Indian-Pacific Journal of Accounting and Finance (IPJAF)
ISSN: 2600-9161 eISSN: 2590-406X
Vol. 9 No. 2, 2025
pp. 3-10
https://doi.org/10.52962/ipjaf.2025.9.2.173
www.ipjaf.omjpalpha.com

Received 28 January 2025; Revised 15 April 2025; Accepted 17 May 2025; Published 30 June 2025

Determinants of Financial Distress using the Zmijewski Model among Public Listed Consumer Product Companies in Malaysia

Afiruddin Tapa[1], Tarshini Balakrishnan[2]

[1]*School of Economics, Finance and Banking, Universiti Utara Malaysia.*
[2]*Universiti Utara Malaysia Kuala Lumpur*

Abstract: This study applies the Zmijewski Model to assess bankruptcy risk and financial distress among 56 publicly listed consumer product companies in Malaysia from 2019 to 2023. The model classifies firms as financially distressed ($X > 0$) or financially stable ($X < 0$) based on key financial ratios, including profitability, leverage, and liquidity. Results indicate that a majority of firms remain exposed to high financial risk, with companies such as Heineken Malaysia Berhad, Carlsberg Brewery Malaysia Bhd, and Nestlé (Malaysia) Berhad consistently exhibiting elevated Zmijewski scores above 4.0. Moderate-risk firms, with scores between 1.5 and 3.0, require careful monitoring to prevent escalation into severe distress. Conversely, a small subset of companies, including HB Global Limited and Bioalpha Holdings Berhad, demonstrated financial recovery through improved profitability, better debt management, and enhanced liquidity. The findings highlight the Zmijewski Model's effectiveness in identifying financial vulnerability and underscore the importance of strategic financial management in mitigating bankruptcy risk.

Keywords: Financial distress, financial ratios, Zmijewski Model, consumer product companies, Malaysia

JEL Classification: G30; G32; G14
Paper Type: Research

1. INTRODUCTION

Financial distress remains a critical issue for publicly listed firms, particularly within Malaysia's consumer goods sector. Financial distress arises when firms experience difficulties in meeting their financial obligations, potentially leading to declining performance, loss of firm value, and business failure. Given the sector's significant contribution to employment and economic growth, financial instability among consumer goods companies poses broader economic and social risks.

The Malaysian consumer goods industry has faced increasing financial vulnerability due to global economic disruptions, such as the Asian Financial Crisis and the COVID-19 pandemic, which disrupted supply chains, increased cost pressures, and weakened consumer demand (Habib et al., 2020). Volatility in raw material prices, especially key commodities such as palm oil, has further eroded profitability and heightened financial risk among firms with high input dependence (Ghazali & Rahman, 2020).

Internally, intense competition, rising operating and compliance costs, shifting consumer preferences, and managerial inefficiencies have exacerbated financial pressure. Aggressive pricing strategies compress profit margins, while regulatory compliance related to environmental and product safety standards increases operational expenses (Salleh & Hanafiah, 2018). These challenges, combined with constrained access to financing during periods of economic uncertainty, significantly increase firms' exposure to financial distress (Wong & Yap, 2020).

Despite the economic importance of the sector, empirical evidence on financial distress prediction in Malaysia's consumer goods industry remains limited. Existing studies often employ cross-sectoral approaches that overlook sector-specific financial characteristics. To address this gap, this study applies the Zmijewski Model, which emphasises profitability, leverage, and liquidity ratios, as a parsimonious and effective framework for identifying early warning signals of financial distress among publicly listed consumer goods companies in Malaysia.

1.1 Problem Statement

The increasing incidence of financial distress among publicly listed consumer goods companies in Malaysia presents a significant concern for firms, investors, and policymakers. Failure to detect financial distress early may result in firm insolvency, employment losses, supply chain disruptions, and reduced investor confidence. At the macroeconomic level, widespread financial distress within this sector may weaken economic stability, reduce tax revenues, and deter foreign investment.

Although financial distress prediction has been widely studied, limited research has focused specifically on the Malaysian consumer goods sector, which exhibits unique operational and financial dynamics. Many existing studies adopt broad, cross-industry models that may not accurately capture sector-specific risk factors. Furthermore, empirical evidence on the applicability of parsimonious accounting-based models in this context remains scarce. Consequently, there is a need for focused empirical investigation using an appropriate predictive framework. This study addresses this gap by employing the Zmijewski Model to evaluate financial distress among Malaysian consumer goods firms and to provide sector-relevant insights for early detection and risk mitigation.

1.2 Research Objectives

This study aims to:

1. Examine the relationships among profitability, leverage, liquidity ratios, and financial distress among publicly listed consumer goods companies in Malaysia using the Zmijewski Model.
2. Assess the effectiveness of the Zmijewski Model in predicting financial distress in the Malaysian consumer goods sector.

2. LITERATURE REVIEW

2.1 Financial Distress

Financial distress refers to a condition in which a firm experiences severe financial difficulties that impair its ability to meet contractual and operational obligations, including debt repayments, employee salaries, and routine operating expenses. This condition often arises from a combination of internal inefficiencies and adverse external economic conditions that negatively affect a firm's cash flow, profitability, and overall financial stability. When left unaddressed, financial distress can escalate into insolvency or bankruptcy, threatening the firm's survival (Musa & Kassim, 2018; Nguyen & Mohamed, 2021).

Firms experiencing financial distress commonly face a deterioration in operational efficiency. Liquidity constraints often force management to reduce expenditures, potentially compromising product quality, service delivery, or investment in operational improvements. While intended to stabilize finances, such cost-cutting measures can erode customer satisfaction and weaken brand loyalty. Prior studies indicate that declining customer confidence may further suppress sales, intensifying financial pressure and creating a self-reinforcing cycle of distress (Ahmad et al., 2019; Nguyen & Mohamed, 2021).

Another major consequence of financial distress is restricted access to external financing. Financially distressed firms are often perceived as high-risk by lenders and investors, resulting in limited access to credit and higher borrowing costs (Salleh & Hanafiah, 2018; Ahmad & Rahman, 2019). This constraint reduces firms' ability to pursue growth opportunities, invest in innovation, or restructure operations, thereby weakening their competitive position in the market. In the long term, insufficient capital access may prevent firms from implementing recovery strategies necessary for financial turnaround.

Financial distress also has significant implications for human resource management. In an effort to conserve cash, firms may implement layoffs, reduce employee benefits, or freeze wages. While these actions may offer short-term financial relief, they often lead to lower employee morale, reduced productivity, and increased staff turnover (Tan & Ismail, 2017; Lim & Tan, 2019). The loss of skilled and experienced employees further constrains the firm's capacity to recover, as human capital plays a critical role in operational effectiveness and strategic decision-making. Empirical evidence suggests that declining employee morale is associated with reduced output and long-term operational inefficiencies (Musa & Kassim, 2018; Ahmad et al., 2019).

Legal and regulatory challenges frequently accompany financial distress. Firms that fail to meet contractual obligations may face legal action from creditors, suppliers, or customers. Litigation and regulatory penalties impose additional financial burdens, draining already limited resources and diverting managerial attention away from core business operations (Salleh & Hanafiah, 2018; Chong & Ahmad, 2022). These legal costs can further aggravate financial difficulties, delaying recovery and increasing the likelihood of prolonged distress or failure (Nguyen & Mohamed, 2021; Lim & Tan, 2019).

Beyond firm-level consequences, financial distress can generate broader economic effects. For publicly listed companies, financial instability often results in declining stock prices, eroding shareholder wealth, and undermining investor confidence. In severe cases, distress experienced by large firms may propagate throughout the supply chain, adversely affecting suppliers, distributors, and other dependent stakeholders. This interconnectedness underscores the systemic importance of financial health in the consumer goods sector, as distress in one firm can disrupt the broader economic ecosystem (Wong & Yap, 2020; Yusoff & Haniffa, 2017).

Macroeconomic conditions can further intensify financial distress. During periods of economic downturn or uncertainty, reduced consumer spending can weaken revenue streams, placing additional pressure on firms already facing financial constraints. Global economic shocks, such as financial crises or pandemics, may rapidly transmit financial stress across borders, affecting firms regardless of prior managerial efficiency or financial strength (Ahmad & Rahman, 2019; Nguyen & Mohamed, 2021). The globalised nature of modern markets increases firms' exposure to such external shocks, heightening the risk of financial distress.

In extreme cases, prolonged financial distress may lead firms to seek bankruptcy protection. Bankruptcy, while often considered a last resort, may offer a structured mechanism for debt reorganization or asset liquidation. However, bankruptcy proceedings are costly and time-consuming and do not guarantee favourable outcomes for all stakeholders. While some firms may emerge financially stronger following reorganization, others may be forced to cease operations entirely (Tan & Ismail, 2017; Salleh & Hanafiah, 2018).

The consequences of financial distress are particularly severe in the consumer goods industry. Firms in this sector typically operate on thin profit margins and rely heavily on consistent cash flows, strong brand reputation, and customer loyalty. Even minor disruptions to sales or cost structures can rapidly escalate into significant financial problems. Declines in product quality or service standards during periods of financial strain may result in loss of market share, making recovery increasingly difficult (Musa & Kassim, 2018; Lim & Tan, 2019).

2.2 The Zmijewski Model

The Zmijewski Model, developed by Zmijewski (1984), was introduced to address methodological limitations identified in earlier financial distress prediction models. Specifically, Zmijewski criticized the matched-pair sampling techniques commonly used in prior studies, arguing that such approaches could introduce sample selection bias and compromise predictive accuracy. To overcome these limitations, he employed random sampling methods, thereby improving the robustness and generalisability of the model's results.

A key feature of the Zmijewski Model is its emphasis on establishing accurate population and sample proportions to estimate the probability of financial distress. The frequency of financial distress is calculated as the ratio of distressed firms to the total sample size, forming the basis for probabilistic estimation. The model adopts a probit regression framework to estimate the likelihood that a firm will experience financial distress.

The Zmijewski Model evaluates financial distress using three fundamental accounting-based ratios: profitability, leverage, and liquidity. Profitability reflects a firm’s ability to generate earnings from its assets, leverage captures the extent of debt financing, and liquidity measures the firm’s capacity to meet short-term obligations. Together, these ratios provide a comprehensive yet parsimonious representation of a firm’s financial condition.

Empirical evidence suggests that the Zmijewski Model is particularly effective in contexts where leverage plays a critical role in predicting financial distress. Pambekti et al. (2009) identified the Zmijewski Model as one of the most robust financial distress prediction models, noting its strong statistical significance and predictive reliability. As a result, the probit-based Zmijewski framework has been widely adopted in subsequent empirical studies (Kamaluddin et al., 2019).

Given its theoretical foundation, methodological robustness, and empirical support, the Zmijewski Model provides an appropriate framework for analysing financial distress among publicly listed consumer goods companies in Malaysia. By focusing on key financial ratios, the model facilitates early detection of financial vulnerability and supports informed decision-making to enhance firm resilience and financial sustainability.

3. DATA AND METHODOLOGY

3.1 Research Framework

The framework of this research is based on two variables: the dependent variable, which is financial distress measured by Zmijewski model, while the independent variable consists of leverage ratio, liquidity ratio, profitability ratio, and efficiency ratio.

Zmijewski created a probit model capable of forecasting bankruptcy. Elviani, Simbolon, Riana, Khairani, Dewi, and Fauzi (2020) conducted the study. This research empirically tests a financial distress model using a sample of companies facing financial difficulties and companies not facing financial difficulties. An equation of the function of the model given by Zmijewski's model is presented as given below:

$$\text{X-Score} = -4.3 - 4.5X1 + 5.7X2 - 0.004X3$$

Where:
X1 = Net Income / Total Assets
X2 = Total Liabilities / Total Assets
X3 = Current Assets / Current Liabilities
Categories in the model of Zmijewski, namely:
a. If X> 0 the company is predicted to go bankrupt,
b. If X <0 the company is predicted not to go bankrupt

To ensure their accuracy and reliability, these variables are operationalized by assigning clear definitions and quantifiable indicators for data collection and analysis. This level of methodological accuracy lends credibility to the study's results, offering useful insights into the factors that brought these publicly listed consumer goods manufacturers in Malaysia close to the brink of financial distress.

4. RESULT AND DISCUSSION

The Zmijewski model is an effective tool for forecasting bankruptcy risk and provides valuable insights into firms' financial distress by examining specific financial ratios. It classifies companies into two main categories: those predicted to face bankruptcy (X > 0) and those expected to be financially stable (X < 0). Analyzing data from 56 consumer product companies in Malaysia from 2019 to 2023, we observe that financial stress has persisted in the sector. While some companies are showing signs of recovery, most continue to exhibit varying degrees of financial vulnerability, indicating strategic financial restructuring within the industry.

Based on the result, many companies consistently showed high Zmijewski scores (X > 0) during the observed period, indicating an ongoing risk of bankruptcy. Notably, companies like Heineken Malaysia Berhad, Carlsberg Brewery Malaysia Bhd, and Nestlé (Malaysia) Berhad maintain Zmijewski scores well above 4.0, suggesting that, despite their established market presence, they still face considerable financial distress. This could be due to several factors, including high leverage ratios, low profitability, and possibly unsustainable business practices that make them vulnerable to financial risk. The other companies, such as Lee Swee Kiat Group Bhd, PWF Corporation Berhad, and QL Resources Bhd, have a Zmijewski score that fluctuates between 2.0 and 3.0, firmly in the high-risk zone, indicating that though they are not bankrupt, they have serious financial problems.

On the contrary, a few companies significantly improved their position and fell into the safe category by 2023. For instance, HB Global Limited has improved its score to -1.72 and entered the safe category (X < 0). Such a move toward stability indicates that the strategies these firms adopted, such as debt reduction, improved profitability, and better liquidity management, helped them recover from financial distress and avoid bankruptcy.

Companies with average scores above 3.0, including Carlsberg Brewery Malaysia Bhd, Heineken Malaysia Berhad, Hwa Tai Industries Bhd, Nestlé (Malaysia) Berhad, Dutch Lady Milk Industries Berhad, and Guan Chong Berhad, are in the high-risk category. These companies generally exhibit low profitability and high leverage, indicating that they depend highly on debt financing and cannot generate adequate earnings to service their financial obligations. High leverage increases their vulnerability to external factors, such as economic downturns or increases in interest rates, which can lead to financial distress. Companies like Oriental Food Industries Holdings Berhad and Teo Guan Lee Corporation Bhd, with scores of around 1.5, indicate a moderate risk of bankruptcy. These firms are not in immediate danger but are under financial strain. With some operational improvements or cost optimization, they could reduce their exposure to financial distress and perhaps recover to a more stable position.

Only a few companies have considerably improved and fallen into the safe category. This includes HB Global Limited, with a score of -1.72, and Bioalpha Holdings Berhad, with a score of -0.25. These firms have managed to enhance their profitability, liquidity, and indebtedness to a relatively safe level compared to other firms in this sector. This has been possible through better management in debt reduction and cash flow generation.

Various important financial ratios significantly impact Zmijewski's scores, which indicate the company's financial well-being. A profitability ratio is calculated by dividing net income by total assets. A low profitability ratio is one of the major indications of financial distress. Companies like Kim Teck Cheon Consolidated Berhad and Mynews Holdings Berhad have weak asset utilization, which results in low or negative profitability. This directly affects their Zmijewski scores, making them more vulnerable to financial instability.

A crucial measure of a company's financial well-being is the leverage ratio, calculated by dividing total liabilities by total assets. Companies like Hwa Tai Industries Bhd and Teck Guan Perdana Bhd have high leverage ratios, indicating they depend on debt financing. While debt may be used to fuel growth, high debt levels increase financial obligations, making it more difficult to meet liabilities and raising bankruptcy risk, especially in challenging economic conditions.

The liquidity ratio, calculated by dividing working capital by total assets, is a critical metric for firms to evaluate their ability to meet short-term financial obligations. Companies with low liquidity, such as Bioalpha Holdings Berhad and Eng Kah Corporation Bhd, faced higher financial risks in previous years. On the other hand, companies that improved their liquidity ratios, such as HB Global Limited, show a positive change in the Zmijewski scores, highlighting strong cash flow and working capital management.

The Zmijewski model offers a holistic approach to evaluating financial distress within the consumer product sector in Malaysia. This research shows that, despite many companies remaining at high risk of bankruptcy, some have improved their financial position by focusing on profitability, leverage, and liquidity. Most companies still face huge financial challenges that require strategic interventions in debt restructuring, cost optimization, and profitability enhancement. In such an unstable economy, the road to improving their Zmijewski scores is to ensure long-term stability by adopting sustainable financial practices. These strategies will enable firms to cope with an increasingly turbulent market, minimize the likelihood of bankruptcy, and protect themselves from financial distress.

5. CONCLUSION

This study applied the Zmijewski Model to assess financial distress among 56 publicly listed consumer goods companies in Malaysia from 2019 to 2023. The findings indicate that financial distress remains prevalent within the sector, with many firms consistently exhibiting high Zmijewski scores, reflecting persistent bankruptcy risk. Companies with scores above 3.0, such as Heineken Malaysia Berhad and Carlsberg Brewery Malaysia Bhd, remain particularly vulnerable due to high leverage and weak profitability, despite strong market positions. Moderate-risk firms, with scores between 1.5 and 3.0, also require careful monitoring to prevent escalation into severe financial distress.

The analysis demonstrates that profitability, leverage, and liquidity are key determinants of financial health, corroborating the predictive strength of the Zmijewski Model. Firms that improved liquidity and profitability, such as HB Global Limited and Bioalpha Holdings Berhad, successfully transitioned into the financially stable category, highlighting the importance of effective debt management, cash flow optimization, and strategic operational improvements in mitigating financial risk.

Overall, the study confirms that the Zmijewski Model is a robust and parsimonious framework for early detection of financial distress in Malaysia's consumer goods sector. While a substantial number of firms remain financially vulnerable, targeted interventions to address profitability, leverage, and liquidity can enhance resilience and reduce bankruptcy risk.

In conclusion, sustained financial stability in the sector depends on proactive and prudent financial management practices. Policymakers, investors, and managers can leverage the Zmijewski Model to identify early warning signals and implement timely corrective measures, ensuring long-term firm viability and safeguarding broader economic stability.

REFERENCES

Ahmad, Z., Mohd-Sanusi, Z., & Rahman, R. A. (2019). Financial performance and the cost of equity capital in the Malaysian consumer product sector. *Journal of Financial Reporting and Accounting*, *17*(3), 409–431.

Elviani, S., Simbolon, R., Riana, Z., Khairani, F., Dewi, S. P., & Fauzi. (2020). The Accuracy of the Altman, Ohlson, Springate, and Zmijewski Model in bankcruptcy Predicting Trade Sector Companies in Indonesia. *Budapest International Research and Institute-Journal (BIRCIJournal) 3*(1).

Ghazali, Z., & Rahman, R. A. (2020). The impact of palm oil price volatility on the financial performance of consumer product companies in Malaysia. *Journal of Agribusiness in Developing and Emerging Economies*, *10*(3), 233–247.

Habib, A., Costa, M. D., Huang, H. J., Bhuiyan, M. B. U., & Sun, L. (2020). Determinants and consequences of financial distress: review of the empirical literature. *Accounting and Finance*, *60*(S1), 1023–1075. https://doi.org/10.1111/acfi.12400

Kamaluddin, A., Ishak, N., & Mohammed, N. F. (2019). Financial distress prediction through cash flow ratios analysis. *International Journal of Financial Research*, *10*(3), 63. https://doi.org/10.5430/ijfr.v10n3p63

Lim, E. T., & Tan, Y. (2019). Corporate governance and financial distress: Malaysian evidence. *Asian Journal of Business and Accounting*, *12*(1), 125–148.

Musa, H., & Kassim, S. (2018). Impact of global financial crisis on the financial performance of consumer product companies in Malaysia. *International Journal of Economics and Management*, *12*(2), 345–360.

Nguyen, N., & Mohamed, S. (2021). Consumer behavior towards sustainable products: Evidence from Malaysia. *Journal of Cleaner Production*, *289*, 125–146.

Pambekti, G. T. (2009). Analisis Ketepatan Model Altman, Springate, Zmijewski, dan Grover untuk Prediksi Financial distress (Studi Pada Perusahaan Yang Masuk Dalam Daftar Efek Syariah Tahun). In *Disertasi Doktoral*.

Salleh, M. S., & Hanafiah, H. M. (2018). Regulatory compliance and financial performance of consumer product companies in Malaysia. *International Journal of Business and Management*, *13*(2), 146–157.

Tan, P. L., & Ismail, R. (2017). Competitive strategies and financial performance of Malaysian consumer product companies. *Journal of Economics, Business and Management*, *5*(2), 67–73.

Wong, W. C., & Yap, M. L. (2020). Financial distress prediction in Malaysian public-listed companies. *Journal of Financial Risk Management*, *9*(4), 325–338.

ZmijEwski, M. E. (1984). Methodological issues related to the estimation of financial distress prediction model. *Journal of Accounting Research*, *22*, 59–86.