and investors. For companies, the managerial aspect reflects how research results can be used as a reference in improving the effectiveness of financial management, improving the transparency of financial reports and avoiding potential fraud or bankruptcy risks. Meanwhile, for investors, it helps in making more rational investment decisions by considering the company's financial condition and potential risks. The findings of this study show that the previous management not only failed to build adequate financial resilience, but also attempted to cover it up by manipulating financial reports, which ultimately only delayed the emergence of the crisis and exacerbated its impact in the future.

### 4.4.1 Recommendations for company management

- Transparency & Accountability: Implement internal controls, routine audits, and reporting in accordance with standards so that financial reports reflect actual conditions and prevent manipulation.
- Fundamental Financial Improvement: Fundamental financial improvement is an effort focused on strengthening the company's financial condition in a real and sustainable manner, not just for the sake of image in financial reports.
- Improvement of Management Competence: Improving management competence is an important step to ensure that the company is managed professionally, transparently, and with integrity.
- Regular Financial Monitoring: Regular financial health monitoring is an effort to oversee the company's financial condition in order to maintain stability and detect problems early on. This is done through routine analysis of financial reports using methods such as *the Beneish M-Score* and *Altman Z-Score*.
- Restoring Investor Reputation: Restoring investor reputation and trust is a crucial step after the disclosure of financial statement manipulation that has damaged the company's image.
- Strengthening Risk Management: Developing risk management policies is a step towards formulating systematic procedures and guidelines for identifying, analysing, monitoring, and controlling various risks that could threaten the company's sustainability.
- Bankruptcy Risk Management: Bankruptcy risk can be managed by developing a well-thought-out recovery plan to get out of bankruptcy, restructuring debt, and improving operational efficiency to overcome the crisis.
- Business Transformation: Business strategy transformation is an effort to review and update business models, policy directions, and company priorities to be more adaptive to changes in the business environment and actual financial conditions.

### 4.4.2 Recommendations for investors

- Increase awareness of signs of financial statement manipulation**:** Investors are advised not to rely solely on financial statements at face value, especially when financial ratios suddenly show excellent performance. Therefore, investors need to use the *Beneish M-Score* analysis tool to test data integrity.
- Incorporating bankruptcy risk analysis into investment strategies**:** Findings that companies entered the bankruptcy danger zone after the cessation of manipulation practices indicate the importance of *Altman Z-Score* analysis as a predictive tool**.**
- Avoiding excessive reliance on short-term performance**:** Investors are advised to focus on long-term sustainability rather than just short-term profits. Previous manipulations indicate that management prioritised financial image over fundamental improvements.
- Be wary of stock price fluctuations as a result of the market confidence crisis**:** Investors are advised to focus on long-term sustainability rather than just short-term profits. Previous manipulations indicate that management is more concerned with financial image than fundamental improvements.
- Using the findings of this study as a lesson for future investments**:** The case of PT Envy Technologies

Indonesia Tbk serves as a reminder for investors not to focus solely on financial data, but also to consider the quality of management, transparency, and reputation of the company. Smart investors need to conduct thorough investigations or reviews before making investment decisions.

## 5. Conclusion

Based on the results of this study, it can be concluded that:

- *Beneish M-Score* analysis indicates that PT Envy Technologies Indonesia Tbk allegedly manipulated its financial statements in 2019–2020. This is evident from the high *M-Score* value due to a surge in ratios such as GMI, AQI, TATA, and DSRI. These ratios reflect a decline in profitability, asset transfers, and unreasonable recognition of revenue and receivables. However, since 2021–2024, *the M-Score* has been below the manipulation threshold, reflecting improvements in reporting and management's commitment to transparency.
- The *Altman Z-Score* analysis shows that the company was in the safe zone in 2019–2020, indicating strong financial conditions. However, since 2021–2024, the score has remained in the danger zone, indicating a high risk of bankruptcy. This decline is due to decreased profitability, working capital efficiency, retained earnings, and increased debt burdens.
- There is a difference between indications of financial statement manipulation and the financial health of a company. In 2019–2020, companies were indicated to have manipulated their financial statements with high *M-Scores*. On the other hand, *Altman Z-Scores* for the same period showed values that were in the safe zone or did not indicate bankruptcy. This finding reflects that the manipulated financial statements successfully created the image that the company was in a healthy financial condition and far from potential bankruptcy, indicating that the manipulation successfully concealed the actual condition. Conversely, from 2021 to 2024, the *Beneish M-Score* showed results below the *manipulator* index threshold, indicating that the company was no longer manipulating its financial statements. However, during the same period, the *Altman Z-Score* experienced a drastic decline to an extreme negative point, which falls into the danger zone category. This drastic decline indicates that the company's actual financial condition was very poor, and this began to be revealed after the company stopped manipulating its financial statements.

## 6. Recommendations

Based on the above conclusions, here are some recommendations for consideration:

- PT Envy Technologies Indonesia Tbk is advised to improve the transparency of its financial reports in accordance with applicable accounting principles, strengthen internal controls through independent auditors, and immediately carry out financial restructuring to overcome the danger zone conditions detected for four consecutive years. A managerial evaluation should also be conducted to identify weaknesses in financial management, and open and honest communication with investors should be maintained to build trust and support for the long-term recovery plan.
- Investors are advised not to rely solely on company financial reports, but also to conduct independent analysis using models such as *the Beneish M-Score* and *Altman Z-Score* to identify potential manipulation and bankruptcy risks. Drastic changes in financial ratios should be viewed as warning signs, and it is important to diversify investments in order to minimise the risk of loss, as can be learned from the case of PT Envy Technologies Indonesia Tbk.
- Future researchers are advised to extend the research period to observe long-term trends and consider using other models such as *F-Score* or *Zmijewski* as comparators. In addition, combining qualitative methods such as interviews or case studies will enrich the understanding of financial manipulation practices, and comparisons with similar companies can provide an overview of whether similar phenomena occur widely in the technology industry.

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## Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

## Author Contribution

*The authors confirm contribution to the paper as follows:* ***Study conception and design****: Deanoviana Galuh Ramadhani, Mohamad Arief Setiawan;****data collection****: Mohamad Arief Setiawan;* ***analysis and interpretation of results****: Deanoviana Galuh Ramadhani, Mohamad Arief Setiawan, Ahmad Saifi Athoilah;* ***draft manuscript preparation****: Mohamad Arief Setiawan, Ahmad Saifi Athoilah. All authors reviewed the results and approved the final version of the manuscript.*

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