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Financial Performance Analysis and Z-Score Assessment of Pharmaceutical Industry During and After Economic Crisis In 2020

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ABSTRACT

This study discusses the analysis of financial performance and potential bankruptcy of all publicly listed pharmaceutical companies in Indonesia during and after the COVID-19 pandemic. This study uses financial ratio analysis such as Liquidity, Solvency, Profitability, and Activity Ratio as well as bankruptcy potential assessment with the Altman Z-Score Model. This research aims to evaluate the financial conditions of companies and identify the financial risks faced by the pharmaceutical industry in Indonesia. Statistical approach Kolmogorov-Smirnov, Paired T-Test, and Wilcoxon Signed Rank Test, to asses significant change in financial performance during and after pandemic. The results of this study indicate that PT Kimia Farma (KAEF), PT Indonesia Farma (INAF), PT Pharos (PEHA), and PT Pyridam Farma (PYFA) have poor financial conditions based on the results of all poor financial ratios, Moreover, these companies showed significant bankruptcy potential, with Altman Z-Score values below 1.89. and for SOHO it also has a poor profitability ratio especially in Gross Profit Margin categorizing them in the "Distress Zone.", And Soho Global Health (SOHO) is not so safe from the potential remains in the "Gray Zone," with Z-Score values ranging from 1.89 to 2.99, indicating moderate bankruptcy risk. In conclusion, this research highlights the urgent need for pharmaceutical companies in Indonesia to enhance their financial resilience in the post-pandemic era.

Keywords: *COVID-19 Pandemic, Financial Performance, Pharmaceutical Industry, Altman Z-Score*

ABSTRAK

Penelitian ini membahas tentang analisis kinerja keuangan dan potensi kebangkrutan seluruh perusahaan farmasi yang tercatat di bursa di Indonesia selama dan setelah pandemi COVID-19. Penelitian ini menggunakan analisis rasio keuangan seperti Likuiditas, Solvabilitas, Profitabilitas, dan Rasio Aktivitas serta penilaian potensi kebangkrutan dengan Model Altman Z-Score. Penelitian ini bertujuan untuk mengevaluasi kondisi keuangan perusahaan dan mengidentifikasi risiko keuangan yang dihadapi oleh industri farmasi di Indonesia. Pendekatan statistik Kolmogorov-Smirnov, Paired T-Test, dan Wilcoxon Signed Rank Test, untuk menilai perubahan signifikan kinerja keuangan selama dan setelah pandemi. Hasil penelitian ini menunjukkan bahwa PT Kimia Farma (KAEF), PT Indonesia Farma (INAF), PT Pharos (PEHA), dan PT Pyridam Farma (PYFA) memiliki kondisi keuangan yang buruk berdasarkan hasil semua rasio keuangan yang buruk, Selain itu, perusahaan-perusahaan ini menunjukkan potensi kebangkrutan yang signifikan, dengan nilai Altman Z-Score di bawah 1,89. dan untuk SOHO juga memiliki rasio profitabilitas yang buruk terutama dalam Gross Profit Margin yang mengategorikannya dalam "*Distress Zone*.", dan Soho Global Health (SOHO) tidak begitu aman dari potensi tetap berada di "*Gray Zone*," dengan nilai Z-Score berkisar antara 1,89 hingga 2,99, yang menunjukkan risiko kebangkrutan sedang. Sebagai kesimpulan, penelitian ini menyoroti kebutuhan mendesak untuk farmasi.

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Kata kunci: Pandemi COVID-19, Kinerja Keuangan, Industri Farmasi, Altman Z-Score

INTRODUCTION

The pharmaceutical industry was able to survive during the COVID-19 crisis due to the global demand for vaccines, which significantly increased company revenues and stock prices. However, with the pandemic over, pharmaceutical companies face challenges in maintaining their growth. The industry is responsible for developing, producing, and marketing branded and generic pharmaceuticals. According to González Peña, López Zavala, and Cabral Ruelas (2021), the global pharmaceutical market has consistently grown, increasing from USD 390 billion in 2001 to USD 1.25 trillion in 2019. Revenue primarily comes from therapeutic drugs, oncology, antidiabetic, respiratory, autoimmune disease treatments, antibiotics, and vaccines. The pharmaceutical industry in Indonesia remains promising as it provides essential commodities

for the community. Indonesia's pharmaceutical market is the largest in Southeast Asia, covering **27% of the ASEAN market** and ranked **23rd worldwide**. In 2020, medicine sales were valued at **Rp 110.6 trillion** and are projected to expand to **Rp 176.3 trillion by 2025**. According to the National Agency of Drug, **73% of the market share** is dominated by national companies. Since the introduction of the **"Indonesia National Health Insurance" (JKN)** in 2014, the market has grown **11.8%**, reaching **USD 4.6 billion** with a per capita consumption of **USD 19**.

The pharmaceutical industry was among the least impacted during the COVID-19 pandemic due to high demand for drugs, but it still faced challenges, including shortages of essential medicines globally and in Indonesia, as reported by Tirivangani et al. (2021) and Socal, Sharfstein, and Greene (n.d.). The increased production of COVID-19 drugs led to overstock and deadstock, as highlighted by BBC. Despite these struggles, the national pharmaceutical industry grew by 10.81% during the pandemic, according to Antara, with PT Biofarma, PT Kimia Farma, and PT Indonesia Farma playing key roles in distributing vaccines. After the pandemic ended, companies such as Pfizer, Moderna, Kalbe Farma, Kimia Farma, and Sidomuncul experienced revenue declines (Anon, 2024). However, the Indonesian pharmaceutical sector remains attractive, supported by data from Sinarmas, showing an increase in health expenditure for medicine from 12.2% in 2019 to 14.3% in 2023.

Therefore, this research needed to see about condition of companies in pharmaceutical sector after pandemic over.

1. How significant was the impact of the ending pandemic COVID-19 on the financial performance of pharmaceutical industry in Indonesia during and after the pandemic?
2. How is the financial performance of pharmaceutical companies in Indonesia that are public listed?

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3. How is the bankruptcy risk result of pharmaceutical companies that are public listed during 2018-2023 period with the use of Z-Score Assessment?
4. What are possible actions that can do to improve and utilize their performance for companies that facing with potential bankruptcy?

This research aims to investigate financial performance and predict financial distress for pharmaceutical companies that public listed in Indonesia in the pre, during, and post pandemic, this research will focus on Financial Performance Analysis and Financial Distress Prediction

RESEARCH METHODS

This study utilizes a quantitative research methodology to assess the financial performance and distress of publicly listed pharmaceutical companies on the Indonesia Stock Exchange (IDX). Secondary data from annual reports, financial statements, and stock exchange records are employed for their reliability and cost-effectiveness. The analysis covers three periods to evaluate the impact of the COVID-19 pandemic: pre-COVID (2018-2019), during COVID (2020-2021), and post-COVID (2022-2023), using purposive sampling to select relevant companies.

Financial performance is examined through Ratio Analysis, which includes liquidity ratios (Current Ratio, Quick Ratio), profitability ratios (Gross, Operating, Net Profit Margins), activity ratios (Total Equity to Asset Ratio; Inventory Turnover; and Total Asset Turnover), and solvency ratios (Debt to Equity Ratio and Debt to Asset Ratio). Additionally, the Altman Z-Score model is applied to predict financial distress by assessing bankruptcy probability based on multiple financial indicators. To determine data normality, the Kolmogorov-Smirnov test is first conducted, followed by either the Paired T-Test for normally distributed data or the Wilcoxon Signed Rank Test for non-normal data to compare financial performance across the different periods.

RESULTS AND DISCUSSION

Statistical Analysis

From research question this study aims to see whether there are difference between pharmaceutical industry in Indonesia during pandemic and after pandemic ended. Statistical analysis that used in this study is Paired t-test. First, a test is carried out to see whether the data is normally distributed using Kolmogorov-Smirnov Analysis. But if there's data that not distributed normally then it can be use Wilcoxson Signed-Rank Test analysis to see if there's any differences between during and after pandemic

Kolmogorov-Smirnov Analysis

Below it table analysis from Kolmogorov-Smirnov Analysis to see if financial ratio from during and after pandemic normally distributed. Data that used in here is

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financial ratio from during pandemic (2020-2021) and after pandemic (2022-2023). Hypothesis use to in this Kolmogorov-Smirnov Analysis are, Interpretation to see whether this data is classified as H0 or H1 depend on p value. If data p value is

Table 1. Kolmogorov-Smirnov Test

Financial Ratio	Statistic	Sig. (p value)	Interpretation
Current Ratio	0.156	0.217	H_0, Accepted
Quick Ratio	0.92	0.738	H_0, Accepted
Cash Ratio	0.17	0.128	H_0, Accepted
Net Profit Margin	0.257	0.02	H_0, Rejected H_1, Accepted
Gross Profit Margin	0.245	0.03	H_0, Rejected H_1, Accepted
Operating Profit Margin	0.274	0.01	H_0, Rejected H_1, Accepted
ROE	0.192	0.052	H_0, Accepted
ROA	0.249	0.03	H_0, Rejected H_1, Accepted
DER	0.439	0.00	H_0, Rejected H_1, Accepted
DAR	0.356	0.00	H_0, Rejected H_1, Accepted
ITOR	0.177	0.98	H_0, Accepted
TATO	0.198	0.39	H_0, Accepted
TETA	0.319	0.00	H_0, Rejected H_1, Accepted

From statistical analysis using Kolmogorov-Smirnov, there are several data that distributed normally (H0 accepted) and not distributed normally (H1 Accepted). If data not distributed normally then it cannot be analyzed using paired t test but using Wilcoxson Signed-Rank Test analysis.

Paired T-test

Table 2. Paired T-test

Financial Ratio	Statistic	Sig. (p value)	Interpretation
Current Ratio	0.156	0.217	H_0, Accepted
Quick Ratio	0.92	0.738	H_0, Accepted
Cash Ratio	0.17	0.128	H_0, Accepted
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TATO	0.198	0.39	H_0, Accepted
TETA	0.319	0.00	H_0, Rejected H_1, Accepted

From analysis using Paired T-test method, it only Inventory Turnover Ratio (ITOR) that statically significant difference between during and after pandemic due to p value is below 0.05 than it falls into hypothesis 1, and the rest financial ratio falls into H0. Therefore, from analysis using Paired T-test, with pandemic covid-19 it affected to majority inventory of pharmaceutical companies in Indonesia. And for the rest ratio that are not statically significant it means that even with pandemic ended, pharmaceutical companies in Indonesia performing just like when the pandemic started.

Wilcoxon Signed-Rank Test Analysis

Table 3. Wilcoxon Signed-Rank Test

Financial Ratio	Z	Sig. (p value)	Interpretation
NPM	-1.157	0.247	Accept H_0
GPM	-1.979	0.048	Reject H_0; Accepted H_1
OPM	-1.493	0.135	Accept H_0
ROA	-0.93	0.351	Accept H_0
DER	-0.971	0.332	Accept H_0
DAR	-0.037	0.97	Accept H_0
TETA	-0.821	0.411	Accept H_0

Result from Wilcoxon Signed-Rank Test Analysis is that only Gross Profit Margin that statically has significant difference between during pandemic and after pandemic, because result from analysis that GPM's p value is low than 0.05 so it rejected hypothesis 0 and falls into hypothesis 1. The rest financial ratio, all of their p

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value is above 0.05 it means that the rest ratio accepted hypothesis 0, so it means that the rest ratio no statically significant difference between during and after pandemic.

Financial Ratio Analysis

Liquidity Ratio

Current Ratio

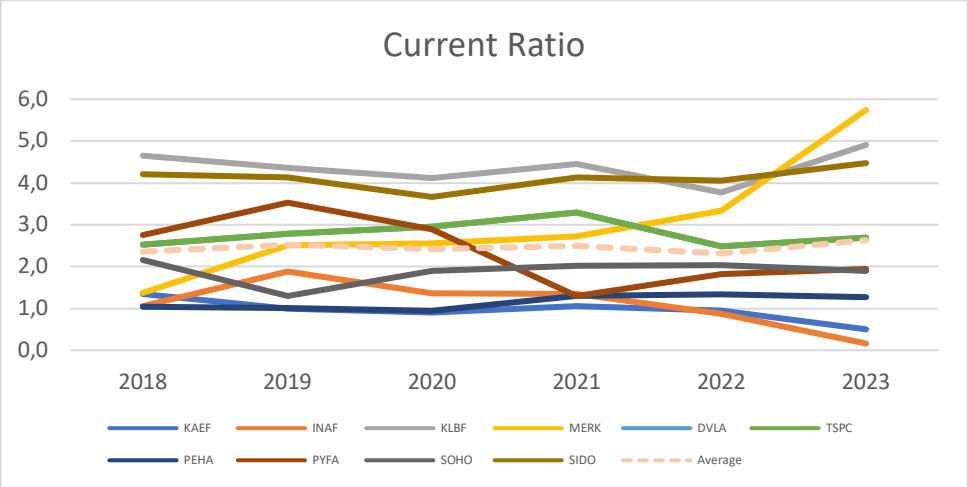

Figure 1. Current Ratio
Source: Author Analysis

The average current ratio of Indonesian pharmaceutical companies is 2.3–2.6, indicating good coverage of current liabilities. However, PYFA's current ratio has declined since 2019 due to increased short-term loans for business development, but actions in 2021 improved the ratio by 2022–2023. INAF and KAEF, as state-owned enterprises, have persistently low current ratios, with INAF's situation worsening in 2023 due to declining cash flow and high liabilities. Similarly, KAEF faced increasing short-term liabilities, cash depletion, and negative cash flow from operations. PEHA, while stable with a ratio above 1, still lags behind the industry average and needs a strategy to improve its current ratio.

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Quick Ratio

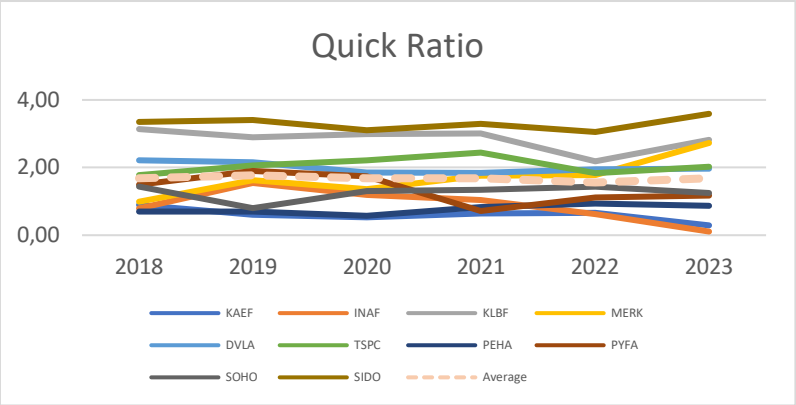

Figure 2. Quick Ratio
Source: Author Analysis

The quick ratio data shows significant differences in liquidity management among pharmaceutical companies. KAEF and INAF face severe liquidity challenges, with quick ratios falling to 0.29 and 0.11 in 2023, respectively. PEHA also struggles, peaking at 0.94 in 2022 but dropping to 0.86 in 2023. In contrast, SIDO and KLBF show strong financial health, with SIDO maintaining ratios above 3.0 and KLBF rebounding to 2.81 in 2023. MERK improved from 1.36 in 2020 to 2.73 in 2023, reflecting enhanced stability. DVLA and TSPC perform steadily, while SOHO, with a 1.26 ratio in 2023, needs further improvements. The trends highlight the importance of effective liquidity management to ensure financial resilience, urging underperformers to address short-term liabilities and cash inflows while top performers focus on growth opportunities.

Cash Ratio

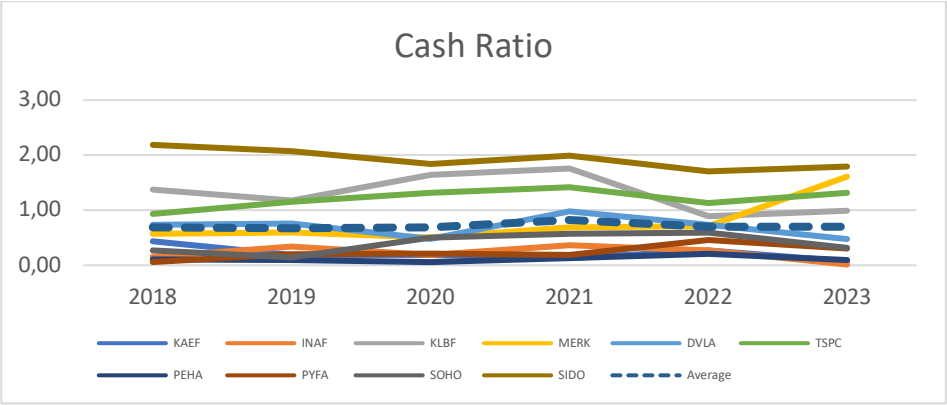

Figure 3. Cash Ratio
Source: Author Analysis

The cash ratio of Indonesian pharmaceutical companies remained stable around 0.67-0.82 before, during, and after the pandemic. SIDO, KLBF, and TSPC consistently maintained good cash ratios, though KLBF saw a drop in 2022 due to

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short-term bank loans. MERK showed strong growth in 2023 with increased cash from operations and reduced liabilities, reflecting good liquidity. DVLA faced a decline in 2020 due to rising payments and reduced cash flow but rebounded in 2021; however, it dropped again post-pandemic, requiring strategies to increase cash flow. Conversely, PEHA, INAF, and KAEF experienced drastic cash ratio declines in 2023, using cash reserves from 2022 to fund operations, signaling poor liquidity and potential bankruptcy risk**.**

Solvency Ratio

Debt-To-Equity Ratio

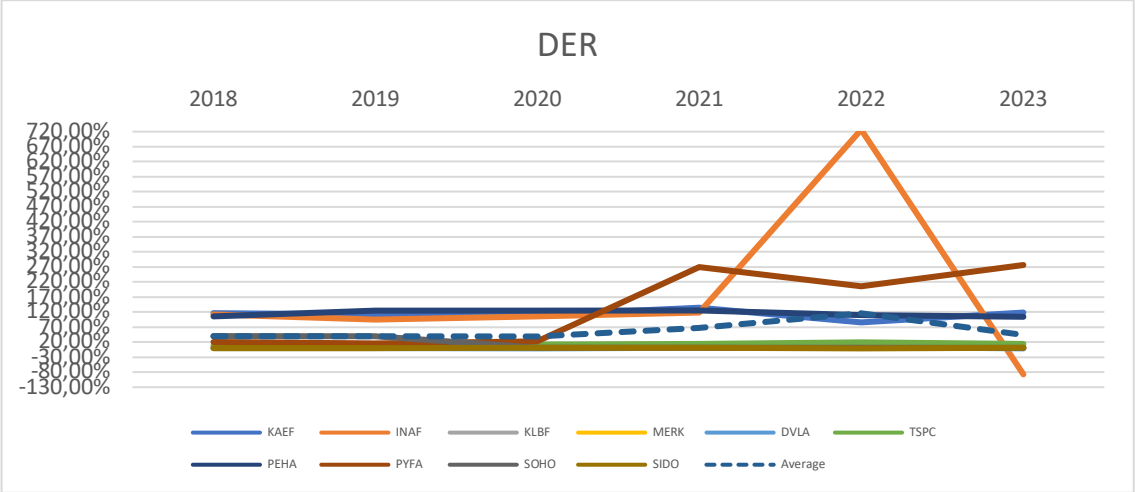

Figure 4. Debt-To-Equity Ratio
Source: Author Analysis

The Debt-to-Equity Ratio (DER) shows that KAEF, INAF, PEHA, and PYFA rely heavily on debt, while DVLA, SIDO, SOHO, MERK, TSPC, and KLBF rely more on equity. PYFA experienced a significant increase in DER in 2021 due to issuing bonds for business development and healthcare products. INAF has consistently high DER, further rising in 2022 due to shareholder loans and equity losses. PEHA saw its DER peak in 2021 as it used debt to meet pandemic-related demand but slightly decreased post-pandemic after restructuring. KAEF increased its debt in 2021-2023 for production expansion but faced decreasing equity due to operational losses. In contrast, MERK, DVLA, and SIDO had a DER of 0 before 2019 but increased it after regulatory changes (PSAK No. 73).

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Debt-To-Asset Ratio

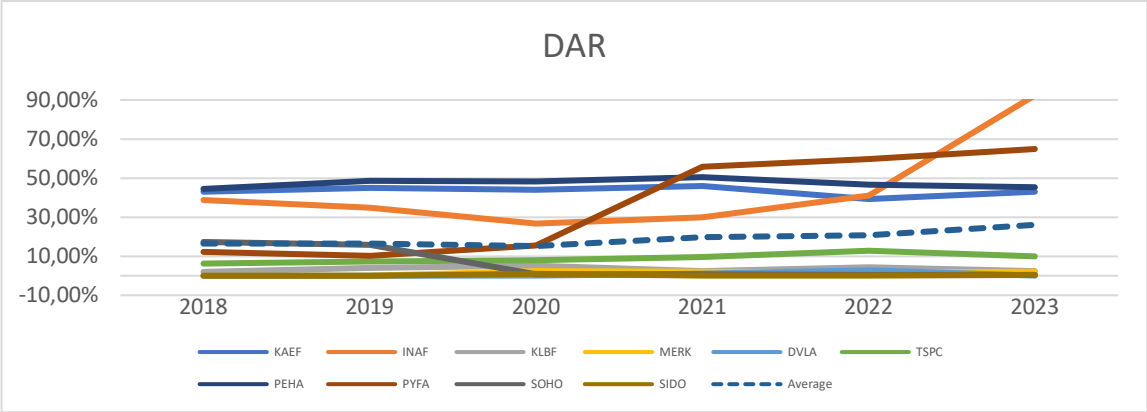

Figure 5. Debt-To-Asset Ratio
Source: Author Analysis

Debt-to-Asset Ratio (DAR) measures how much of a company's assets are funded by debt. KAEF, INAF, PYFA (since 2021), and PEHA rely heavily on debt, while KLBF, SIDO, SOHO, MERK, TSPC, and DVLA fund assets using equity.

INAF's DAR peaked in 2023 due to increasing shareholder loans for business activities. PYFA saw an increase in DAR since 2021 because of rising debt to support business development, capital expenditures, and the launch of new healthcare products, as mentioned in the DER analysis.. KAEF increased debt to cover high operational costs and demand, but its assets declined due to cash repayment of short-term loans. PEHA expanded its business during the pandemic, relying on debt, which further reduced its cash for loan repayments in 2023. In contrast, companies in the second category maintain low DAR, relying on equity rather than debt for funding.

Profitability Ratio

Net Profit Margin

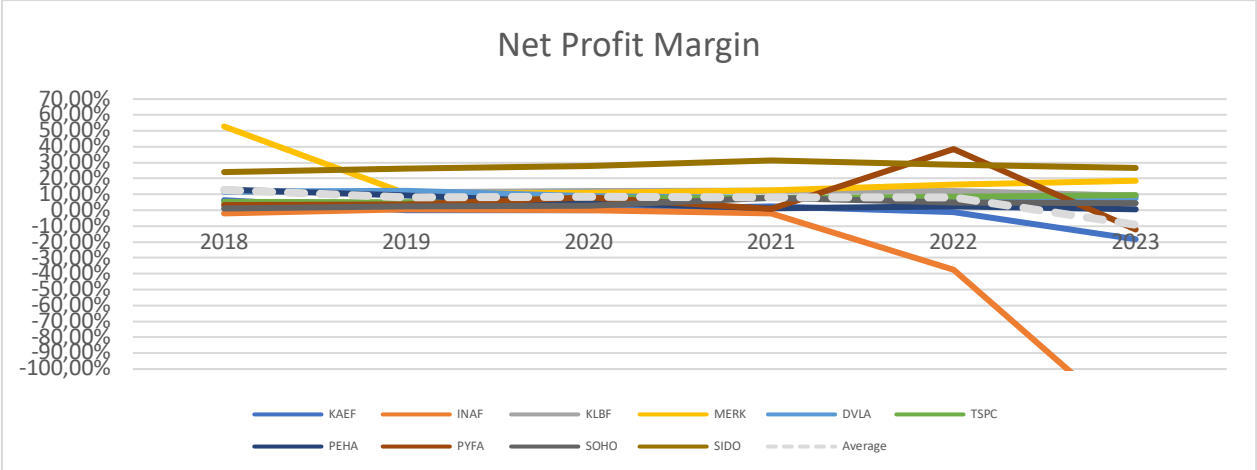

Figure 2. Net Profit Margin

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Source: Author Analysis

Net Profit Margin (NPM) measures net income compared to revenue. From the chart, MERK experienced a sudden NPM decrease in 2019 due to selling its Merck KGaA unit, but its NPM increased steadily during and after the pandemic. PYFA saw a significant NPM increase in 2022 due to a gain on haircut loans and negative goodwill from acquiring PT Ethica Pharma but became negative in 2023 as these gains were absent.

INAF's NPM worsened to -37% in 2022 and -137% in 2023 due to a revenue loss of 1.2 trillion, failure to cover costs, and fraud activities reported in 2023. KAEF had low NPM and turned negative in 2023, driven by high operational and finance costs, issues with its subsidiary "Kimia Farma Apotek," and reduced demand for COVID-related products and syrup restrictions.

PEHA's NPM declined since 2018 due to rising interest expenses from bank loans for business expansion, increasing cost of goods sold (higher raw material prices), and decreasing revenue in 2023 from increased competition and reduced sales of key products like Antimo, Omeprazole, and Dextamine. SIDO, KLBF, and MERK had stable and good NPM, while other companies maintained positive but not strong NPM values. In 2023, the average NPM turned negative, reflecting economic challenges and shifts in the pharmaceutical market.

Gross Profit Margin

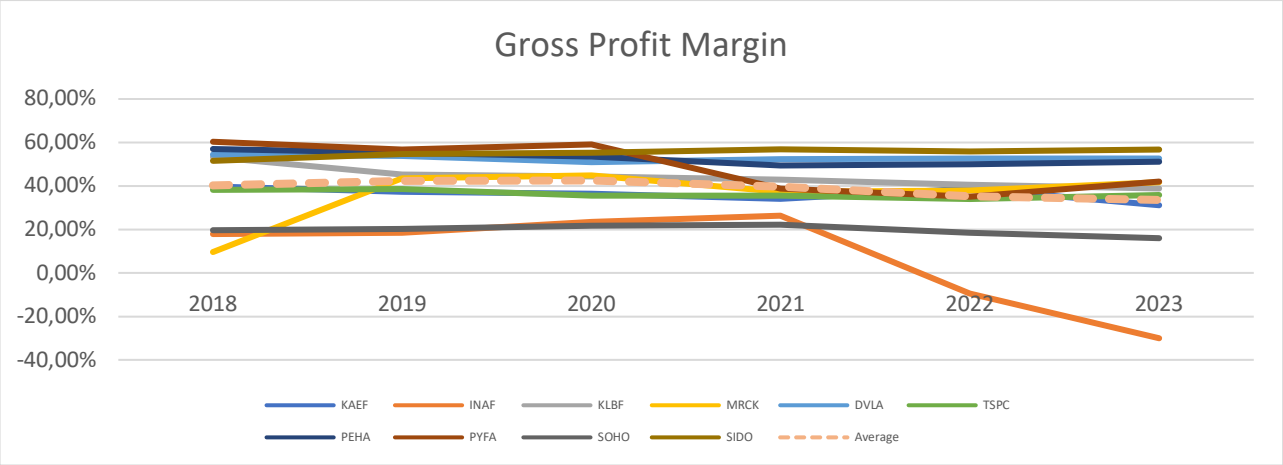

Figure 3. Gross Profit Margin
Source: Author Analysis

Gross Profit Margin (GPM) measures efficiency in managing production costs. MERK, TSPC, PYFA, SIDO, KLBF, DVLA, and PEHA show high and stable GPM, reflecting good cost control and profitability. INAF experienced a significant decline, with a negative GPM in 2023 due to inventory impairment, write-offs, and fraud, while SOHO had consistently low GPM caused by high production costs, though it maintained a good Net Profit Margin (NPM).

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For INAF, GPM declined sharply in 2022 due to reduced sales, high cost of goods sold, inventory impairments, and write-offs, worsening further in 2023 due to continued sales decline and fraud detection. SOHO struggled with high production costs, keeping its GPM low, but effectively controlled operational and non-operational costs, resulting in a good NPM.

PYFA maintained a strong GPM until 2020, but saw a significant decline in 2021 due to a sharp rise in the cost of goods sold (production and merchandise costs), which continued to impact its performance without recovery to earlier levels.

Operating Profit Margin

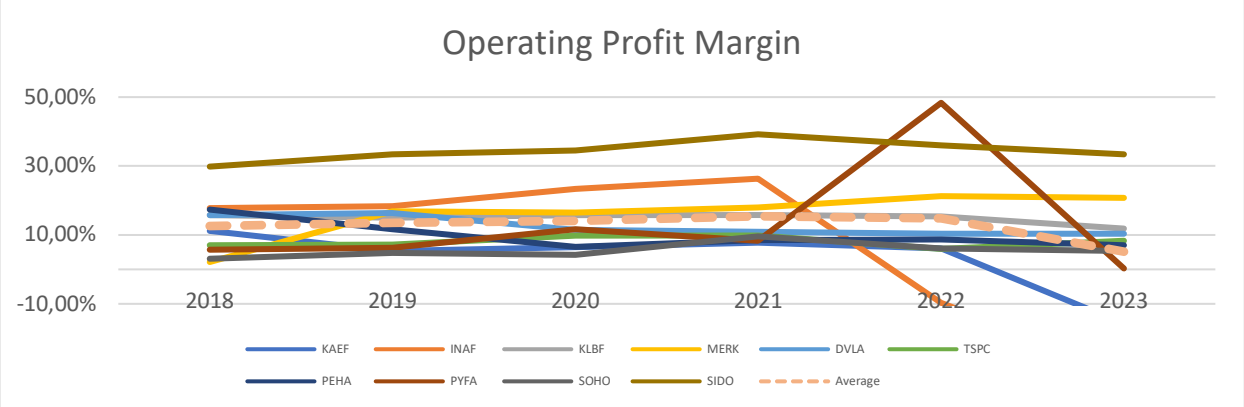

Figure 4. Operating Profit Margin
Source: Author Analysis

Operating Profit Margin (OPM) measures efficiency in generating profit after deducting operating expenses. SIDO has maintained a good and stable OPM from 2018 to 2023, reflecting efficient operational management and consistent profit generation.

For MERK, OPM significantly increased in 2018 due to the sale of fixed assets, and it has shown consistent improvement since then. INAF had good OPM from 2018 to 2021, but it declined due to increased cost of goods sold and higher selling and administrative expenses. KAEF has consistently low OPM, which worsened after the pandemic due to rising cost of goods sold and operational expenses, similar to INAF.

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Return on Equity

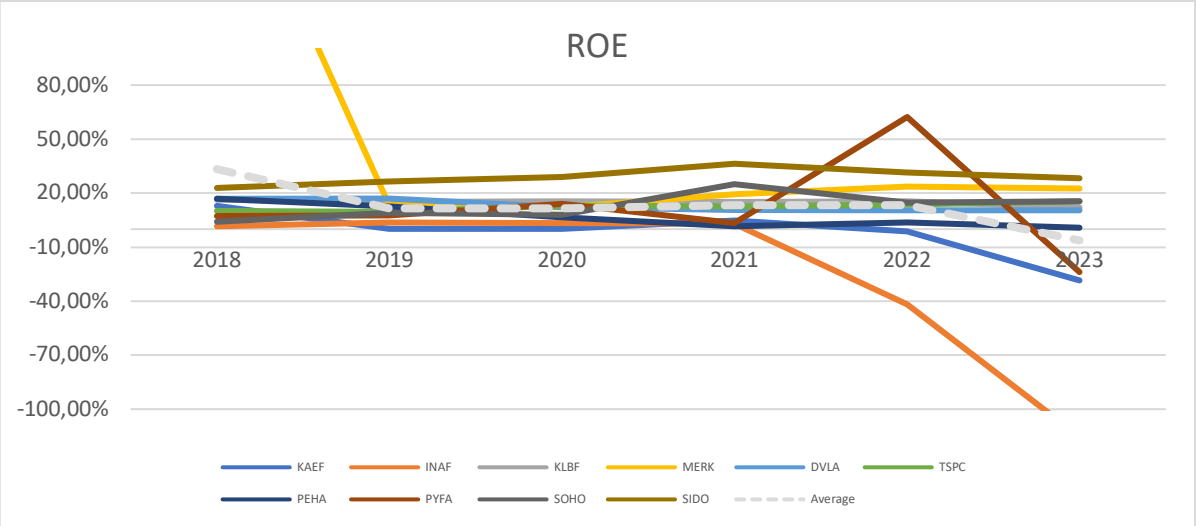

Figure 5. Return on Equity
Source: Author Analysis

ROE measures how well a company generates profits from shareholder equity. After the pandemic (2022-2023), ROE has generally decreased, reflecting pressure on the pharmaceutical industry. Companies like DVLA, SIDO, KLBF, MERK, and TSPC maintain stable and good ROE, while SOHO improved after IPO but saw a decline post-pandemic. The rest are underperforming.

For MERK, ROE decreased in 2019 due to a drop in net income but improved steadily during and after the pandemic. For INAF, ROE increased slightly during the pandemic (2019-2020) but fell sharply to -115.3% in 2023 due to accumulated losses, decreased equity, and expenses exceeding revenue. KAEF experienced a severe decline, reaching -28.49% in 2023, driven by increased operational costs, raw material expenses, and allowance for inventory obsolescence and receivables.

PYFA had fluctuating ROE, peaking at 62.27% in 2022 due to other income from the acquisition of PT Ethica Pharma but dropped to -23.87% in 2023 as income fell without similar gains. PEHA saw ROE decline from 12% in 2019 to 6% in 2020 due to lower net sales and impairment costs, briefly increasing in 2022 from other income before declining again in 2023 due to lower net sales. SOHO's ROE rose in 2021 during the pandemic but declined in 2022 as increasing expenses and inventory costs offset revenue growth.

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Return on Asset

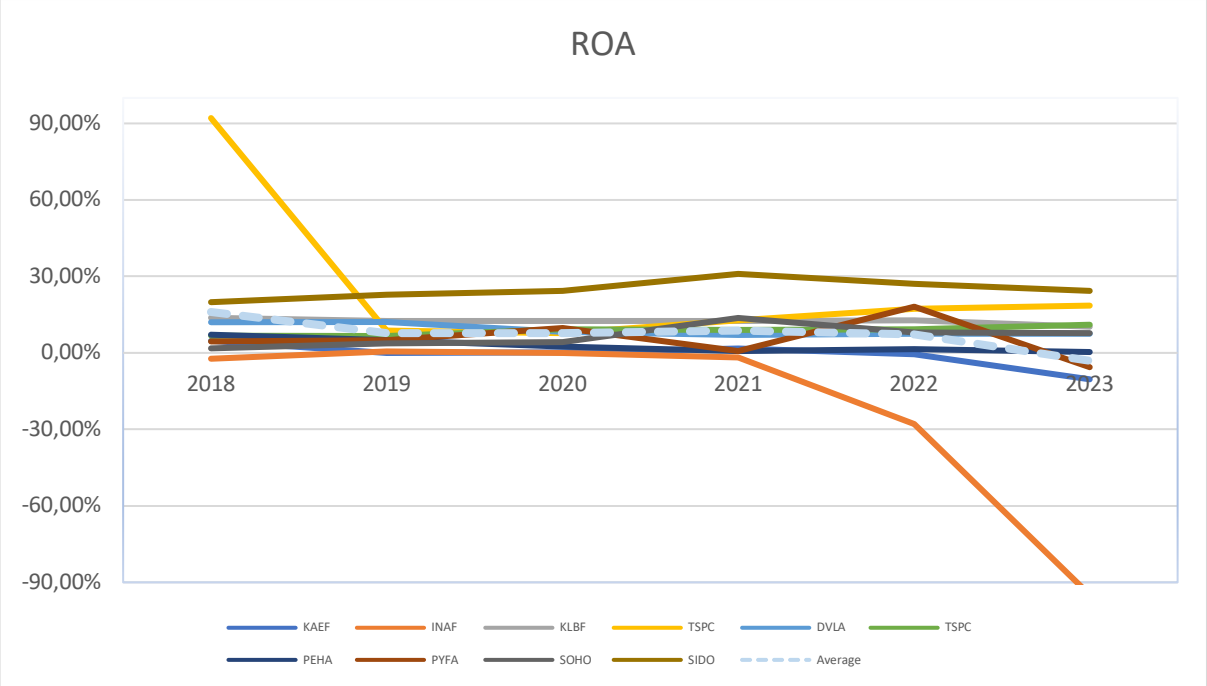

Figure 6 Return on Asset
Source: Author Analysis

ROA measures how efficiently a company uses its assets to generate profit, and on average, pharmaceutical companies' ROA has decreased since 2018, turning negative in 2023. SIDO, KLBF, DVLA, and TSPC maintain high and stable ROA, while MERK improved after a decline in 2019. SOHO increased ROA during the pandemic but saw a decline post-pandemic. KAEF, INAF, PEHA, and PYFA show very small or negative ROA, indicating inefficiency.

For MERK, ROA dropped in 2019 due to a decline in net income and operational cash flow but steadily increased afterward. SOHO had low ROA in 2020 post-IPO but increased significantly in 2021 as revenue rose and expenses fell, before declining post-pandemic due to higher inventory expenses. PYFA saw significant ROA growth in 2020 but dropped in 2021 due to rising financial costs. It rebounded in 2022 but fell again in 2023 as both net income and assets declined.

KAEF improved ROA during the pandemic in 2021 but failed to maintain it, turning negative as assets grew but income remained negative. INAF consistently showed poor ROA even before the pandemic, with high expenses and unutilized opportunities, leading to drastically reduced assets and no profit in 2023. PEHA's ROA consistently decreased from 2018-2023, failing to capitalize on the pandemic momentum. In 2019, net income dropped due to rising expenses, and by 2023, both revenue and assets fell further, worsening its ROA.

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Activity Ratio

Inventory Turnover Ratio

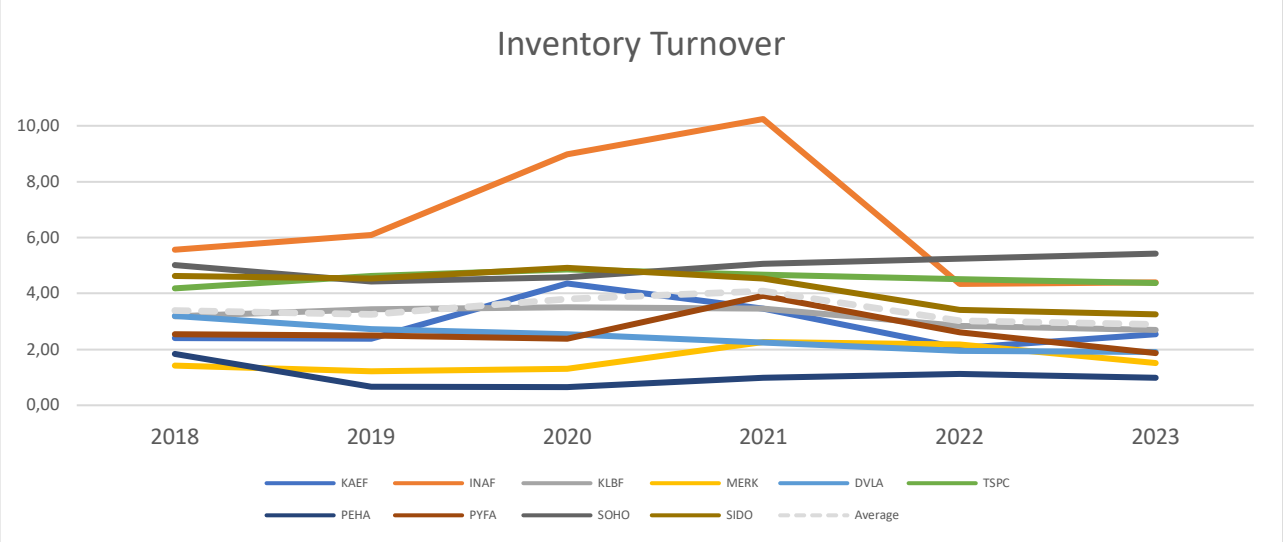

Figure 7. Inventory Turnover
Source: Author Analysis

Inventory Turnover measures a company's efficiency in managing inventory, which increased during the pandemic (2020-2021) but declined post-pandemic. SIDO, SOHO, KLBF, and TSPC managed inventory efficiently, while INAF had a high turnover ratio before and during the pandemic but decreased significantly afterward. DVLA's ratio consistently decreased, and PYFA, KAEF, MERK, and PEHA had low ratios even before the pandemic, improving slightly during it but declining again post-pandemic.

For INAF, inventory turnover dropped significantly in 2022 as sales declined, and the decrease in inventory was not proportional to the revenue decline. DVLA's ratio stayed low as inventory levels increased since 2018, while the cost of goods sold remained stagnant, leading to slow turnover. PEHA maintained the lowest turnover ratio, with high inventory levels in 2018-2019 to prepare for production facility renovations. In 2020-2021, PEHA's inventory remained high due to unsold travel-related products, despite high sales of pandemic-related items. In 2022-2023, inventory burdens from unsold pandemic products persisted, and in 2023, PEHA increased inventory to support the anticipated e-catalog project.

Lastly, DVLA consistently reported high inventory levels with provisions for obsolete and slow-moving inventory, indicating that portions of inventory had lower demand or longer sales cycles.

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Total Asset Turnover

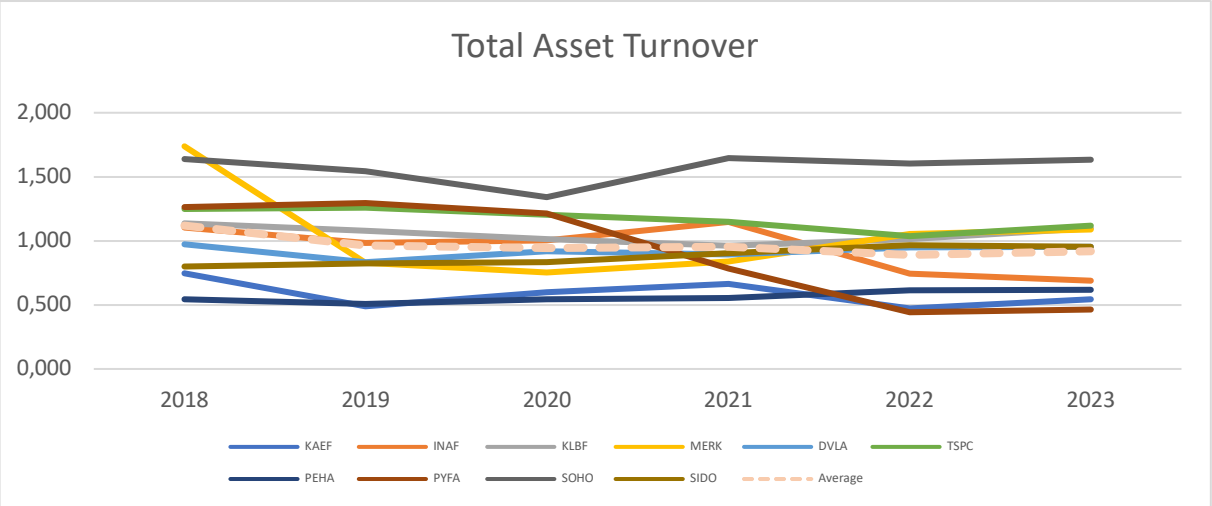

Figure 8. Total Asset Turnover
Source: Author Analysis

The Total Asset Turnover Ratio measures how well a company generates revenue from its assets. Companies like SOHO, INAF, KLBF, TSPC, MERK, DVLA, and SIDO show good performance, while KAEF, PEHA, and PYFA have low ratios, indicating inefficiency in generating revenue from assets.

MERK's TATO decreased in 2019 due to the closure of its consumer health division, which, despite high sales volume, had minimal profit, leading the company to shift focus to biopharma. This decision resulted in a steady TATO increase over the years.

INAF's TATO decreased in 2019 due to postponed tenders but improved in 2020-2021 during the pandemic due to increased demand for healthcare products. In 2022, as pandemic-related product demand dropped, inventory increased, raising total assets and lowering TATO, with the situation worsening in 2023.

PYFA's TATO decreased significantly in 2021 despite increased revenue, as total assets grew disproportionately due to acquiring new machinery and facilities to boost production. While sales increased in 2022, PYFA needs to better utilize its assets to generate more revenue. In 2023, TATO slightly decreased due to a minor drop in net sales.

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Total Equity to Total Asset Turnover

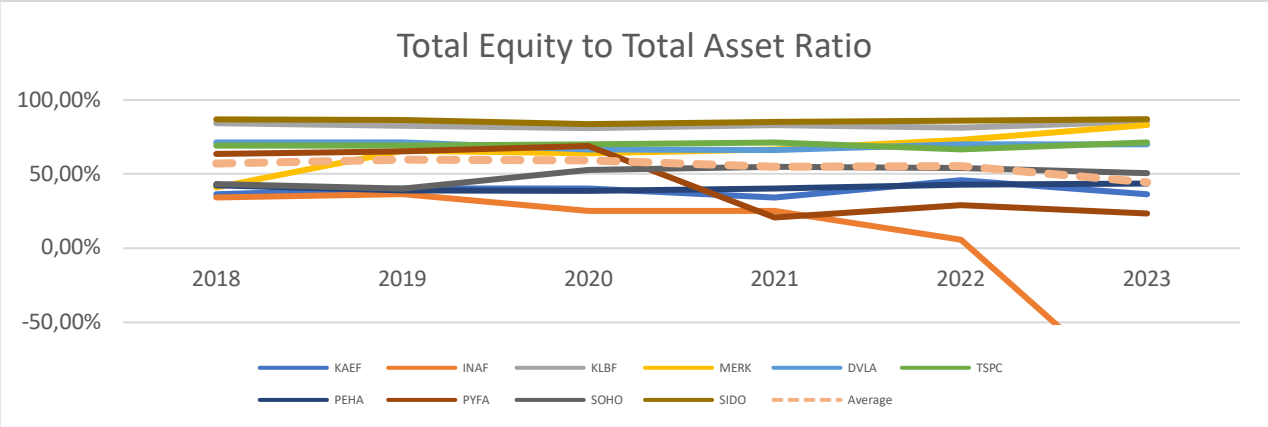

Figure 9. Total Equity to Total Asset Ratio
Source: Author Analysis

From the chart it shows that average total equity to total asset ratio has been stable around 50% but there are decrease in 2023 to 44% that indicating that in 2023 pharmaceutical companies in Indonesia increase more debt than equity in financing their assets. From companies like KLBF, SIDO, TSPC, DVLA, and MERK they are stable has high total equity and asset ratio These companies can leverage their strong capital positions to expand operations, invest in research and development, or consider strategic acquisitions to grow market share. But for KAEF, PEHA, and SOHO they has stable total equity ratio but they should be improve it to match with company-company such as KLBF, SIDO, TSPC, and DVLA. For INAF and PYFA in 2023 they has negative total equity to asset ratio it indicating that these two companies has extremely high level of liabilities.

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Altman Z-Score

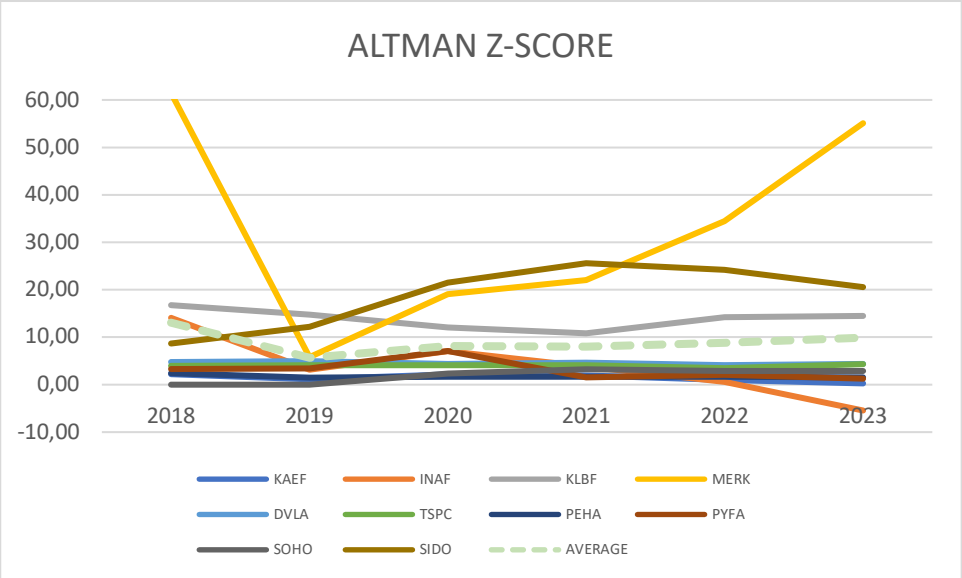

Figure 10. Altman Z-Score Analysis

Table 4. Altman Z-Score Conclusion

KAEF	Grey Area	Bad	Grey Area	Bad	Bad	Bad
INAF	Good	Good	Good	Good	Bad	Bad
KLBF	Good	Good	Good	Good	Good	Good
MERK	Good	Good	Good	Good	Good	Good
DVLA	Good	Good	Good	Good	Good	Good
TSPC	Good	Good	Good	Good	Good	Good
PEHA	Grey Area	Bad	Bad	Bad	Bad	Bad
PYFA	Good	Good	Good	Bad	Grey Area	Bad
SOHO	Bad	Bad	Grey Area	Good	Grey Area	Grey Area
SIDO	Good	Good	Good	Good	Good	Good
AVERAGE	Good	Good	Good	Good	Good	Good

Source: Author Analysis

The Altman Z-Score analysis shows that KAEF's Z-Score declined drastically from 2.14 in 2018 to 0.27 in 2023, indicating a high risk of bankruptcy and the need for urgent financial restructuring. INAF's Z-Score dropped sharply from 14.08 in 2018 to -5.44 in 2023, reflecting major losses and capital imbalances that require immediate debt reduction and profitability improvement.

KLBF demonstrates financial resilience with its Z-Score consistently above 10, reaching 14.51 in 2023, while MERK remains stable, declining slightly from 61.46 in 2018 to 55.05 in 2023, indicating very low bankruptcy risk. DVLA and TSPC maintain stable Z-Scores between 4.71 to 4.43 and consistently above 3, respectively, showing strong financial conditions.

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PEHA's Z-Score fell from 2.41 in 2018 to 1.54 in 2023, placing it at high bankruptcy risk despite pandemic assistance. PYFA experienced a sharp decline in 2021 due to decreases across key financial ratios, signaling serious financial issues and bankruptcy potential.

SOHO, having IPO'd in 2020, remained in the grey zone but improved in 2021, needing better profitability and risk management to move into the safe zone. SIDO excelled with a Z-Score peaking at 25.60 in 2021 and 20.61 in 2023, reflecting strong profitability and financial stability.

Overall, while the industry average Z-Score remains above 2.99, companies like KAEF, PEHA, INAF, and PYFA face a significant risk of bankruptcy, and SOHO must act to avoid falling into the red zone.

Business Solution

Company-Specific Solutions

a. **Kimia Farma (KAEF)**

Kimia Farma faces challenges in all financial areas, including liquidity, solvency, profitability, and activity ratios. To improve, the company should speed up its collections to increase cash flow and restructure its short-term debts to balance liabilities with assets. Enhancing equity by issuing new shares and reducing production costs can improve profitability. Additionally, focusing on developing new drugs and consumer health products will boost revenue. Strengthening corporate governance will help prevent fraud, and reducing excess inventory will improve efficiency and liquidity.

b. **Indonesia Farma (INAF)**

Indonesia Farma also struggles with all financial ratios and faces bankruptcy risks. The company should optimize its working capital by extending payment terms for short-term debts, reducing excess inventory through discounts or bundling products, and cutting unnecessary administrative and operational expenses. Improving corporate governance will help address internal fraud issues, and seeking government support can ensure timely payments from national hospitals.

c. **Pharos (PEHA)**

Pharos needs to enhance its liquidity by improving receivables management to increase available cash. Restructuring debt by negotiating better terms with creditors or raising equity can reduce financial pressure. Improving operational efficiency by cutting unnecessary production costs and adopting lean manufacturing processes will increase profitability. Diversifying into high-margin health and biotech products can also provide new revenue streams.

d. **Pyridam Farma (PYFA)**

Pyridam Farma must improve inventory management by eliminating dead stock to free up cash. Restructuring debt and increasing equity through

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new share issuances will strengthen its financial position. Diversifying its product portfolio to include specialized treatments for chronic diseases and focusing on nutritional and OTC products can help capture niche markets and increase revenues.

e. SoHo Global Health (SOHO)

SOHO struggles with a high cost of goods sold, affecting its gross profit margin. To address this, SOHO should enhance inventory management using AI technologies to optimize stock levels and reduce storage costs. Implementing efficient inventory tracking systems will lower costs and improve profitability, ensuring better financial stability.

CONCLUSIONS AND SUGGESTIONS

In conclusion, this study effectively addressed the research question by evaluating the significant impact of the COVID-19 pandemic's conclusion on the financial performance of Indonesia's pharmaceutical industry. Through the application of Paired T-Test and Wilcoxon Signed-Rank Test, the analysis revealed that only the Inventory Turnover Ratio and Gross Profit Margin exhibited significant differences, indicating that inventory management and gross profitability were notably affected during and after the pandemic. Financial performance was comprehensively assessed using liquidity, solvency, profitability, and activity ratios, highlighting that four companies—Kimia Farma, Indofarma, Pharos, and Pyridam Farma—faced substantial difficulties across all financial ratios, with additional challenges observed in companies like Darya Varia and SOHO. The Altman Z-Score assessment further identified KAEF, INAF, PEHA, and PYFA as having a high probability of bankruptcy, while SOHO was situated in the grey area, signaling potential financial instability. To mitigate these risks, the study proposes strategic actions such as debt reorganization, expenditure control, improved inventory management, digitization, revenue distribution, asset sales, cash flow enhancement, strengthening corporate governance, and optimizing internal operations. These recommendations aim to enhance financial ratios, reduce bankruptcy risks, and attract potential investors, thereby ensuring the long-term sustainability and resilience of Indonesia's pharmaceutical sector in a post-pandemic landscape. The findings provide valuable insights for industry stakeholders to implement effective measures that foster financial stability and promote strategic growth in the evolving economic environment.

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