Krisnadwipayana International Journal of Management Studies
Volume 5 Issue 2 (July – December) 2025 Printed ISSN : 2776-0413
DOI: https://dx.doi.org/10.35137/kijms.v5i2.1001 Electronic ISSN : 2775-5029
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Periodization Analysis of Bankruptcy Prediction at PT Matahari Department Store Tbk for the 2019–2024 Period

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Submit : 4 October 2025, Review : 2 November 2025, Accepted : 24 December 2025

ABSTRACT

This study aims to determine and analyze bankruptcy predictions at PT. Matahari Department Store Tbk for the period of 2019-2024. This type of research is included in the quantitative descriptive research category. The research data source is the company's annual financial report data for the period of 2019 - 2024 which has been audited and can be accessed through the PT. Matahari Department Store Tbk. website: https://www.matahari.com/. The sampling technique used is purposive sampling. The analysis technique used in this study is the Altman Z-Score model using the ratio (Net Working Capital to Total Assets, Earnings Before Tax to Total Assets, Retained Earnings to Total Assets, Sales to Total Assets, and Total Equity to Total Assets) and the Grover model using the ratio (Working Capital to Total Assets and Earning Before Interest and Tax to Total Assets). The results of the analysis show that the model can adapt to the environment and economic conditions in Indonesia as an early warning system to mitigate the risk of bankruptcy in the future, so that management can immediately take preventive measures.
Keywords: Periodization; Bankruptcy Prediction

INTRODUCTION

In an effort to achieve profits in the competitive retail business environment, companies need to optimize available opportunities and implement effective marketing strategies. It is also important for companies to continuously monitor consumer behavior in order to maximize the sales of each product marketed. Retail companies must be careful in selecting the products they offer and ensure that these products align with consumer needs, desires, and expectations. Consumers consider various factors before making purchasing decisions, such as atmosphere, location, quality, and loyalty.

PT Matahari Department Store Tbk (LPPF) is one of the largest modern retail entities in Indonesia and has a strong reputation, having operated for many years in providing a wide range of products to meet community needs. The company offers various products including apparel, accessories, beauty products, and household goods, with a focus on consumers who are interested in the latest fashion trends while prioritizing value for money in shopping.

With support from reliable local and international supplier networks, the combination of affordable fashion products, modern and attractive store visual concepts, and high-quality service creates a comfortable and dynamic shopping experience, making Matahari one of the preferred department stores among the middle-class community.

PT Matahari Department Store Tbk has begun closing several of its outlets in various regions, one of the main causes being the increase in COVID-19 cases in Indonesia. PT Matahari has implemented various promotional strategies, such as developing digital services through the company’s official website and platforms. This development is expected to provide an integrated and flexible shopping experience through both online channels and physical stores. However, these efforts appear not to have received a positive response from the public. PT Matahari Department Store Tbk has also established business collaborations with several well-known

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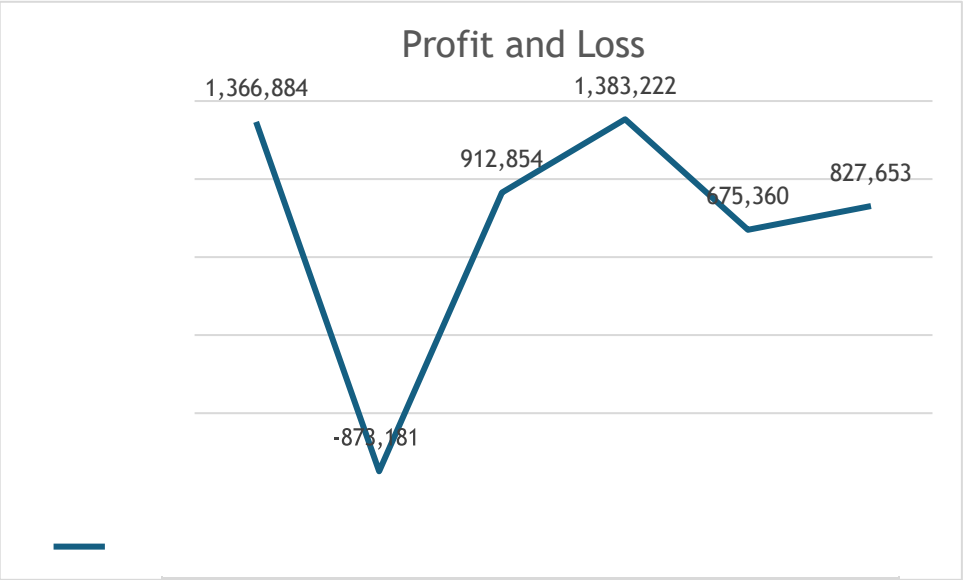
companies such as Disney, Marvel, and Nike to encourage increased product sales.
Below is an explanation of the profit and loss performance of PT Matahari Department Store Tbk from 2019 to 2024 based on an analysis of the company's financial statements.

Profit and Loss of PT Matahari Department Store Tbk (Matahari) for 2019-2024



	2019	2020	2021	2022	2023	2024
Series 1	1,366,884	-873,181	912,854	1,383,222	675,360	827,653

Source: data processed by the author in 2025

Based on the income statement data of PT Matahari Department Store Tbk from 2019 to 2024, there are significant fluctuations, with a substantial loss in 2020 amounting to -873,181, indicating serious financial pressure. This condition can be identified as the impact of the COVID-19 pandemic, which placed pressure on various industrial sectors in both the global and national economy.

The company showed a recovery in 2021 by recording a profit of 912,854, which continued to increase to 1,383,222 in 2022. However, there was a sharp decline in profit to 675,360 in 2023. In 2024, the company experienced an increase in profit to 827,653. This increase indicates efforts toward recovery and improvement in financial performance. Nevertheless, this profit level has not yet matched the achievement in 2022, meaning the company has not been fully free from the threat of bankruptcy.

In an effort to anticipate or slow down the occurrence of bankruptcy, companies must have the ability to accurately predict bankruptcy. Bankruptcy prediction serves as a supporting tool that provides information and guidance for stakeholders to assess a company's financial performance and to identify the possibility of unexpected problems. Bankruptcy prediction becomes the basis for evaluating the company's condition and business continuity.

THEORETICAL FRAMEWORK

Agency Theory

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Agency Theory describes the relationship between agents (managers) and principals (owners). In a company, there is an interactive relationship between owners who act as principals—those who invest capital into the company with the expectation of earning returns—and managers who act as agents, namely individuals entrusted with authority to operate, manage, and control company operations on behalf of the owners. Principals are assumed to focus on increasing the financial returns on their investments, while managers or agents are assumed to derive satisfaction from financial compensation and other contractual incentives that must be considered in designing incentive contracts between owners and managers (Warsidi and Pramuka, 2009).

The behavioral perspective of agency theory explains the contractual relationship between principals (contract providers) and agents (contract recipients). The principle of agency contracts aims to ensure that agents perform their roles and responsibilities in achieving the objectives set by principals; therefore, agents are granted authority in managerial decision-making. Agency theory is closely related to income smoothing, as there are differences in interests between managers as agents and owners as principals in decision-making processes (Supriyono, 2018). Agents and principals are economic actors who share a common goal of maximizing company profits. Morally, agents acting as managers have a responsibility to maximize profits for the owners, and in return, they receive compensation as agreed upon in the contract. However, agents may engage in opportunistic behavior by prioritizing personal interests over organizational interests, which can lead to conflicts between the two parties and negatively affect company stability (Panda, 2017).

Financial Distress

Financial distress is a condition in which a company experiences financial pressure before eventually facing bankruptcy. Brahmana (2007) states that financial problems may arise when a company fails to manage and maintain its financial performance properly. This condition generally begins with failure in marketing products, which subsequently leads to declining sales revenue and results in operational losses. Therefore, companies need to estimate the potential for financial distress.

Bankruptcy

Bankruptcy is a condition in which a company is unable to meet its financial obligations and therefore must seek legal protection or file for liquidation. Bankruptcy can be caused by various factors, such as economic crises, poor management, or internal financial problems.

The Altman Z-Score model is one of the most well-known and widely used bankruptcy prediction models in the business world. It was first introduced by Professor Edward Altman in 1968 and has been empirically tested, demonstrating a high level of accuracy in predicting the likelihood of corporate bankruptcy.

The Altman Z-Score model combines five financial ratios—Working Capital Ratio, Equity to Total Assets Ratio, Earnings to Total Assets Ratio, Sales to Total Assets Ratio, and Working Capital to Total Assets Ratio—to generate an index value that reflects a company's financial condition. The resulting index value is then compared with threshold values established by Altman to measure the probability of bankruptcy.

Bambang Hermanto and Mulyo Agung (2015:242) state that based on the Altman method, companies can be classified into three categories:

1. If the Z-Score value is greater than 2.90, the company is considered financially healthy.

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2. If the Z-Score value falls between 1.20 and 2.90, the company is considered to be in the gray area, indicating serious financial managerial difficulties that must be addressed immediately. Failure to respond promptly may lead to bankruptcy.
3. If the Z-Score value is below 1.20, the company is considered to be experiencing financial distress.

On an industry scale, bankruptcy refers to the collapse of a company due to continuous losses. Bankruptcy is generally defined as an industrial failure to conduct business operations that generate profits. There are several types of failure, including:

1. Economic distress, which occurs when a company runs out of income and is unable to cover expenses because revenue is insufficient, meaning the profit level is lower than the cost of capital. This failure can occur when actual cash flows are far below targeted levels.
2. Financial distress, which refers to funding difficulties. This insolvency has two forms: technical insolvency, which occurs when a company fails to meet its obligations as they fall due and is declared bankrupt. This can happen when net income is insufficient to cover total expenses as shown on the balance sheet, resulting in cash flows that are smaller than the debt obligations that must be paid.

Indicators for Predicting Bankruptcy

Signs that a company may officially experience bankruptcy can be observed in conditions reflecting declining effectiveness and efficiency in company operations. Hanafi (2003) states that several indicators can be used by management to predict potential bankruptcy, including:

1. Analysis of current and future cash flows.
2. Evaluation of the company's business strategy.
3. Assessment of cost structure compared to competitors.
4. The level of management quality.
5. Management's ability to manage and control costs.

According to Hanafi (2014), bankruptcy is a critical issue because it involves significant costs, making an early warning system essential for identifying potential bankruptcy. There are two indicators that can be used to predict bankruptcy:

a. External indicators, which originate outside the company, such as financial markets or information from related parties such as suppliers, consumers, and dealers.
b. Internal indicators, which originate within the company, such as corporate strategy, cash flows, sales trends, financial statements, and management capacity.

Ratio Calculation

The data analysis technique in this study was conducted using two bankruptcy prediction models: the Altman Z-Score and the Grover Z-Score. The researchers calculated financial data using financial ratios from both bankruptcy prediction analysis models.

The following is an explanation of the measurement methods for each ratio used in the two bankruptcy prediction models applied in this study:

a) *Working Capital To Total Asset*

Working capital to total assets is a ratio used to assess a company's liquidity. This ratio is applied in both Altman and Grover models.

WCTA = (Current Assets – Current Liabilities) / Total Assets

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b) *Retained Earnings To Total Asset*

This ratio shows the extent to which a company can generate retained earnings from its total assets. This ratio is only used in the Altman model.

RETA = Retained Earnings/Total Assets

c) *Earning Before Interest And Taxes To Total Asset*

This ratio measures a company's potential for generating operating profit before deducting interest and taxes. It's applied in both the Altman Z-Score and Grover models.

EBITTA = Earnings Before Interest and Taxes / total assets

d) *Book Value of Equity to Book Value of Total Liabilities*

This ratio reflects the extent to which a company's capital is able to cover long-term debt and indicates the soundness of its capital structure.
This ratio is used only in the Altman model.

BVETL = Book Value of Equity / Total liabilities

e) ROA Ratio

This ratio indicates the company's ability to generate revenue. This ratio is used only in the Grover model.

ROA = Net Income / Total Asset

The following are the prediction models used in this study, along with the measurements or ratios used to generate scores for each model.

1) Altman Z-Score Model

The Altman model is a bankruptcy prediction model calculated based on a combination of financial ratios to generate a score reflecting a company's potential for bankruptcy. The Altman model is calculated as follows:

Z = 6,56 X1 + 3,26 X2 + 6,72 X3 + 1,05 X4

With the following information:
Z = *Financial distress*
XI = *Working capital to total asset*
X2 = *Retained earnings to total asset*
X3 = *Earnings before interest and taxes total asset*
X4 = *Book Value of Equity to Book Value of Total Liabilities*

The value provisions from the results of the formula above are:

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Criteria	Z Value
Safe Zone	Z > 2,6
Grey Zone	1,1 < Z
< 2,6 Distress	Z > 1,1

2) ***Grover Model***

The Grover model is a modification of the Z-Score model developed through re-evaluation. The Grover model has calculations formulated as follows:

$$G = 1{,}650X1 + 3{,}404X3 – 0{,}016ROA + 0{,}057$$

Where:
X1 = working capital to total assets
X3 = earnings before interest and tax to total assets
ROA = net income to total assets

The value provisions from the results of the formula above are:

Criteria	Z Value
Healthy	G ≥ 0,01
Distress	G ≤ -0,02

This analysis is performed by displaying the information in financial reports. This comparison demonstrates the relationship between certain numbers and other numbers. This type of data is also known as a percentage, which represents a single level or part. Ratios serve as guidelines and useful references for future use.

Conceptual Framework

Researchers developed a conceptual framework on the Analysis of Bankruptcy Prediction Periodization at PT Matahari Department Store Tbk for 2019-2024.

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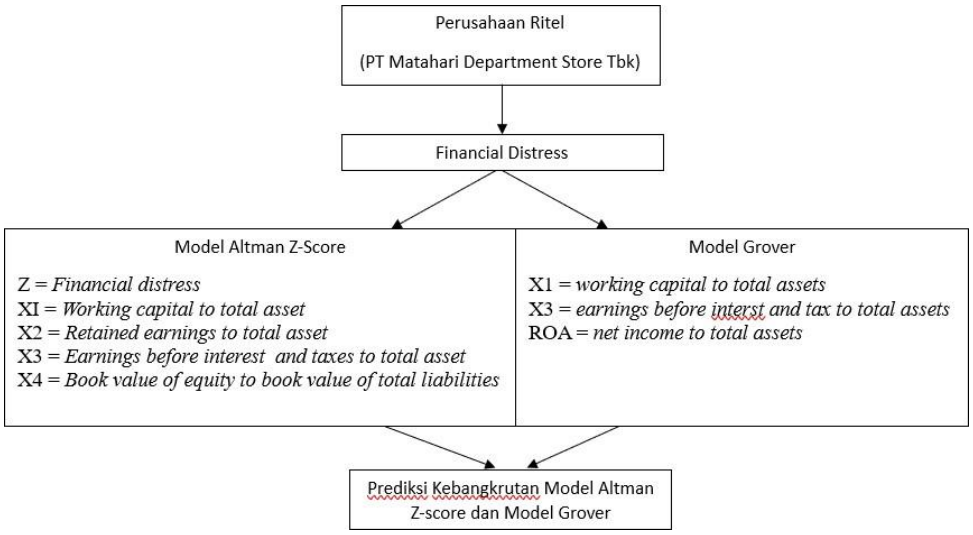

Source: data processed by researchers, 2025

Based on the research framework above, it is identified that this research is focused on the relationship between the measuring instruments between the Altman Z-Score model and the Grover model used to predict bankruptcy, the indicators of the Altman Z-Score model can be calculated with the formula Z = 6.56 X1 + 3.26 X2 + 6.72 X3 + 1.05 X4. The bankruptcy category in this model if the Z value <1.1 is bankrupt, if 1.1 <Z <2.6 is in the gray area, and if Z> 2.6 is not bankrupt. Meanwhile, the Grover model is measured with the formula G = 1.650X1 + 3.404X3 - 0.016 ROA + 0.057. A company is considered bankrupt if the score obtained is less than or equal to -0.02 ($G \leq -0.02$) and is categorized as healthy if the score is at a value greater than or equal to 0.01 ($G \geq 0.01$).

Hypotheses

A hypothesis is an initial assumption regarding a research problem that must be tested for its validity through scientific research methods (Abdullah, 2015). Based on the explanations presented earlier, the hypotheses formulated in this study are as follows:

1. It is assumed that there is a periodized bankruptcy prediction using the Altman Z-Score model at PT Matahari Department Store Tbk.
2. It is assumed that there is a periodized bankruptcy prediction using the Grover model at PT Matahari Department Store Tbk.
3. It is assumed that there are differences in scores for predicting bankruptcy between the Altman Z-Score model and the Grover model.

RESEARCH METHODOLOGY

Object, Location, and Time of Research

The object of this research is PT Matahari Department Store Tbk, a company operating in the retail sub-sector and listed on the Indonesia Stock Exchange (IDX). This study focuses on the analysis of the annual financial statements of PT Matahari Department Store Tbk from 2019 to 2024.

The research location is PT Matahari Department Store Tbk, whose head office is located

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at Menara Matahari, 12th Floor, Jalan Bulevar Palem Raya No. 7, Lippo Village, Tangerang, 15811, Indonesia. The method applied in this study is secondary research, conducted by collecting data and information through internet media, particularly from the official website of PT Matahari Department Store Tbk at https://www.matahari.com/.

This study is classified as descriptive quantitative research. The factors examined are bankruptcy prediction variables using the Altman Z-Score method and the Grover model. The data source used in this study consists of secondary data. The researcher uses the company's annual financial statements from 2019 to 2024, which can be accessed through the official website of PT Matahari Department Store Tbk at https://www.matahari.com/, which provides financial reports related to the object under study. In addition, supporting data are obtained from various sources, including previous research journals, reference books, scientific works such as undergraduate theses, and other relevant literature that support the continuity of this research. These sources provide relevant data to help the researcher achieve the expected results.

RESULT AND DISCUSSION

Research Data Description

This research is a quantitative research with a descriptive approach that applies the Altman Z-Score model and the Grover model with data collection techniques in the form of secondary data obtained from the annual financial report of PT Matahari Department Store Tbk through the company's official website, which is then analyzed using the financial ratio calculations required in the Altman Z-Score and Grover bankruptcy prediction models.

Altman Z-Score Model

The first stage of testing uses the Altman Z-Score approach to analyze the financial condition of PT Matahari Department Store Tbk. The following data illustrates the results of the company's bankruptcy predictions for the period 2019 to 2024 based on the application of this model.

1. Working Capital to Total Assets is a ratio used to describe a company's ability to meet its obligations. It compares current assets minus current liabilities to total assets.
Working Capital to Total Assets formula:

WCTA = (Current Assets – Current Liabilities) / Total Assets

In this formula, the data obtained comes from the financial reports of PT Matahari Department Store Tbk from 2019 to 2024. The results of the calculation of the Working Capital to Total Asset ratio are presented in Table 1.

Table 1
***Working Capital To Total Asset* (X1)**
(In Million Rupiah)

Year	Working Capital	Total Asset	X1
2019	150,942	4,832,910	0.031
2020	(1,246,087)	6,319,074	(0.20)
2021	(556,561)	5,851,229	(0.10)
2022	(909,915)	5,750,217	(0.16)
2023	(1,504,947)	5,880,396	(0.26)

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2024	(913,066)	5,140,751	(0.18)

Source: data processed by the author, 2025

2. Retained Earnings to Total Assets is a ratio used to assess a company's ability to generate retained earnings relative to its total assets. This ratio plays a role in predicting potential bankruptcy, with a negative value indicating a company is at risk of bankruptcy.
The formula for Retained Earnings to Total Assets is:

RETA = Retained Earnings / Total Assets

By using this formula on the financial report data of PT Matahari Department Store Tbk for 2019-2024, the results of the calculation of the Retained Earnings to Total Assets Ratio are shown in Table 2.

Table 2
***Retained Earnings to Total Asset* (X2)**
(In Million Rupiah)

Year	Retained Earnings	Total Asset	X2
2019	5,255,184	4,832,910	1.09
2020	3,741,255	6,319,074	0.59
2021	4,449,943	5,851,229	0.76
2022	4,293,320	5,750,217	0.75
2023	3,381,811	5,880,396	0.58
2024	3,793,678	5,140,751	0.74

Source: data processed by the author, 2025

3. The Earnings Before Interest and Taxes to Total Assets ratio illustrates a company's potential capacity to utilize all its assets to generate operating profit before taxes and interest are charged. This ratio reflects the company's overall revenue generation capacity and measures its level of productivity from its assets. The formula for Earnings Before Interest and Taxes to Total Assets is:

EBITTA = Earnings Before Interest and Taxes / Total Assets

The formula used on data taken from the financial statements of PT Matahari Department Store Tbk for 2019-2024 produces the Earnings Before Interest and Taxes to Total Assets Ratio, which is shown in Table 3.

Table 3
***Earning Before Interest and Taxes to Total Asset*(X3)**
(In Million Rupiah)

Year	EBIT	Total Asset	X3

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2019	1,792,609	4,832,910	0.371
2020	(870,073)	6,319,074	-0.138
2021	1,122,380	5,851,229	0.19
2022	1,847,986	5,750,217	0.32
2023	1,175,823	5,880,396	0.20
2024	1,275,752	5,140,751	0.25

Source: data processed by the author, 2025

4. Book Value of Equity to Book Value of Total Liabilities (X4) is a solvency ratio that assesses how efficiently a company uses its capital to cover long-term debt obligations. The formula for calculating the Book Value of Equity to Book Value of Total Liabilities ratio is:

BVETL = Book Value of Equity / Total liabilities

Based on the calculation of the formula on the financial report data of PT Matahari Department Store Tbk for 2019-2024, the resulting Book Value of Equity to Book Value of Total Liabilities Ratio value is listed in Table 4.

Table 4
***Book Value of Equity to Book Value of Total liabilities* (X4)**
(In Million Rupiah)

Year	Book Value Of equity	Book Value Of *liabilities*	X4
2019	1,746,627	3,086,283	0.57
2020	581,118	5,737,956	0.10
2021	1,005,972	4,845,257	0.21
2022	580,164	5,170,053	0.11
2023	30,738	5,849,658	0.01
2024	325,786	4,814,965	0.07

Source: data processed by the author, 2025

Grover Model

The second test in this study was conducted using the Grover model. The results of the bankruptcy prediction calculations for PT Matahari Department Store Tbk for 2019–2024, based on this model, are presented below.

1. Working Capital to Total Assets, a ratio used to assess a company's liquidity level by comparing net working capital to total assets. The formula for Working Capital to Total Assets is:

WCTA = (Current Assets – Current Liabilities) / Total Assets

Based on the calculation using the formula in the financial report of PT Matahari Department

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Store Tbk for 2019-2024, the Working Capital to Total Asset ratio value is obtained as listed in Table 5.

Table 5
***Working Capital To Total Asset* (X1)**
(In Million Rupiah)

Year	Working Capital	Total Asset	X1
2019	150,942	4,832,910	0.031
2020	(1,246,087)	6,319,074	(0.20)
2021	(556,561)	5,851,229	(0.10)
2022	(909,915)	5,750,217	(0.16)
2023	(1,504,947)	5,880,396	(0.26)
2024	(913,066)	5,140,751	(0.18)

Source: data processed by the author, 2025

2. Earnings Before Interest and Taxes to Total Assets is a ratio used to evaluate a company's efficiency in generating operating profit before deducting interest and tax expenses. This ratio can be assessed by comparing earnings before interest and taxes to the company's total assets. The formula for calculating Earnings Before Interest and Taxes to Total Assets is:

EBITTA = Earnings Before Interest and Taxes / Total Assets

By applying this formula to the financial statements of PT Matahari Department Store Tbk for 2019-2024, the Earnings Before Interest and Taxes to Total Assets ratio is obtained, which is recorded in Table 6.

Table 6
***Earning Before Interest and Taxes to Total Aseet* (X3)**
(In Million Rupiah)

Year	EBIT	Total Asset	X3
2019	1,792,609	4,832,910	0.371
2020	(870,073)	6,319,074	-0.138
2021	1,122,380	5,851,229	0.19
2022	1,847,986	5,750,217	0.32
2023	1,175,823	5,880,396	0.20
2024	1,275,752	5,140,751	0.25

Source: data processed by the author, 2025

3. Return on Assets (ROA) is a ratio used to evaluate a company's level of profitability and efficiency in utilizing its assets. A higher ROA indicates a company's ability to manage assets effectively and efficiently. The following is the ROA formula:

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ROA = Net Income / Total Assets

By applying this formula to the financial report of PT Matahari Department Store Tbk 2019-2024, the ROA ratio is obtained as listed in Table 7.

Table 7
***Return on Asset* (ROA) (In Million Rupiah)**

Year	Net Income	Total Asset	ROA
2019	1,366,884	4,832,910	0.283
2020	(873,181)	6,319,074	-0.138
2021	912,854	5,851,229	0.16
2022	1,383,222	5,750,217	0.24
2023	675,360	5,880,396	0.11
2024	827,653	5,140,751	0.16

Source: data processed by the author, 2025

Data Processing Results Using the Altman Z-Score Model

Below are the results of calculations using the Altman Z-Score model, applied to the financial data of PT Matahari Department Store Tbk for the years 2019 to 2024. The researchers present the calculation results in tabular form, as shown in Table 8.

Table 8
Data Processing Results Using the Altman Z-Score Model

Z = 6,56 X1 + 3,26 X2 + 6,72 X3 + 1,05 X4						
YEAR	X1	X2	X3	X4	SCORE	INTERPRETATION OF VALUES
2019	0.03	1.09	0.37	0.57	6.84	Healthy
2020	-0.20	0.59	-0.138	0.10	-0.18	Distress
2021	-0.10	0.76	0.19	0.21	3.36	Healthy
2022	-0.16	0.75	0.32	0.11	3.67	Healthy
2023	-0.26	0.58	0.20	0.01	2.59	Grey Area
2024	-0.18	0.74	0.25	0.07	2.29	Grey Area

Source: data processed by the author, 2025

Data Processing Results Using the Grover Model

The following are the results of calculations conducted by researchers using the Grover model for the years 2019 to 2024 at PT Matahari Department Store Tbk. The obtained data is then presented in tabular form. Table 9

Table 9
Data Processing Results Using the Grover Model

G-Score = 1.650X1 + 3.404X3 - 0.016ROA + 0.057

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YEAR	X1	X3	ROA	SKOR	INTERPRETATION OF VALUE
2019	0.03	0.37	0.283	1.37	Healthy
2020	-0.20	-0.138	-0.138	-0.73	Distress
2021	-0.10	0.19	0.16	0.55	Healthy
2022	-0.16	0.32	0.24	0.89	Healthy
2023	-0.26	0.20	0.11	0.31	Healthy
2024	-0.18	0.25	0.16	0.16	Healthy

Source: data processed by the author, 2025

Based on the findings, the financial condition of PT Matahari Department Store Tbk during the period 2019–2024 experienced significant fluctuations. In particular, in 2020 the company faced severe financial pressure and entered the distress category or was indicated to be bankrupt, caused by the impact of the COVID-19 pandemic on operations and financial performance. In the following years, the company was able to demonstrate a recovery trend, with financial scores returning to the healthy category. However, in 2023 and 2024, a decline in scores occurred, indicating that the company's financial condition has not yet fully stabilized and has not returned to its strongest position as seen during the peak recovery period. Overall, the company has succeeded in emerging from the crisis, but it still faces challenges in maintaining stability and sustaining a healthy financial condition in the long term.

Based on the results of bankruptcy prediction analysis for PT Matahari Department Store Tbk during the 2019–2024 period using the Altman Z-Score model and the Grover model, the following findings were obtained:

1. Altman Z-Score Model Analysis

Based on data processing using the Altman Z-Score model, it can be concluded that bankruptcy predictions for PT Matahari Department Store Tbk show fluctuating conditions throughout 2019–2024. In 2019, the company was in a healthy financial condition, as indicated by a Z-Score value of 6.84, which was far above the safe threshold of 2.6. The X1 ratio of 0.031 reflected adequate liquidity. The X2 ratio was very high at 1.09, indicating a strong accumulation of retained earnings relative to total assets. The X3 ratio of 0.371 indicated efficient operational performance in generating profits from assets. Meanwhile, the X4 ratio of 0.57 reflected a healthy capital structure, where the company relied more on equity financing than debt.

In 2020, the financial condition of PT Matahari Department Store Tbk declined significantly, as shown by a sharp drop in the Z-Score to -0.18, placing the company in the financial distress category. The decrease in the X1 ratio to -0.20 indicated a serious working capital deficit, reflecting the company's inability to meet short-term obligations using its current assets. In addition, the X2 ratio declined significantly to 0.59, reflecting weakened retained earnings accumulation. The X3 ratio turned negative at -0.138, indicating operational losses. Meanwhile, the X4 ratio fell sharply to 0.10, reflecting high dependence on debt relative to equity.

In 2021, the company's financial condition showed significant improvement, with the Z-Score increasing to 3.36, returning the company to the healthy category. Although the X1 ratio remained negative at -0.10, indicating that liquidity issues had not been fully resolved, the X2 ratio improved to 0.76, reflecting better retained earnings accumulation. The X3 ratio also improved to 0.19, indicating recovery in operational performance. In addition, the X4 ratio increased to 0.21, signaling improved stability in the company's funding structure.

Volume 5 Issue 2 (July – December) 2025 Printed ISSN : 2776-0413
DOI: https://dx.doi.org/10.35137/kijms.v5i2.1001 Electronic ISSN : 2775-5029
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In 2022, the Z-Score remained high at 3.67, indicating that the company continued to be in a stable and healthy financial condition. Although the X1 ratio was still negative at -0.16, the X2 ratio remained relatively stable at 0.75. The increase in the X3 ratio to 0.32 indicated further improvement in operational efficiency. However, the X4 ratio declined to 0.11, indicating renewed dependence on debt financing.

Entering 2023, the financial condition began to show a declining trend, with the Z-Score falling to 2.59, indicating that the company had entered the grey area or vulnerable zone. The X1 ratio declined further to -0.26, reflecting worsening liquidity conditions. The X2 ratio declined to 0.58, while the X3 ratio fell to 0.20, reflecting decreased operating profit. The X4 ratio dropped sharply to 0.01, indicating very high dependence on debt.

In 2024, the company remained in the grey area with a Z-Score of 2.29. Although the X1 ratio slightly improved to -0.18, this condition still reflected a working capital deficit. The X2 ratio increased to 0.74, driven by a reduction in total assets that made retained earnings appear proportionally larger. The X3 ratio increased to 0.25, indicating improvement in operational performance. The X4 ratio remained low at 0.07, showing that the company's debt burden was still very high.

These findings are consistent with the study conducted by Monika Rosmalinda et al. (2020) entitled "Analysis of Bankruptcy Prediction Based on the Altman Z-Score Model at PT Goodyear Indonesia Tbk for the 2015–2020 Period." The study showed that the company experienced fluctuations reflecting the dynamics of its financial condition during the period. The company was initially healthy, but gradually declined into the grey area and eventually into financial distress, indicating significant financial pressure.

2. Grover Model Analysis

Based on the Grover model, the prediction results show a fluctuating pattern consistent with the period 2019–2024. In 2019, PT Matahari showed good financial performance. The X1 ratio of 0.031 indicated positive working capital and adequate liquidity. The X3 ratio reached 0.371, indicating the company's ability to generate operating profit from its total assets. In addition, the ROA ratio of 0.283 reflected high profitability. These strong positive ratios contributed to a high Grover score, classifying the company as healthy.

The company's financial condition deteriorated significantly in 2020. The X1 ratio was negative at -0.20, indicating a working capital deficit and liquidity pressure. The X3 ratio was also negative at -0.138, reflecting operating losses. This was reinforced by a negative ROA of -0.138, indicating a net loss. These negative ratios resulted in a low Grover score below the threshold of 0.01, placing the company in a distress condition.

In 2021, the company's financial condition improved. The X1 ratio remained negative at -0.10, but this showed improvement compared to the previous year. The X3 ratio increased to 0.19, indicating positive operating profit. The ROA ratio turned positive at 0.16, reflecting net income generated from asset utilization. This improvement resulted in the Grover score exceeding the threshold again, classifying the company as healthy.

In 2022, the company showed stronger recovery. Although X1 remained negative at -0.16, the X3 ratio increased significantly to 0.32, indicating high operational efficiency. The ROA ratio rose to 0.24, reflecting increased profitability. While liquidity remained a concern, strong operational performance and net income positively impacted the Grover score, placing the company in the healthy category.

In 2023, the X1 ratio declined further to -0.26, the lowest level during the analysis period, indicating severe liquidity pressure. However, the company maintained the X3 ratio at 0.20 and ROA at 0.11, indicating that operations still generated profit, although lower than in

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previous years. Overall, the Grover score remained above the threshold, so the company was still classified as healthy.

In the final year of the analysis period, the company's financial condition stabilized. The X1 ratio improved to -0.18, although it still reflected a working capital deficit. The X3 ratio increased to 0.25, indicating strengthening operational efficiency. The ROA ratio remained stable at 0.16, reflecting sustained net profit. As a result, the Grover score remained in the healthy category.

These findings support the study conducted by Luthfi Thoriq Amalia et al. (2024) entitled "Analysis of Financial Distress Using the Grover Model at PT Hero Supermarket Tbk for the 2015–2022 Period." The study showed similar results, where the company experienced fluctuations with scores reflecting its financial condition over time. Crisis points typically occurred when scores fell below the threshold, indicating distress or bankruptcy, followed by recovery and return to the healthy category. This research is relevant to the condition of PT Matahari Department Store Tbk, which experienced improvements but remains financially unstable.

3. Comparison Between Altman Z-Score and Grover Models

Based on the analysis of the Altman Z-Score and Grover models in predicting bankruptcy potential at PT Matahari Department Store Tbk during 2019–2024, differences in scores and interpretations were observed. In 2020, both the Altman Z-Score model and the Grover model indicated financial distress, producing similar results. However, differences emerged in 2023 and 2024. The Altman model indicated that the company was in the grey area, meaning the condition was unstable but not definitively bankrupt. In contrast, the Grover model continued to show positive scores above the threshold, classifying the company as healthy.

These findings are consistent with the study by Yuni Arti et al. (2022) entitled "Comparative Analysis of Altman's Z Model and the Grover Model in Measuring the Health of Food and Beverage Companies on the Indonesia Stock Exchange." The study found differences in scores between the two methods. For ALTO Company during 2018–2020, the Altman Z-Score model indicated unhealthy or financial distress conditions, while the Grover model classified the company as healthy in the same period. This difference suggests that the Altman model is more sensitive in detecting potential instability, whereas the Grover model focuses on a simpler healthy–distress classification.

CONCLUSION

This study aims to analyze the periodization of bankruptcy prediction using the Altman Z-Score and Grover models at PT Matahari Department Store Tbk during 2019–2024. Based on data processing, the following conclusions are drawn:

1. The findings show that the Altman Z-Score model indicates fluctuating conditions over the study period. In several years, the company was classified as healthy due to scores above the threshold. However, during the pandemic period, the scores fell into the distress category, indicating a real bankruptcy threat. In recent years, the company has been classified in the grey area, suggesting that its financial condition has not yet fully stabilized.
2. The Grover model also shows a fluctuating pattern consistent with the Altman model. Initially, the company was healthy, but it experienced a sharp decline during the pandemic, clearly indicating distress and serious bankruptcy risk. Nevertheless, the company managed to recover in subsequent years. However, in recent years, although the scores remain in the healthy category, they have declined sharply compared to the peak recovery period.
3. The scores generated by the Altman Z-Score and Grover models show differences in bankruptcy prediction results. The Altman model uses thresholds to classify companies into

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healthy, grey area, and distress categories, making it more detailed. Meanwhile, the Grover model applies a simpler classification between healthy and distress. In recent years, the Altman Z-Score indicates the company is in the grey area, while the Grover model still considers it healthy. This difference shows that the Altman model is more sensitive in detecting potential instability than the Grover model.

Recommendations

Based on the conclusions above, the researcher proposes the following recommendations:

1. For the Company

The company is strongly advised to focus on maintaining financial stability in order to move out of distress and grey area conditions that still indicate potential bankruptcy risk. Measures such as operational efficiency, product diversification, and strengthening online sales should continue to be enhanced. In addition, management should remain vigilant regarding global economic fluctuations that may affect company performance.

2. For Investors

Investors are advised to remain cautious and carefully consider investment decisions regarding PT Matahari Department Store Tbk shares. Although the company shows signs of recovery, fluctuating financial conditions indicate risks that must be taken into account. Investors should continuously monitor the company's financial scores and management strategies before making buy or sell decisions.

3. For Readers and Future Researchers

Readers and future researchers are encouraged to develop more comprehensive bankruptcy prediction models by incorporating external factors such as macroeconomic conditions or government regulations. Future studies are also advised to expand the research sample and examine factors influencing financial instability, both internal and external, to obtain more valid and applicable results.

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Volume 5 Issue 2 (July – December) 2025 **Printed ISSN : 2776-0413**
DOI: https://dx.doi.org/10.35137/kijms.v5i2.1001 **Electronic ISSN : 2775-5029**
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