

PERFORMANCE OF SHARIA PUBLIC COMPANIES DURING THE COVID-19: AN ALTMAN Z-SCORE ANALYSIS

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ABSTRACT - This research aims to assess and analyze the financial performance of public companies operating under the Sharia category during the Covid-19 pandemic. The Altman Z-Score method, which utilizes four parameters and secondary data, was employed to investigate the 2020 financial statements of 30 companies listed in the Sharia category in JII. The study findings indicate that three companies exhibited potential bankruptcy as their Z-Score value was less than 1.1, while three other companies were susceptible to bankruptcy with a Z-Score value between 1.1 and 2.6. In contrast, 24 companies were classified as financially healthy since their Z-Score value was greater than 2.6. To mitigate the risk of bankruptcy, management is advised to implement effective debt restructuring and management strategies while examining best practices from companies that thrived during the pandemic. This research underscores the effectiveness of the Altman Z-Score method in assessing financial performance, identifying financial issues, predicting bankruptcy, and evaluating a company's financial well-being.

Keywords: Performance Management, Financial Performance, Altman Z-Score Method, COVID-19 Pandemic

ABSTRAK – Kinerja Perusahaan Publik Syariah Pada Masa Pandemi Covid-19: Analisis Altman Z-Score. Penelitian ini bertujuan untuk mengetahui dan menganalisis kinerja perusahaan terbuka kategori syariah pada masa pandemi Covid-19. Penelitian ini menggunakan metode Altman Z-Score dengan empat parameter dan data sekunder yaitu laporan keuangan tahunan perusahaan periode 2020, dengan sampel penelitian berjumlah 30 perusahaan terbuka kategori syariah dalam JII. Hasil penelitian menunjukkan 3 perusahaan berpotensi bangkrut karena nilai Z-Score kurang dari 1,1, dan 3 perusahaan berpotensi rawan bangkrut karena nilai Z-Score antara 1,1 dan 2,6, serta ada 24 perusahaan dalam kategori sehat karena Z-Score lebih dari 2,6. Untuk mengantisipasi potensi kebangkrutan, manajemen diharapkan dapat menerapkan strategi restrukturisasi manajemen dan utang serta melihat praktik baik perusahaan yang mampu bertahan dimasa pandemi. Penelitian ini juga menunjukkan bahwa metode Altman Z-Score mampu mengevaluasi kinerja, mendeteksi masalah keuangan, memprediksi kebangkrutan, dan dapat mengukur tingkat kesehatan keuangan perusahaan.

Kata Kunci: Manajemen Kinerja, Kinerja Keuangan, Metode Altman Z-Score, Pandemi COVID-19

INTRODUCTION

The Covid-19 pandemic, which began in Indonesia in early 2020, has had a significant negative impact on the country's economy including the manufacturing and service industries, which are part of the productive sector, experienced a decline in productivity (Babuna et al., 2020; Susilawati et al., 2020). According to a survey conducted by the Central Statistics Agency, the pandemic caused operational issues for 58.95% of companies that were previously operating normally, and 82.45% of companies reported a decrease in income or profits, leading to job losses, inflation, increased production costs, and reduced export-import activities (Hasan et al., 2021; Kurniawan et al., 2021; Ozili & Arun, 2020; Yamali & Putri, 2020).

While every company aims to maintain its performance and business continuity, it is not immune to risks that could lead to potential bankruptcy, such as excessive debt from assets (Hilman & Laturette, 2021). Companies with a low debt ratio and higher asset value before the pandemic were better equipped to handle its impact than those with high debt from assets in the previous year (Kurniawan et al., 2021). However, there were also some companies that managed to survive or even increase their profits during the pandemic (Indarwati, 2015; Aulia, Ibrahim, & Tarigan, 2020).

Indonesia is a developing country that requires capital to increase its economic growth. One way to achieve this is by expanding the investment sector (Nurafiati, 2019). Investments in public companies can benefit both companies and investors based on the procedures established by the capital market law (Djohan & Loh, 2021). The establishment of a sharia stock index is a fascinating aspect of the Indonesian capital market system. As is widely known, Indonesia has the world's largest Muslim population, and sharia-compliant investments continue to grow annually. Consequently, the Indonesian Islamic capital market has a promising future (Puspitasari et al., 2020).

The achievement of company goals depends on the performance of all stakeholders involved. Performance is derived from operational capabilities, and financial performance can also be used to increase investor confidence. Investors can analyze a company's financial statements as one of their investment strategies (Asmadi et al., 2021). In performance management, the measurement of company performance can be achieved through financial ratios. The financial ratios used to assess company performance include



profitability, liquidity, solvency, and activity (Barus et al., 2017; Muarif, Ibrahim, & Amri, 2021). Financial statement analysis provides essential information for companies to determine their strategy. By analyzing these ratios, companies can identify their strengths and weaknesses and predict business continuity under healthy and unhealthy conditions (Anriani, 2019).

One method that can be used to evaluate a company's financial performance is the Altman Z-Score method, which is an effort to predict the actual performance conditions of a company. It is recommended to use the prevailing economic conditions, such as economic changes, market changes, and industry changes, when using the Altman Z-Score model (Al-Manaseer & Al-Oshaibat, 2018). Hence, the choice of this method is very relevant to the requirements of the Covid-19 pandemic, which has affected the global economy, causing a decline in operational activities and company productivity, leading to financial difficulties (Kurniawan et al., 2021; Yamali & Putri, 2020).

In addition, the Altman Z-Score approach to evaluating a company's financial performance is better because it combines the effects of many financial ratios, including assets, profits, and market value, rather than using only one ratio to evaluate the company's condition. The method was developed by Edward I. Altman in 1968, and it established a formula for predicting company bankruptcy from financial ratio analysis. The Altman Z-Score is a score value determined from standard calculations multiplied by financial ratios that result in the potential for bankruptcy. Therefore, the Altman Z-Score method can be used as a measuring tool to assess and predict a company's performance (Altman et al., 2019; Gilrita, 2015; Indriyati, 2010; Sudiyatno & Puspitasari, 2010). The Altman Z-Score approach, as a method of measuring financial performance, continues to develop over time. Previously, this method had three calculation models and was limited to assessing certain types of companies. Currently, a modified Altman Z-Score has been found that can determine the financial performance of all kinds of companies (Herlin et al., 2021; Primadani & Ariasih, 2021).

Previous studies have used the Altman Z-Score method to evaluate the financial performance of companies in various sectors. Niresh and Pratheepan (2015) studied the financial health of trade sector companies over a 5-year period and found that companies with a low Z-Score were more likely to go bankrupt. Similarly, Setyaningrum et al. (2020) identified several companies in the Indonesian market that were prone to bankruptcy. Azlina (2020) found that PT



Panorama Sentrawisata Tbk was in a potential bankruptcy condition based on its Z-Score values. Korry et al. (2019) found that all state-owned banks were in a grey area condition based on their Z-Scores for the 2014-2017 period.

Recent research has examined the impact of the Covid-19 pandemic on company performance using the Altman Z-Score method. Hilman and Laturette (2021) found that the pandemic caused a decrease in liquidity and profitability ratios. Marginingsih (2022) analyzed the impact of the pandemic on the retail industry and found that several retail companies experienced unfavorable financial performance conditions. Esomar and Christianty (2021) examined financial performance in the service industry and found differences in solvency and profitability ratios before and during the pandemic.

However, there is still an opportunity for research on the financial performance of sharia category public companies during the pandemic. The researchers are interested in conducting research on the analysis of the performance of public companies in the sharia category during the Covid-19 pandemic using the Altman Z-Score method. The purpose of this research is to analyze the performance of public companies in the sharia category during the pandemic, to provide information for management to take corrective actions and for investors to minimize investment risk. This study is also aimed at increasing understanding of the Altman Z-Score method in analyzing financial performance and determining the level of financial soundness with the Altman Z-Score indicator.

LITERATURE REVIEW

The concept of financial performance is a crucial aspect of any organization, as it helps to understand how well a company has utilized financial rules and tools to achieve its objectives. Fahmi (2014) defines financial performance as an analysis of whether a company has used financial rules effectively and correctly. On the other hand, according to Esomar dan Chritianty (2021), financial performance is a description of a company's financial condition that is analyzed using financial analysis tools to identify the company's strengths and weaknesses within a specific period.

Effective management of business activities can improve a company's financial performance, leading to higher profits. Investors can evaluate a company's financial performance to make informed investment decisions (Efriyanti et al., 2012). The objectives of measuring financial performance include assessing a



company's liquidity, solvency level, profitability, and stability (Asmadi & Rahmawati, 2021).

Financial statements provide valuable information on an organization's financial performance. These statements include balance sheets, profit and loss calculations, changes in equity, and cash flow statements, which communicate financial information to stakeholders, including investors and creditors (Anriani, 2019; Azlina, 2020). Financial statement analysis is essential for understanding a company's financial position, weaknesses, and strengths (Herlin et al., 2021). Overall, the concept of financial performance and financial statement analysis is vital for assessing a company's performance and making informed financial decisions.

The Altman Z-Score method is a popular method used to analyze a company's financial performance. As explained by Sudiyatno and Puspitasari (2010), this method involves using financial ratio numbers and mathematical equations to evaluate a company's financial health. The Z-score method was initially proposed by Edward I Altman in 1968, and it is primarily used to predict the possibility of a company's bankruptcy.

The Altman Z-Score method uses five ratios, including liquidity, profitability, leverage, market test ratio, and activity, to identify areas that require more investigation than others (Gilrita, 2015). Currently, there are three calculation models for the Altman Z-Score method. The first model, known as the Altman Z-Score Original model, is intended for manufacturing companies that go public. The second model, known as the Revised Altman Z-Score Model, was developed to be used by private sector companies that do not go public. The third model is the Altman Z-Score Modified model, which can be used by all companies, including manufacturing and non-manufacturing, publicly listed, and non-public companies.

The Altman Z-Score Modified model uses only four types of ratios, excluding the X5 variable (sales to total assets), as this ratio varies significantly across businesses with varying asset quantities (Altman et al., 2013, 2019; Herlin et al., 2021; Primadani & Ariasih, 2021). This model is different from the two previous models, which used five ratios.

Indriyati (2010) highlights the effectiveness of the Z-Score model in predicting bankruptcy up to two years before its occurrence. In some cases, other models can predict bankruptcy up to four or five years in advance. The Z-Score method



can also be used to assess a company's financial health and detect financial problems before acquiring a prospective company (Indriyati, 2010). In conclusion, the Altman Z-Score method is a valuable tool for evaluating a company's financial performance and predicting its financial health.

METHODOLOGY

The study is based on secondary data from the annual financial statements (LKT) for the 2020 period of public companies in the sharia category. The data was obtained from the Jakarta Islamic Index (JII), which published the data based on No: Peng 00229/BEI.POP/07-2020 (IDX, 2020). The population of the study consists of 30 registered companies in the sharia category. In this study, the saturated sample technique was used for population and sample determination, where all 30 companies in the population were included as research samples (Sugiyono, 2011).

Table 1. List of Sharia Category Public Companies

No.	Code	Company Name	No.	Code	Company Name
1	ACES	Ace Hardware Indonesia Tbk.	16	JPFA	Japfa Comfeed Indonesia Tbk.
2	ADRO	Adaro Energy Tbk.	17	JSMR	Jasa Marga (Persero) Tbk.
3	AKRA	AKR Corporindo Tbk.	18	KLBF	Kalbe Farma Tbk.
4	ANTM	Aneka Tambang Tbk.	19	MDKA	Merdeka Copper Gold Tbk.
5	ASII	Astra International Tbk.	20	MNCN	Media Nusantara Citra Tbk.
6	BRPT	Barito Pacific Tbk.	21	PGAS	Perusahaan Gas Negara Tbk.
7	BTPS	Bank BTPN Syariah Tbk.	22	PTBA	Bukit Asam Tbk.
8	CPIN	Charoen Pokphand Indonesia Tbk.	23	PWON	Pakuwon Jati Tbk.
9	CTRA	Ciputra Development Tbk.	24	SCMA	Surya Citra Media Tbk.
10	ERAA	Erajaya Swasembada Tbk.	25	SMGR	Semen Indonesia (Persero) Tbk.
11	EXCL	XL Axiata Tbk.	26	TLKM	Telekomunikasi Indonesia (Persero) Tbk.
12	ICBP	Indofood CBP Sukses Makmur Tbk.	27	TPIA	Chandra Asri Petrochemical Tbk.
13	INCO	Vale Indonesia Tbk.	28	UNTR	United Tractors Tbk.
14	INDF	Indofood Sukses Makmur Tbk.	29	UNVR	Unilever Indonesia Tbk.
15	INTP	Indocement Tunggul Prakarsa Tbk.	30	WIKA	Wijaya Karya (Persero) Tbk.



Source: (IDX, 2020)

The analysis used is the modified Altman Z-Score method using the following equation (Altman et al., 2019):

$$Z = 6,56(X1) + 3,26(X2) + 6,72(X3) + 1,05(X4) \quad (1)$$

The ratios in the above equation are used to analyze and calculate the annual financial statements and are then used to predict the occurrence of potential bankruptcy. These ratios can be categorized into three groups, namely (Barus et al., 2017; Esomar & Christianty, 2021; Gilrita, 2015; Indriyati, 2010; Kasmir, 2014; Setyaningrum et al., 2020):

1. Liquidity ratio; (X_1) working capital to total assets aims to measure liquidity by comparing net working capital with total assets.
2. Profitability ratio consisting of; (X_2) retained earnings to total assets, which aims to show the ratio of retained earnings to total assets and (X_3) The ratio of earnings before interest and taxes to total assets is intended to demonstrate the company's ability to make profits before taxes.
3. Activity ratio; (X_4) market value equity to book value total debt ratio, aims to measure how much the company's assets can decrease in value before total liabilities are more significant than assets.

Table 2. Value “cut off” Z-Score

No	Value “cut off” Z-Score	Description
1	Less than 1,1 (<1,1)	Bankrupt
2	Between 1.1 to 2.6 (1,1 < Z < 2,6)	Prone to Bankruptcy
3	Greater than 2.6 (>2,6)	Healthy

Source: Altman et al. (2019)

Based on table 2, The bankruptcy statement shows that the company is facing a serious bankruptcy danger, which the company's management must address. Information indicating a prone to bankruptcy indicates that the company is vulnerable. In this situation, management must use caution when handling corporate assets. Meanwhile, the healthy category indicates that the company's performance is in good shape and that there are no issues with financial performance (Altman et al., 2019; Herlin et al., 2021; Primadani & Ariasih, 2021).



RESULT AND DISCUSSION

Calculation of Altman Z-Score Parameter Value

In measuring company financial performance using the Altman Z-Score method with four parameters at the public company sharia category, these calculations use annual financial report data for 2020. The following is a recapitulation of the Altman Z-Score parameter value calculation in table 3.

Table 3. Recapitulation of Altman Z-Score Parameter Value

No.	Code	X ₁	X ₂	X ₃	X ₄
1	ACES	0,578	0,572	0,127	2,579
2	ADRO	0,092	0,368	0,045	1,626
3	AKRA	0,157	0,371	0,067	1,299
4	ANTM	0,05	0,262	0,064	1,500
5	ASII	0,138	0,440	0,064	1,369
6	BRPT	0,125	0,028	0,032	0,624
7	BTPS	0,769	0,254	0,068	2,233
8	CPIN	0,262	0,743	0,153	2,990
9	CTRA	0,230	0,182	0,036	0,801
10	ERAA	0,180	0,286	0,082	1,106
11	EXCL	-0,167	0,002	0,002	0,394
12	ICBP	0,111	0,217	0,096	0,945
13	INCO	0,231	0,682	0,045	6,866
14	INDF	0,064	0,190	0,076	0,942
15	INTP	0,296	0,630	0,079	4,291
16	JPFA	0,221	0,287	0,065	0,785
17	JSMR	-0,041	0,030	0,007	0,312
18	KLBF	0,439	0,737	0,161	4,262
19	MDKA	0,008	0,201	0,060	1,540
20	MNCN	0,325	0,657	0,124	3,242
21	PGAS	0,109	0,353	0,023	0,645
22	PTBA	0,187	0,571	0,134	2,380
23	PWON	0,161	0,493	0,043	1,986
24	SCMA	0,305	0,729	0,220	1,358
25	SMGR	0,052	0,407	0,045	0,879
26	TLKM	-0,091	0,321	0,157	0,959
27	TPIA	0,178	0,263	0,008	1,016
28	UNTR	0,233	0,494	0,070	1,723
29	UNVR	-0,221	0,231	0,448	0,317
30	WIKA	0,056	0,059	0,005	0,324

Based on table 3, the calculation results obtained for each parameter value in



the Altman Z-Score method show that for the X₁, companies with negative values are EXCL, JSMR, TLKM, and UNVR. The negative net working capital was caused by higher short-term debt than current assets. That is not appropriate considering that if short-term debt matures and current assets are insufficient to finance it, the company does not have collateral because fixed assets have very low liquidity.

For X₂ calculation results, the company with the highest retained earnings value is CPIN, and the lowest is EXCL. This ratio is used to measure cumulative profitability, which measures the overall profit for the company running. The company's age affects this ratio because the longer the company is running, it can facilitate the accumulation of retained earnings. However, negative retained earnings indicate the company's failure to achieve profits and contribute negatively to the company due to accumulated losses.

While the result of X₃, the highest parameter value is UNVR and the lowest is EXCL. This ratio measures the actual productivity of the company's assets. This ratio has a large constant in the modified Altman Z-Score model, so it can produce a negative value indicating that the use of company assets cannot accumulate profits, even reducing the company's equity due to accumulated losses. Finally, the results of the X₄, where this ratio is used to measure how much the company's assets can decrease in value before the total liabilities are greater than assets and the company becomes bankrupt. Several companies have a value of <1, including BRPT, CTRA, EXCL, ICBP, INDF, JPFA, JSMR, PGAS, SMRG, TLKM, UNVR, and WIKA. The ratio value <1 reflects that the total liability is greater than the book value of equity. So that the equity owned by the company cannot fully guarantee its debt, the company also uses other debt as a source of funding to pay off debts that are due. This shows that the company pays off its debt by incurring new debt. Suppose the accumulated losses experienced by the company continue to increase while the amount of debt also increases. It is feared that one day the debt will exceed assets, and equity will have a negative value. Then this can indicate that the company will experience the potential for bankruptcy.

Calculation of Altman Z-Score Value

Based on the calculated data from the four parameters above, the next step is to enter the results into the modified Altman Z-Score equation above. Then the results will be converted based on the Z-Score "cut-off" value in table 1. The



following are the results of the Altman Z-Score value Score for each company in table 4.

Table 4. Altman Z-Score Value in The Sharia Category Public Company

No.	Code	Z-Score	Description
1	ACES	9,222	Healthy
2	ADRO	3,810	Healthy
3	AKRA	4,057	Healthy
4	ANTM	3,189	Healthy
5	ASII	4,206	Healthy
6	BRPT	1,777	Prone to Bankruptcy
7	BTPS	8,677	Healthy
8	CPIN	8,312	Healthy
9	CTRA	3,188	Healthy
10	ERAA	3,826	Healthy
11	EXCL	-0.378	Bankrupt
12	ICBP	3,078	Healthy
13	INCO	11,254	Healthy
14	INDF	2,560	Prone to Bankruptcy
15	INTP	9,027	Healthy
16	JPFA	3,646	Healthy
17	JSMR	0,204	Bankrupt
18	KLBF	10,835	Healthy
19	MDKA	2,730	Healthy
20	MNCN	8,511	Healthy
21	PGAS	2,702	Healthy
22	PTBA	6,487	Healthy
23	PWON	5,039	Healthy
24	SCMA	7,283	Healthy
25	SMGR	2,893	Healthy
26	TLKM	2,507	Prone to Bankruptcy
27	TPIA	3,145	Healthy
28	UNTR	5,420	Healthy
29	UNVR	2,653	Healthy
30	WIKA	0,738	Bankrupt

Based on table 4, it is found that there are three companies based on the Altman Z-Score method that are classified as unsafe in 2020. This means that the prediction model signals that the three companies included in the category of potential bankruptcy are EXCL, JSMR, and WIKA.

Several things cause the potential for bankruptcy of the above companies. For example, EXCL, in the company's 2020 annual financial statements, has



problems with short-term liabilities that cannot be covered by current assets, thus making the company have to use long-term liabilities to cover short-term liabilities. The increasing public need for internet access during the Covid-19 pandemic has made this company's experience an advantage. However, because the liquidity and activity ratios also affect the company's financial performance, this also puts the company in a potential bankrupt position.

Meanwhile, JSMR has a negative liquidity ratio, so the company cannot pay its short-term liabilities with its current assets. This company's profitability and activity ratios are not too high, so it is categorized as having the potential to experience bankruptcy. This condition occurred due to the impact of the Covid-19 pandemic. In the summary of the financial statements, it was explained that the implementation of PSBB in various regions drastically decreased the mobility of the community. Likewise, the flow of trade in goods and services experienced a slowdown. This causes a decrease in the volume of vehicles crossing the toll road, resulting in a decrease in revenue. This also happened to WIKA, which is projected by this method to have the potential to fail due to the impact of the Covid-19 pandemic, which has hampered the planning, implementation of land acquisition, and construction project work. Thus, affecting the operational and financial performance of the company.

Furthermore, based on the Altman Z-Score method, there are three companies classified as prone to bankruptcy in 2020: BRPT, INDF, and TLKM. This condition requires quick and measurable corrective action so the company can return to a stable condition. Several things cause prone to bankruptcy companies above, including BRPT has a low liquidity ratio, so the company has not been able to pay its short-term liabilities with current assets. The book value of equity is lower than total liabilities, so the equity owned by the company cannot fully guarantee its debt. Meanwhile, INDF experienced an increase in profits from the previous year. However, the liquidity and equity of this company are not good enough, so the Z-Score value is potentially prone to bankruptcy. Finally, TLKM In the company's 2020 financial statements, this company experienced a problem where short-term liabilities could not be covered by current assets, thus making the company have to use long-term liabilities to cover short-term liabilities.

The research results found that several companies experienced problems with financial performance due to decreased productivity and operations caused by the impact of the Covid-19 pandemic, so the level of liquidity ratios and



company income decreased. This research is in line with the results of Hilman & Laturette (2021), which stated that differences in company performance before and during the Covid-19 pandemic caused the liquidity and profitability ratios to decrease. The results of another study by Wijayanto & Seno (2022) also found that financial performance as measured by the ROA ratio declined dramatically during the Covid-19 Pandemic compared to before the Covid-19 Pandemic. However, several companies are still performing well, meaning that they have not experienced the impact of the pandemic, which has caused the company's financial condition to be in good performance. The growth of company assets causes this, and capital increases compared to the level of existing debt.

Company management can follow several strategies to minimize the risk of poor performance during the Covid-19 pandemic. The strategy is to restructure management and debt, aiming to improve the company's performance condition. Management restructuring is a change in the management structure with more competent people to optimize business processes. Meanwhile, debt or financial restructuring is an effort to ensure a low capital cost so the company can survive in the long term (Altman et al., 2019; Pustynick, 2012). Other strategies can also be obtained from good practices carried out by several healthy category companies based on the Altman Z-Score method, one of which is ADRO which implements the Crisis Management Plan (CMP) for Contagious Disease Outbreak before Covid-19 spreads in Indonesia and BTPS, which has an anticipatory strategy for market dynamics and changes, in which BTPS develops crisis scenarios and simulates potential impacts on business processes, credit risk, and liquidity risk.

While the financial data used in this study is limited to analyzing the company's financial performance during the Covid-19 pandemic in the sharia category of public companies listed on the IDX, the results still demonstrate that the Altman Z-Score method can effectively evaluate a company's performance and predict potential bankruptcy. This method serves as an early warning system for management to take corrective action and prepare a survival strategy during a crisis, in line with previous studies (Altman et al., 2013; Marginingsih, 2022; Panigrahi, 2019). The Z-Score model is a valuable indicator for various users of financial statements, such as financial managers, auditors, lenders, and investors, to make informed decisions in the face of financial failure (Al-Manaseer & Al-Oshaibat, 2018). Additionally, Indriyati (2010) states that the Altman Z-Score method is an effective tool for predicting bankruptcy 4 or 5



years prior and can detect financial and performance problems that affect business processes while measuring a company's financial health.

CONCLUSIONS

The study revealed that three companies, namely EXCL, JSMR, and WIKA, had the potential to go bankrupt as their Z-Score values were less than 1.1. Additionally, three companies, namely BRPT, INDF, and TLKM, were potentially prone to bankruptcy as their Z-Score values were between 1.1 and 2.6. On the other hand, 24 companies were classified as healthy as their Z-Score values were more than 2.6. Most of these companies had relatively large total assets compared to their total debt, which enabled them to survive during the Covid-19 pandemic. To minimize the risk of poor performance during the pandemic, management can implement strategies such as management restructuring, debt or financial restructuring, and the Crisis Management Plan (CMP) for Contagious Disease Outbreak. The CMP can be developed to simulate potential impacts on business processes and establish crisis scenarios.

The study findings demonstrate that the Altman Z-Score method is an effective tool to evaluate performance, detect financial problems, predict bankruptcy, and measure the level of company financial health. As an early warning system, it enables management to take corrective action promptly to ensure the company's survival during a crisis. Nevertheless, the study has limitations as it used relatively short financial data, covering only the last two years during the pandemic. Therefore, future research should consider using financial data from the previous five years to provide a broader perspective on the pandemic's impact on company performance. Additionally, other relevant financial performance measurement methods should be employed to compare results, examine root causes, develop effective strategies, and implement risk management during a crisis.

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