

Riska Amelia

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Analysis Of The Financial Performance Of Islamic Banks And Conventional Banks Using The Altman Z-Score Approach

Riska Amelia¹, Junaidi Junaidi², Rahmawati Rahmawati³

¹Universitas Muhammadiyah Palopo, Indonesia, e-mail: r.skameliaa3011@gmail.com

²Universitas Muhammadiyah Palopo, Indonesia, e-mail : junaidi@umpalopo.ac.id

³Universitas Muhammadiyah Palopo, Indonesia, e-mail: rahmawati@umpalopo.ac.id

081210480589

Abstrak

Kinerja keuangan bank merupakan indikator penting stabilitas, pertumbuhan, dan ketahanan dalam menghadapi tantangan ekonomi. Di Indonesia, sektor perbankan terbagi menjadi sistem konvensional dan syariah, masing-masing dengan prinsip operasional yang berbeda. Bank konvensional bergantung pada mekanisme berbasis bunga, sedangkan bank syariah beroperasi berdasarkan kontrak bagi hasil yang dipandu oleh nilai-nilai etika dan agama. Perbedaan ini menyebabkan variasi dalam struktur keuangan, pola risiko, dan kerentanan terhadap krisis. Menilai kinerja keuangan kedua sistem tersebut sangat penting untuk memahami kemampuan mereka dalam mengelola risiko dan menjaga keberlanjutan. Studi ini bertujuan untuk menganalisis dan membandingkan kinerja keuangan bank syariah dan konvensional menggunakan pendekatan Altman Z-Score. Altman Z-Score diterapkan sebagai model peringatan dini yang menggabungkan beberapa rasio keuangan menjadi skor komposit, mengklasifikasikan bank ke dalam kategori sehat, area abu-abu, atau bermasalah. Dengan menerapkan model ini, penelitian ini memberikan wawasan tentang stabilitas keuangan bank yang beroperasi di bawah sistem yang berbeda. Hasil penelitian diharapkan dapat menyoroti kekuatan dan kelemahan perbankan syariah dan konvensional dalam menjaga kesehatan keuangan, khususnya dalam konteks ketidakpastian ekonomi global. Temuan ini juga menawarkan implikasi praktis bagi regulator dan pemangku kepentingan dalam meningkatkan strategi manajemen risiko dan memastikan keberlanjutan jangka panjang di sektor perbankan.

Kata kunci: Kinerja Keuangan, Altman Z-Score, Perbankan

Abstract

The financial performance of banks is an important indicator of stability, growth, and resilience in facing economic challenges. In Indonesia, the banking sector is divided into conventional and Islamic systems, each with distinct operational principles. Conventional banks rely on interest-based mechanisms, while Islamic banks operate on profit-sharing contracts guided by ethical and religious values. These differences lead to variations in financial structure, risk patterns, and vulnerability to crises. Assessing the financial performance of both systems is crucial to understand their ability to manage risks and maintain sustainability. This study aims to analyze and compare the financial performance of Islamic and conventional banks using the Altman Z-Score approach. The Altman Z-Score is applied as an early warning model that combines several financial ratios into a composite score, classifying banks into categories of healthy, grey area, or distress. By applying this model, the research provides insights into the financial stability of banks operating under different systems. The results are expected to highlight the strengths and weaknesses of Islamic and conventional banking in maintaining financial health, particularly in the context of global economic uncertainty. The findings also offer practical implications for regulators and stakeholders in improving strategies for risk management and ensuring long-term sustainability in the banking sector.

Keywords: Financial Performance, Altman Z-Score, Banking

PENDAHULUAN

The financial performance of banks is a key indicator in assessing the health, stability, and growth prospects of financial institutions. Banks that are unable to manage credit, liquidity, or market risks are potentially facing financial difficulties leading to bankruptcy. Thus, financial performance not only reflects operational efficiency but also the bank's ability to maintain customer trust and meet long-term obligations (Hassan & Bashir, 2018). In the context of the national economy, banking plays an important role as a financial intermediary institution that connects parties with excess funds with those in need of financing, making the continued functioning of banking crucial for economic stability (Berger & Bouwman, 2017).

In Indonesia, the banking system is divided into two main categories: conventional banks and Islamic banks. Conventional banks profit thru an interest system, while Islamic banks use the principle of profit and loss sharing (dividing profits and losses) based on ethical and religious values. These system differences not only affect transaction mechanisms but also impact financial structures, risk patterns, and resilience in the face of economic fluctuations. In-depth analysis shows that risks in Islamic banking have unique dynamics because the profit-sharing principle binds customers to the bank's real asset performance, unlike conventional bank customers who focus on fixed interest (Ibrahim & Rizvi, 2017). Competition between the two is intensifying as the integrity of fast, secure, and ethically sound financial services increases (Kasim & Sanusi, 2020).

Various previous studies have highlighted the measurement of banking financial performance thru traditional financial ratios such as liquidity, profitability, and solvency. However, the ratio-based approach often only provides a partial picture of a bank's financial condition. The Altman Z-Score is a more comprehensive method because it combines several financial ratios into a single composite score that can be used as an early warning system for potential financial difficulties (Altman & Hotchkiss, 2019). Although this method has been applied in the banking sector, the literature is still limited in presenting in-depth and up-to-date empirical comparisons between Islamic banks and conventional banks in Indonesia regarding vulnerability to financial difficulties, especially after regulatory changes and the global crisis (Zainol & Engku Ali, 2015).

This research aims to fill this gap by analyzing and comparing the financial performance of Islamic banks and conventional banks using the Altman Z-Score approach. The main focus of this research is to identify the extent to which the differences in the operational principles of the two systems have implications for financial stability and resilience. The research findings are expected to provide a clearer picture of the strengths and weaknesses of each banking system in maintaining financial health, while also offering practical input for regulators and stakeholders in strengthening risk management strategies in the banking sector (Kashif et al., 2023).

MATERIALS AND METHODS

Altman Z-Score Model

The Altman Z-Score analytical method is crucial for identifying potential bankruptcy or financial stress early on. This model was developed by Edward I. Altman in 1968 and has been widely used in financial research to analyze

5 the financial risk of companies, including banks. The Z-Score is quite accurate because it combines financial ratios such as working capital to total assets, retained earnings, earnings before interest and taxes, market value of equity to debt, and sales to assets. According to Kamal & Visita (2020), the Z-Score can assess the condition of banks in Indonesia and categorize them into safe, gray, or unsafe zones based on the score obtained.

In the context of Islamic banking, several studies indicate that Islamic banks in Indonesia have successfully maintained relatively safe Z-Score scores in recent years. Anggraini et al. (2022) found that the Islamic banks studied had scores above the threshold of 2.6, indicating good financial health. Another study, Syamsuddin & Hasan (2022), modified the Z-Score and showed that despite financial pressure before and during the pandemic, Islamic banks were still able to avoid the distress zone with relatively stable scores.

However, the literature also notes that applying the Altman Z-Score has some limitations, especially if used without modification in the Islamic financial sector. One issue is the market value of equity data, which is less available or volatile for unlisted Islamic banks. An article by Assidiki & Fauziah (2021) notes that control variables such as NPF/NPL, CAR, and liquidity ratios must be included for the model to yield more valid results. Recent research also indicates that modifications to the Altman Z-Score formula are necessary to make it more suitable for the characteristics of banking, especially Islamic banks. Mauluddi & Fauziah (2021) found that score modification and variable adjustment helped capture financial fluctuations due to pandemic conditions.

Thus, Altman's Z-Score theory remains relevant and useful for analyzing the financial performance of both Islamic and conventional banks, especially when used with modifications according to the characteristics of banking and current economic conditions. This approach allows for early prediction of financial risk and provides guidance for regulators and bank management. This study aims to reexamine the performance of both types of banks using a modified Z-Score, incorporating control factors such as capital adequacy ratio and non-performing financing to achieve more accurate results.

Financial Performance Of Conventional & Sharia Banks

15 The financial performance of sharia and conventional banks is an important topic in banking studies because they have different operational systems but both play a role in supporting economic stability. Conventional banks rely on the interest system as their primary source of income, while Islamic banks operate on the principles of profit sharing and Sharia-compliant contracts (Setyaningsih & Pramudito, 2019). This fundamental difference affects the risk structure, financing strategies, and profitability patterns of both types of banks. Financial performance, measured through indicators such as Return on Assets (ROA), Capital Adequacy Ratio (CAR), and liquidity ratios, becomes an important tool for comparing their competitive advantages.

26 Recent research indicates that although Islamic banks have lower profitability compared to conventional banks, their resilience to crises tends to be better. Rahmawati & Anwar (2019) found that during global economic fluctuations, Islamic banks are relatively more stable because they do not rely on interest and are more cautious in disbursing financing. This supports the view that the financial performance of Islamic banks more accurately reflects the principles of prudence and long-term sustainability. Conversely, conventional banks typically record higher profitability growth under normal conditions but are more vulnerable during economic shocks.

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In the context of bankruptcy prediction, the Altman Z-Score is widely used to analyze the financial health of both Islamic and conventional banking. Nugroho & Hapsari (2018) emphasize that although the Z-Score model was initially developed for manufacturing companies, its application to banking remains relevant because the financial ratios used are universal. The study by Susilowati et al. (2019) shows that Islamic banks in Indonesia during the period 2013–2017 were mostly in the safe zone according to Z-Score calculations, while some conventional banks were in the vulnerable zone. This suggests that the financial stability of Islamic banks is better maintained even tho profitability is lower.

Additionally, risk management factors also influence the differences in their financial performance. Anggraini et al. (2022) showed that Islamic banks that maintain a healthy Non-Performing Financing (NPF) ratio have stronger stability. Meanwhile, conventional banks often face challenges from high Non-Performing Loans (NPLs), which impact liquidity and profitability. This difference in risk management reflects the characteristics of each banking system, where Sharia banking prioritizes the principle of prudence and conventional banking focuses more on credit expansion.

Thus, the financial performance of Islamic banks and conventional banks has different patterns, but both are important in supporting the national financial system. Sharia banks demonstrate long-term stability with a relatively lower risk of bankruptcy, while conventional banks excel in profitability but are more sensitive to economic fluctuations. The Altman Z-Score, as a method for predicting bankruptcy, provides an objective overview of the financial condition of both, while also assisting regulators, investors, and the public in assessing the health of the banking sector (Syamsuddin & Hasan, 2022).

Working Capital to Total Assets

Working Capital to Total Assets reflects the extent to which a company can meet its short-term obligations by utilizing its assets. This ratio describes management's efficiency in maintaining a balance between current assets and current liabilities to support the company's operational sustainability without liquidity pressure (Altman, 1968). The higher this ratio, the greater the company's ability to maintain liquidity and ensure smooth cash flow, especially in the face of economic fluctuations and unstable market conditions (Altman & Hotchkiss, 2019).

In the context of banking, this ratio is crucial for assessing the liquidity level and cash health of a financial institution. Banks with a high Working Capital to Total Assets ratio demonstrate good ability in managing working capital to finance short-term operations without relying on external loans (Nugroho & Hapsari, 2018). Conversely, a low ratio indicates potential liquidity pressure that could increase the risk of financial distress, especially during a surge in third-party fund withdrawals.

Research by Anggraini et al. (2022) and Rahmawati & Anwar (2019) found that this ratio has a significant influence on the financial stability of banks. An adequate level of working capital has been proven to reduce the potential for financial distress and increase the company's Z-Score. In Islamic banking, this ratio is also linked to the principle of prudence, which emphasizes the importance of managing funds efficiently and in accordance with Islamic principles.

Thus, Working Capital to Total Assets serves as a key indicator in measuring a company's short-term liquidity strength and stability. This ratio not only reflects the bank's ability to maintain cash and current asset availability but also indicates the effectiveness of management in sustainably managing liquidity risk.

H1: Working Capital to Total Assets has a positive effect on the bank's financial condition.

Retained Earnings to Total Assets

Retained Earnings to Total Assets indicates the extent to which a company's retained earnings can be used to finance asset growth and operational activities without relying on external funding. This ratio indicates the level of financial independence and the company's ability to build internal capital reserves from its operating results (Altman, 1968). A high ratio value indicates that the company is able to finance its expansion and maintain its financial stability thru the profits it has generated (Altman & Hotchkiss, 2019).

In banking, especially in Islamic banks, retained earnings are an important source for strengthening capital structure and increasing public trust in the bank's financial stability. According to Rahmawati & Anwar (2019), a high retained earnings ratio reflects healthy financial performance and the bank's ability to withstand economic pressure and market volatility. Conversely, a low ratio indicates a high reliance on external funding, which can increase the risk of financial distress during economic downturns.

Empirical research by Mauluddi & Fauziah (2022) shows that Retained Earnings to Total Assets is one of the dominant components in the Altman Z-Score model, significantly influencing the prediction of bank bankruptcy. This finding is also supported by Anggraini et al. (2022), who stated that the accumulation of retained earnings plays an important role in strengthening capital resilience and reducing the potential for financial risk in Islamic banks.

Thus, Retained Earnings to Total Assets not only reflects long-term profitability but also indicates the extent to which a company can manage profits to strengthen its capital position and financial independence.

H2: Retained earnings to total assets has a positive effect on the bank's financial condition.

Earnings Before Interest and Taxes to Total Assets

Earnings Before Interest and Taxes (EBIT) to Total Assets is used to measure a company's ability to generate operating profit from its total assets. This ratio serves as a primary measure of managerial efficiency and asset productivity in generating revenue before interest and taxes (Altman, 1968). The higher this ratio, the more effectively the company manages its assets to generate sustainable operating profits, ultimately strengthening its financial position (Altman & Hotchkiss, 2019).

In the banking sector, EBIT to Total Assets reflects an institution's ability to optimize productive assets such as financing, investments, and securities to generate income. Chandra & Diana (2020) explain that this ratio can be used to assess the bank's core profitability, particularly because it is not influenced by external factors such as interest rates and tax policies. In Islamic banks, a stable EBIT value indicates the effectiveness of the profit-sharing system, which is more sustainable compared to interest-based income in conventional banks (Rahmawati & Anwar, 2019).

Anggraini et al.'s (2022) research shows that the EBIT-to-total assets ratio has a significant positive influence on the Z-Score value, making it an important indicator in detecting bankruptcy risk. A low value indicates inefficiency in asset utilization or a decline in profitability, while a high value reflects strong and efficient operational conditions.

Thus, Earnings Before Interest and Taxes to Total Assets serves as an important measure in assessing a company's operational efficiency and fundamental strength. This ratio reflects management's ability to optimally manage productive assets to generate sustainable profits.

H3: Earnings Before Interest and Taxes to Total Assets has a positive effect on the bank's financial condition.

Book Value of Equity to Book Value of Total Debt

Book Value of Equity to Book Value of Total Debt measures the extent to which the book value of a company's equity can cover its total liabilities. This ratio reflects the strength of the capital structure and the company's ability to bear long-term financial risk (Altman & Hotchkiss, 2019). The higher the value of this ratio, the stronger the equity position in supporting financial stability and reducing dependence on debt-based funding.

In the context of banking, this ratio is often used to assess capital adequacy. According to Alam & Rizvi (2018), banks with a high equity-to-total liabilities ratio are considered to have a better ability to absorb losses and maintain public trust. Meanwhile, Nurfadilah & Firmansyah (2020) found that an increase in this ratio positively affects the Altman Z-Score value, which means it strengthens the bank's financial resilience against potential financial distress.

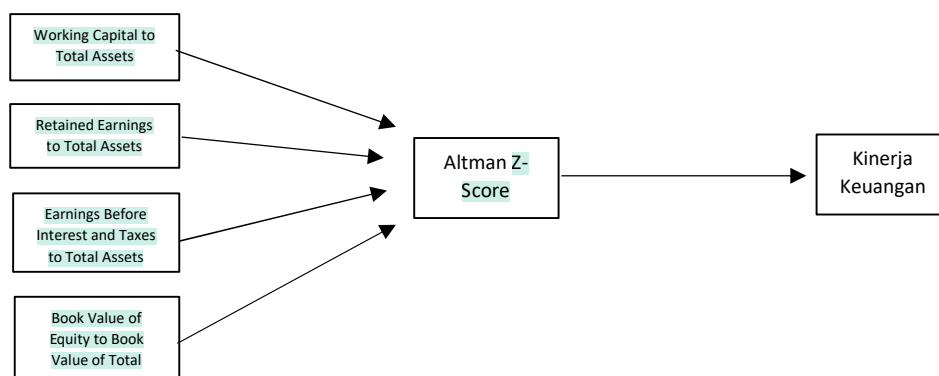
This ratio is rooted in capital structure theory (Modigliani & Miller, 1963), which explains the importance of balance between equity and debt financing. In the context of the Altman Z-Score, this ratio is used to measure long-term financial stability, with equity serving as the primary buffer against the risk of asset devaluation.

Thus, the Book Value of Equity to Book Value of Total Debt becomes a fundamental indicator that reflects the company's capital strength, solvency level, and resilience to financial pressure. This ratio also reflects public and investor confidence in the company's ability to maintain its financial stability.

H4: The book value of equity to the book value of total debt has a positive effect on the bank's financial condition.

Based on what has been explained above, the following framework for thinking has been created:

Table 1.1 Conceptual Framework



METHODS

This study uses the Altman Z-Score approach as one of the analysis methods capable of detecting potential financial problems early on. This model was developed by Edward I. Altman in 1968 and has been widely used to analyze potential problems that may arise in companies. The Altman Z-Score model develops a statistical model that successfully formulates the best financial ratios in predicting bankruptcy (Suteja, 2018). The advantage of this method is its ability to present simple yet accurate results thru a combination of liquidity, profitability, solvency, and activity ratios.

The population in this study consists of several Islamic banks and conventional banks listed on the Indonesia Stock Exchange (IDX) during the period 2020-2024. The selection of this population was based on the availability of audited financial statements and the consistency of annual publications. The research sample was selected using a purposive sampling technique, which is a method of selecting samples based on specific criteria. These criteria include banks that consistently publish annual reports, have complete financial ratio data, and have not undergone mergers or liquidations during the research period. Purposive sampling is widely used in financial research because it can ensure that the data obtained meets the needs of the analysis (Susilowati et al., 2019).

The data source in this study is secondary data in the form of annual financial reports from Islamic banks and conventional banks. Secondary data was chosen because it is more efficient, easily accessible, and has undergone an audit process, making it more reliable. The financial statements were obtained from the official website of the Indonesia Stock Exchange (www.idx.co.id) and the official websites of each bank. Data collection methods were carried out using documentation techniques, namely downloading annual financial reports containing balance sheet information, income statements, and notes to the financial statements.

According to Setiawan & Rahmawati (2017), the use of secondary data in financial research is highly relevant because the data is more objective and standardized. The variables used in this study include independent and dependent variables. The independent variable (X) is financial performance measured thru Altman Z-Score financial ratios, such as working capital to total assets, retained earnings to total assets, earnings before interest and taxes to total assets, and market value of equity to book value of debt. The dependent variable (Y) is the level of bankruptcy risk or financial stability indicated by the Z-Score category, namely the safe zone, the gray zone, and the distress zone. The Z-Score model was chosen because it has been proven as an effective bankruptcy prediction tool across various sectors, including banking (Nugroho & Hapsari, 2018).

Next, the author uses the Altman Z-Score method as the main tool for processing and analyzing the data. According to Chandra & Diana (2020), the use of the modified Z-Score is highly relevant for assessing the stability of the banking sector because it considers the characteristics of service companies, which differ from those of manufacturing companies. The model known as the Revised Altman's Z-Score with the following discriminant function (Altman, 2000):

$$\text{Z-Score Formula} = Z = 6,56X_1 + 3,26X_2 + 6,72X_3 + 1,05X_4$$

Description :

X_1 = Working capital / Total Asset

X_2 = Retained Earnings / Total Asset

X_3 = Earning Before Interest and Texas / Total Asset

X_4 = Book Value of Equity / Book Value of Total Debt

Table 1.2 Altman Z-Score Classification

Skors	Zone	Description
$Z > 2,60$	green (safe zone)	Where the company is in a safe condition, the likelihood of bankruptcy is very low.
$1,1 < Z < 2,60$	Grey (grey zone)	Where the company is in a cautionary condition, indicating that there are issues within the company that must be addressed properly. However, the risk of bankruptcy is not too high.
$Z < 1,1$	Red (distress zone)	Where the company is in a dangerous condition, as the risk of bankruptcy is high.

RESULT AND DISCUSSION

Table 1.3 Calculation of financial performance analysis for sharia banks

NO	KODE	YEARS					MEAN	KET.
	BANK	2020	2021	2022	2023	2024		
1	BRIS	1.08	1.20	1.48	1.23	1.20	1.24	safe
2	BTPS	3.35	3.97	4.08	4.32	8.79	4.90	safe
3	PNBS	6.11	3.99	2.13	1.48	2.11	3.16	safe
4	BAS	1.94	1.98	1.73	1.79	1.97	1.88	safe
5	BBMI	1.23	1.15	1.32	1.12	1.16	1.20	safe
6	KBBS	0.88	1.26	1.09	1.05	1.06	1.07	safe
7	BMS	0.91	2.52	3.10	2.02	1.78	2.07	safe
8	BVS	0.10	0.13	-0.67	0.29	0.28	0.03	Unsafe
9	BCAS	1.77	1.33	0.71	0.61	1.62	1.21	safe
10	BJBS	1.69	0.69	0.50	0.47	0.40	0.75	Unsafe

Source: Data processed

Based on the calculation results using the Altman Z-Score model for ten Islamic banks in Indonesia during the period 2020–2024, it was found that most banks are in the safe zone, indicating good financial stability and the ability to avoid the risk of financial distress. The average Z-Score value above 1.1 indicates that Islamic banks are generally still able to maintain their financial performance in stable condition, although there are differences in health levels between banks.

Upon closer examination, Bank Tabungan Pensiunan Nasional Syariah (BTPS) holds the top position with an average score of 4.90, indicating a very healthy financial condition and a low risk of bankruptcy. The high Z-Score value reflects the effectiveness of productive asset management, operational efficiency, and the ability to generate stable profits. This aligns with the research by Rahmawati & Anwar (2019), which states that Islamic banks with an asset-based financing business model tend to have better financial resilience.

Next, Bank Panin Dubai Syariah (PNBS), with an average value of 3.16, also shows a healthy condition, although it experienced a decline in its Z-Score from 2022 to 2023 due to pressure on profits and increased operational expenses. This decline can be linked to the weakening of variable X3 (Earnings Before Interest and Taxes/Total Assets), which describes the bank's operational profitability. A similar phenomenon was described by Anggraini et al. (2022), who found that a decrease in profitability ratios can significantly lower the Z-Score value because it suppresses the efficiency of asset utilization.

On the other hand, Bank KBBS (1.07), Bank Muamalat Indonesia (BBMI) (1.20), and Bank BMS (2.07) showed relatively stable Z-Score values, indicating a balance between liquidity, profitability, and capital structure. Although their values are not as high as BTPS or PNBS, all three are still in the safe category. This indicates that management is capable of consistently maintaining financial performance, particularly in managing variables X1 (Working Capital/Total Assets) and X4 (Book Value of Equity/Book Value of Total Debt), which play a significant role in determining the bank's capital strength and liquidity (Altman & Hotchkiss, 2019).

However, the analysis results show that Bank Victoria Syariah (BVS) and Bank Jabar Banten Syariah (BJBS) are in the unsafe category with average values of 0.03 and 0.75 respectively, indicating potential financial distress risk. The low Z-Score value indicates weak capital structure and asset efficiency. Based on variable analysis, this is most likely caused by low X2 (Retained Earnings/Total Assets) due to minimal retained earnings and faster growth in current liabilities compared to asset growth. According to Nurfadilah & Firmansyah (2020), conditions like this reflect pressure on the bank's capital and profitability, which can increase the risk of inability to meet financial obligations.

Overall, the calculation results also show that Islamic banks have a good level of financial resilience compared to conventional banks during the same period. The Sharia principles that emphasize a profit-sharing system and the avoidance of interest (riba) allow Islamic banks to be more resistant to economic fluctuations and capital market pressures. This aligns with the research findings of Nugroho & Hapsari (2018), which state that Islamic banks demonstrate stronger financial stability compared to conventional banks in the face of global economic fluctuations.

Additionally, the variable analysis results also show that fluctuations in the values of X1 (Working Capital/Total Asset) and X3 (EBIT/Total Asset) have the greatest impact on changes in the Z-Score value of Islamic banks. Banks with stable X1 and X3 values tend to have high Z-Scores, indicating efficient working capital and asset management. Meanwhile, a decline in the value of both variables is often an early signal of financial distress, as also found by Mauluddi & Fauziah (2022).

Thus, the results of the Altman Z-Score calculation for the period 2020–2024 indicate that the majority of Islamic banks in Indonesia are in a safe condition with maintained levels of liquidity and solvency. However, banks with Z-Scores approaching the lower limit, such as BJBS and BVS, need to strengthen their working capital and improve profitability to maintain long-term financial stability. This finding strengthens the empirical evidence that the Altman Z-Score model remains relevant as an early prediction tool for bankruptcy risk in the Indonesian Islamic banking sector.

Table 1.4 Calculation of financial performance analysis for conventional banks

NO	KODE	YEAR					MEAN	KET.
	BANK	2020	2021	2022	2023	2024		
1	BBCA	0.44	0.43	1.27	0.46	0.50	0.62	Unsafe
2	BBNI	1.16	1.18	1.20	1.21	1.22	1.19	Safe
3	BBRI	0.34	0.40	0.39	0.39	0.39	0.38	Unsafe
4	BBKP	0.11	0.21	0.07	0.15	0.00	0.11	Unsafe

5	BNGA	0.33	0.33	0.54	0.37	0.36	0.39	Unsafe
6	BBTN	0.18	0.20	0.22	0.23	0.23	0.21	Unsafe
7	MEGA	0.42	0.38	0.38	0.41	0.39	0.40	Unsafe
8	BMRI	1.20	1.21	0.44	0.47	0.46	0.76	Unsafe
9	BDMN	-0.49	-0.44	-0.40	-0.44	0.52	-0.25	Unsafe
10	PNBN	0.53	0.33	0.35	0.37	0.34	0.38	Unsafe

Source: Data processed

Based on calculations using the Altman Z-Score model for ten major conventional banks in Indonesia during the period 2020–2024, it was found that most banks fall into the unsafe category or are potentially facing financial pressure. This result indicates that although conventional banks have large asset and capital scales, their financial stability is relatively more vulnerable to market fluctuations and interest rate changes compared to Islamic banks. Low Z-Score values, even some below 1.1, indicate the potential for financial distress if not balanced by improved operational efficiency and a strengthened capital structure.

Upon closer examination, only Bank Negara Indonesia (BBNI) falls into the safe zone category with an average Z-Score of 1.19. This indicates that BBNI has a healthy financial structure, supported by stable profitability and the ability to maintain a balance between assets and liabilities. Meanwhile, Bank Mandiri (BMRI), despite being one of the largest banks in Indonesia, showed an average value of 0.76, which is still in the unsafe category. This condition indicates pressure on the efficiency of productive assets, especially in the post-pandemic period where increased loan loss provision (CKPN) burdens are squeezing banks' net profits (Setiawan & Rahmawati, 2017).

Bank Central Asia (BBCA) also showed an average value of 0.62, placing it in the unsafe category. Although BBCA is known for its high profitability and good operational efficiency, the low Z-Score value indicates a decline in the X1 ratio (Working Capital/Total Assets) due to high current liabilities and pressure on short-term liquidity. This phenomenon aligns with the findings of Nugroho & Hapsari (2018), who explain that in the banking sector, the working capital ratio tends to be smaller compared to the manufacturing sector because the structure of bank assets is more dominated by long-term, illiquid financial assets.

Furthermore, banks such as Bank Rakyat Indonesia (BBRI), Bank Bukopin (BBKP), and Bank CIMB Niaga (BNGA) are also in the unsafe category, with average Z-Scores of 0.38, 0.11, and 0.39, respectively. This value indicates a high potential risk of bankruptcy due to low operational efficiency, reflected in the value of X3 (Earnings Before Interest and Taxes/Total Assets). The relatively small EBIT value reflects limitations in generating operating profit relative to the total assets owned. This is supported by research by Mauluddi & Fauziah (2022), which states that a decrease in EBIT is a key indicator of a long-term decline in Z-Score value.

Meanwhile, Bank Danamon (BDMN) was the only bank to record a negative average Z-Score of -0.25, indicating a rather concerning financial condition and a high risk of financial distress. This negative value reflects weaknesses in variables X2 (Retained Earnings/Total Assets) and X4 (Book Value of Equity/Book Value of Total Debt), where low retained earnings are unable to cover long-term liabilities. According to Rahmawati & Anwar (2019), this condition indicates that the bank's capital structure is highly dependent on external funding, making it vulnerable to changes in macroeconomic conditions.

Additionally, banks like Bank Mega (MEGA) and Bank Tabungan Negara (BBTN) have very low average values, 0.40 and 0.21 respectively, indicating high liquidity and solvency risks. The low ratios of X1 (Working Capital/Total Assets) and X4 (Book Value of Equity/Book Value of Total Debt) indicate that most of the bank's assets are used to cover liabilities, rather than to strengthen capitalization. This condition indicates that the bank's ability to maintain financial stability is still limited and needs to be strengthened with more efficient capital management strategies (Altman & Hotchkiss, 2019).

The results of this analysis also show that conventional banking is more sensitive to external factors such as interest rate fluctuations and global market conditions, which affect the main components of the Z-Score model. Anggraini et al. (2022) explain that changes in monetary policy directly impact the profitability of conventional banks thru net interest margins, which ultimately affects the EBIT/Total Asset and Retained Earnings/Total Asset ratios. Therefore, the stability of the Z-Score in conventional banks is highly dependent on macroeconomic conditions and the efficiency of interest rate risk management.

Thus, the results of this study indicate that the majority of Indonesian conventional banks during the 2020–2024 period are in the unsafe zone, which means there is a potential risk of bankruptcy if capital strengthening and operational efficiency improvements are not implemented. Only BBNI showed stable financial conditions with a Z-Score value above the safe threshold. This finding reinforces the results of research by Setiawan & Rahmawati (2017) and Nugroho & Hapsari (2018), which states that conventional banks tend to be more vulnerable to economic changes than Islamic banks due to their reliance on interest-based instruments and market volatility.

CONCLUSION AND IMPLICATION

Based on the research results using the Altman Z-Score method on the financial performance of Islamic banks and conventional banks in Indonesia for the period 2020–2024, it can be concluded that, in general, Islamic banks have more stable and healthy financial conditions compared to conventional banks. The majority of Islamic banks fall into the safe zone category, indicating good ability in maintaining their liquidity, solvency, and operational efficiency. This is due to the implementation of the profit and loss sharing principle, which reduces the risk of income volatility and increases resilience to economic fluctuations. Meanwhile, most conventional banks fall into the unsafe zone category, indicating a higher potential for financial distress due to their reliance on the interest rate system and the impact of interest rate fluctuations on profitability.

The most influential factors on the Z-Score value for both types of banks are Working Capital to Total Assets (X1) and Earnings Before Interest and Taxes to Total Assets (X3). These two ratios reflect the importance of efficient working capital management and the ability to generate operating profits in maintaining long-term financial health. Banks with high X1 and X3 values indicate stable financial conditions and are free from potential bankruptcy. Based on these findings, it can be suggested that banks, particularly conventional banks, improve asset management efficiency and strengthen their capital structure to mitigate financial risk.

Additionally, the research findings confirm that the Altman Z-Score model is still relevant for use as an analysis tool and early warning system for potential bankruptcy in the banking sector. For regulators and stakeholders, these results can serve as a basis for strengthening banking supervision and risk management policies in Indonesia, in order to maintain the stability of the national financial system sustainably.

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