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Efficiency and Effectiveness of Indonesian Listed Pharmaceutical Companies: A Financial Ratio and Management Perspective

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ABSTRACT

Indonesia's pharmaceutical industry faces structural challenges, including substantial dependence on imported raw materials and exposure to exchange rate fluctuations, requiring companies to strengthen both operational efficiency and financial effectiveness. This study aimed to analyze the financial performance of six pharmaceutical companies listed on the Indonesia Stock Exchange in fiscal year 2025 by integrating financial ratio analysis with an industrial pharmacy management perspective. A quantitative descriptive approach with a cross-sectional comparative design was employed using secondary data obtained from the companies' audited 2025 annual reports. The analysis covered production cost efficiency, asset utilization effectiveness, productivity, research and development investment, human resource retention, solvency, and exchange rate exposure. The findings revealed substantial differences between production cost efficiency and asset utilization effectiveness. Darya-Varia Laboratoria (DVLA) and Phapros (PEHA) recorded the highest gross profit margins, at 54.34% and 52.35%, respectively. In contrast, Merck (MERK), Kalbe Farma (KLBF), and Tempo Scan Pacific (TSPC) demonstrated stronger asset utilization effectiveness, with return on assets of 19.17%, 12.20%, and 11.32%, respectively. Multidimensional ranking further revealed that DVLA and PEHA, despite their strong production cost efficiency, ranked fourth and sixth overall. PEHA represented the clearest divergence, achieving the second-highest gross profit margin but the weakest performance across other rankable categories, alongside a debt-to-equity ratio of 224.51%. Capital structure emerged as an important factor associated with overall performance, although the descriptive research design does not establish causality. The study also identified inconsistencies in non-financial disclosures, particularly regarding research and development expenditure, production capacity utilization, and exchange rate sensitivity, which limited cross-company comparability. These findings demonstrate that pharmaceutical financial performance cannot be adequately assessed using a single financial indicator. A multidimensional evaluation that distinguishes production cost efficiency from asset utilization effectiveness, while considering operational and financing conditions, provides a more comprehensive basis for managerial decision-making. However, the findings apply only to the six profitable companies examined and cannot be generalized to the entire sector.

Keyword: *Asset effectiveness; Financial ratios; Pharmaceutical industry; Production cost efficiency.*

Introduction

The pharmaceutical industry is one of the strategic sectors in Indonesia's national economy. The market value of Indonesia's pharmaceutical industry in 2025 was recorded at approximately IDR143 trillion, with domestic production capacity physically capable of meeting around 82% of national demand for finished drugs. Nevertheless, finished-drug imports, though relatively small in percentage terms

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(around 17%), still absorb foreign exchange of roughly IDR16 trillion, indicating that national pharmaceutical self-sufficiency remains incomplete (Elfahmi, 2026) Publicly listed (Tbk) pharmaceutical issuers on the Indonesia Stock Exchange represent the most transparent proxy for overall industry performance, given their obligation to periodically publish audited financial statements.

This market growth is accompanied by structural challenges. Indonesia's pharmaceutical industry remains heavily dependent on imported raw materials, estimated at 80–94% of total requirements, particularly Active Pharmaceutical Ingredients (API) from China and India (K. P. R. Indonesia, 2026) . This dependence makes the production cost structure highly sensitive to Rupiah exchange rate volatility, while drug selling prices remain relatively inflexible because of e-catalog mechanisms and government procurement contracts. Low investment in research and development (R&D) is a further challenge, even though the government has provided fiscal incentives in the form of a tax super deduction of up to 300% of R&D costs (Republik Indonesia, 2019). At the same time, the government is promoting up to 100% foreign investment openness in the pharmaceutical sector (K. K. R. Indonesia, 2025) . This policy reshapes the competitive landscape and requires domestic pharmaceutical issuers to manage their resources ever more efficiently and effectively.

Amid these structural pressures, financial ratio analysis serves as the most objective tool for assessing managerial performance, particularly through two conceptually distinct dimensions. Efficiency refers to how economically resources and costs are managed in the production and operational processes, whereas effectiveness refers to how optimal the results or returns achieved from the resources used are (Brigham & Houston, 2021). These two dimensions must be analyzed separately, since a company that is efficient at the production-cost level is not necessarily effective in generating returns on its assets or equity, and vice versa (Naibaho et al., 2023).

Research on the financial performance of Indonesian pharmaceutical issuers is not new. (Naibaho et al., 2023) evaluated the financial performance of nine pharmaceutical issuers listed on the Indonesia Stock Exchange for the 2017–2022 period, while (Anggraini & Khoiriawati, 2023) analyzed liquidity, profitability, and activity ratios for nine similar pharmaceutical issuers over the 2019–2021 period. Earlier, (Daryanto & Daryanto, 2019) evaluated the financial performance of Indonesian pharmaceutical companies using a ratio-based framework. More recently, (Tasik et al., 2023) assessed the profitability of nine pharmaceutical issuers for 2020–2021, and (Putri et al., 2023) measured the performance of the pharmaceutical sub-sector using Economic Value Added and Market Value Added for 2019–2022. These studies provide a solid methodological foundation, but they rely on data predating several important developments that have since affected

pharmaceutical issuers' performance, such as the 2025–2026 Rupiah depreciation trend and foreign investment liberalization policies. Moreover, prior research generally stops at generic financial ratios without explicitly linking them to the pharmaceutical operational aspects that underlie those ratio figures, such as production capacity, R&D intensity, human resource retention, and exposure to imported raw materials.

Building on this gap, the present study addresses two problems. First, whether production cost efficiency and asset utilization effectiveness among listed Indonesian pharmaceutical companies move in the same direction in fiscal year 2025. Second, which pharmaceutical-industry operational and financing factors best explain any divergence between the two dimensions. Accordingly, this study aims to analyze the efficiency and effectiveness of the financial performance of six leading listed pharmaceutical companies in Indonesia based on their fiscal-year 2025 financial statements, combining classic financial ratios with an industrial pharmacy management perspective, namely productivity and production capacity, R&D investment, human resources, and dependence on imported raw materials together with exchange rate exposure. The study is expected to benefit pharmaceutical company management as a basis for formulating more targeted operational and financing strategies, regulators as input for standardizing non-financial disclosure practices, and academics as an updated empirical reference on the performance of the national pharmaceutical sector.

Methods

Study Design and Sample

This study employed a quantitative descriptive approach with a cross-sectional comparative study design for fiscal year 2025. The sample was determined using a purposive sampling technique applied in stages to the initial population of 11 pharmaceutical issuers listed on the Indonesia Stock Exchange, as illustrated in Figure 1. First, one issuer (SCPI) was excluded because it was undergoing a go-private process and was therefore no longer actively traded, leaving 10 issuers. Second, one issuer (SIDO) was excluded because its business is dominated by herbal medicine (jamu) rather than conventional drug production, leaving nine issuers focused on drug manufacturing. Third, three issuers (INAF, KAEF, and PYFA) were excluded because they recorded a net loss in 2025. Each remaining issuer was also required to have published a complete 2025 Annual Report with fully audited consolidated financial statements that were accessible at the time the study was conducted. Based on these criteria, six research samples were obtained: PT Phapros Tbk (PEHA)(P. T. P. Tbk, 2026), PT Soho Global Health Tbk (SOHO)(P. T. S. G. H. Tbk, 2026) , PT Tempo Scan Pacific Tbk (TSPC)(P. T. T. S. P. Tbk, 2026) , PT Darya-

Varia Laboratoria Tbk (DVLA)(P. T. D.-V. L. Tbk, 2026) , PT Kalbe Farma Tbk (KLBF)(P. T. K. F. Tbk, 2026), and PT Merck Tbk (MERK) (P. T. M. Tbk, 2026) , (PT Darya-Varia Laboratoria Tbk (DVLA) (P. T. D.-V. L. Tbk, 2026).

The exclusion of the three loss-making issuers requires explicit justification. Profitability-based ratios that form the core of this study, namely Return on Assets, Net Profit Margin, and profit per employee, lose their economic interpretability when the numerator is negative, because a negative ratio cannot be ranked meaningfully alongside positive values on the same scale. Excluding these issuers therefore preserves the comparability of the ranking. This choice, however, inevitably biases the sample toward better-performing companies and may overstate the apparent efficiency and effectiveness of the sector as a whole. The sample consequently does not represent the entire population of listed pharmaceutical issuers on the Indonesia Stock Exchange, and the findings cannot be generalized to the sector at large. The implications of this decision are elaborated in the Study Limitations section.

Data Sources and Collection Techniques

Secondary data were collected through a documentation technique from the Consolidated Statement of Profit or Loss and Other Comprehensive Income, the Consolidated Statement of Financial Position, the Notes to the Consolidated Financial Statements, and non-financial narrative sections (Management Discussion and Analysis, Human Resources, Operational Review) in each company's 2025 Annual Report (PT Darya-Varia Laboratoria Tbk, 2026; PT Kalbe Farma Tbk, 2026; PT Merck Tbk, 2026; PT Phapros Tbk, 2026; PT Soho Global Health Tbk, 2026; PT Tempo Scan Pacific Tbk, 2026). Every figure used was traced directly back to its original line item or note and checked for label consistency before being used in the calculations, in order to ensure data validity.

Operational Definitions and Data Analysis Techniques

The ratios used are grounded in Kasmir (2018) and Brigham and Houston (2021), covering seven categories as presented in Table 1. All monetary values were standardized to IDR billion for cross-issuer comparison purposes, since the original financial statements use different reporting units. Data analysis was conducted descriptively and comparatively by ranking the ratio results across companies for 2025, interpreting them based on theoretical frameworks and prior research, and then synthesizing findings across categories to build a more complete understanding of each company's performance. No inferential statistical testing was applied, so the relationships reported in this study are read as associations rather than as causal relationships.

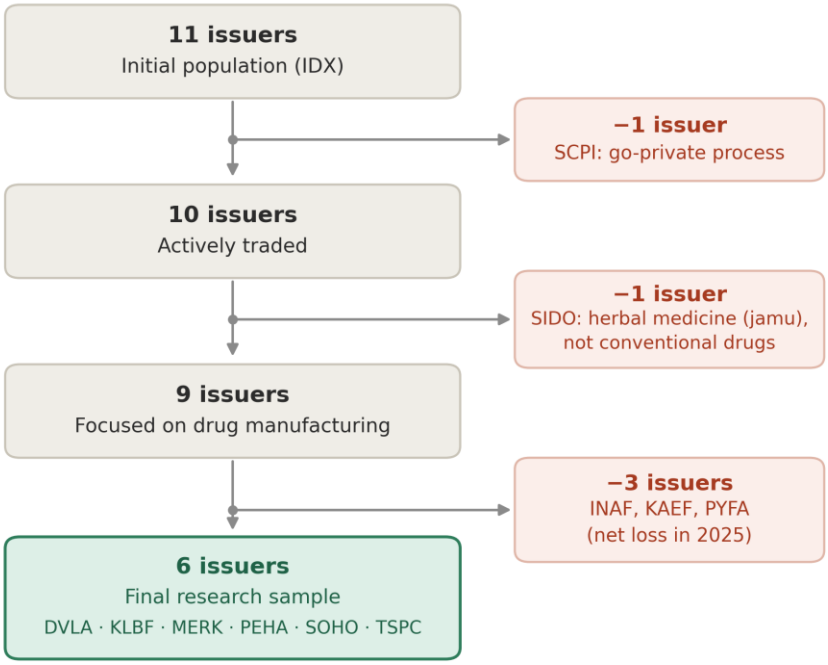


Figure 1. Sample selection and elimination flow of listed pharmaceutical companies on the Indonesia Stock Exchange, fiscal year 2025

Table 1. Operational Definitions of Study Ratios

Category	Indicator	Formula
Production Cost Efficiency	COGS/Sales; GPM; Inventory Turnover	COGS÷Sales; Gross Profit÷Sales; COGS÷Inventory
Asset Utilization Effectiveness	ROA; TATO; NPM	Net Income÷Total Assets; Sales÷Total Assets; Net Income÷Sales
Productivity & Capacity	FATO; Sales/Profit per Employee	Sales÷Fixed Assets; Sales or Profit÷Number of Employees
R&D Investment	R&D Intensity	R&D Expense÷Sales
Human Resources	Employee Turnover Rate	As disclosed by each company
Solvency	DER; DAR; Current Ratio	Liabilities÷Equity; Liabilities÷Assets; Current Assets÷Current Liabilities
Import & Exchange Rate Dependence	Profit Sensitivity to Exchange Rate	Impact of exchange rate change÷Profit Before Tax (normalized per 1%)

COGS: Cost of Goods Sold; GPM: Gross Profit Margin; ROA: Return on Assets; TATO: Total Asset Turnover; NPM: Net Profit Margin; FATO: Fixed Asset Turnover; DER: Debt to Equity Ratio; DAR: Debt to Asset Ratio.

Results and Discussion

The results of the financial ratio and operational indicator analysis for the six listed pharmaceutical companies in fiscal year 2025 are presented in the following nine subsections, based on primary data from each company's 2025 Annual Report (PT Darya-Varia Laboratoria Tbk, 2026; PT Kalbe Farma Tbk, 2026; PT Merck Tbk, 2026; PT Phapros Tbk, 2026; PT Soho Global Health Tbk, 2026; PT Tempo Scan Pacific Tbk, 2026).

1. Production Cost Efficiency

DVLA (P. T. D.-V. L. Tbk, 2026) recorded the highest production cost efficiency (Gross Profit Margin/GPM of 54.34%), followed by PEHA (52.35%) and MERK (47.58%), as presented in Table 2. SOHO and TSPC recorded much lower consolidated GPM (16.74% and 38.02%), not because of production inefficiency but because their business model includes low-margin third-party distribution segments. At the segment level, SOHO's Consumer Health GPM reached 75.5%, comparable to a pure manufacturing issuer. Inventory turnover shows a pattern inverse to GPM: SOHO is highest (5.74x), consistent with its high-volume distribution business model, while MERK and DVLA are lowest (1.99x and 2.27x), consistent with a high-margin manufacturing model that holds inventory longer. The national dependence on imported raw materials forms the structural context affecting the entire sample (K. P. R. Indonesia, 2026) .

Table 2. Production Cost Efficiency Ratios 2025

Company	COGS/Sales (%)	GPM (%)	Inventory Turnover (x)
DVLA	45.66	54.34	2.27
PEHA	47.65	52.35	2.93
MERK	52.42	47.58	1.99
KLBF	60.21	39.79	3.04
TSPC	61.98	38.02	3.85
SOHO	83.26	16.74	5.74

COGS: Cost of Goods Sold; GPM: Gross Profit Margin. Companies are ranked by GPM.

2. Asset Utilization Effectiveness

MERK recorded the highest ROA (19.17%) with a margin-driven pattern (NPM of 20.31%, the highest), while SOHO showed a turnover-driven pattern (TATO of 1.75x, the highest) compensating for its thin margin, as presented in Table 3. KLBF and TSPC showed a balanced pattern between margin and asset turnover. The most notable finding concerns PEHA: despite being efficient in production costs (Table 2, ranked second), PEHA recorded the lowest ROA (1.98%) and the lowest TATO (0.68x) in the entire sample. This indicates that production cost efficiency does not automatically translate into asset utilization effectiveness, consistent with the conceptual framework distinguishing these two dimensions (Naibaho et al., 2023) The most plausible source of this gap is examined further in the solvency section.

Table 3. Return on Assets (ROA), Total Asset Turnover (TATO), and Net Profit Margin (NPM) 2025

Company	ROA (%)	TATO (x)	NPM (%)
MERK	19.17	0.94	20.31
KLBF	12.20	1.15	10.60
TSPC	11.32	1.07	10.57
SOHO	9.75	1.75	5.57
DVLA	6.98	0.95	7.35
PEHA	1.98	0.68	2.92

Companies are ranked by ROA.

3. Productivity and Production Capacity

Disclosure of production capacity is not uniform across companies. Only MERK discloses explicit capacity utilization (63.5%), while DVLA reports that a number of key pieces of equipment operate above 90% utilization. TSPC specifically discloses its use of the Overall Equipment Effectiveness (OEE) method to measure production line performance, consistent with production-effectiveness measurement practices common in the Indonesian pharmaceutical industry (Purnama, 2024) Based on the productivity ratios that can be calculated uniformly, as presented in Table 4, SOHO recorded the highest Fixed Asset Turnover (FATO) of 26.92x, in line with its volume-intensive distribution business model, while MERK recorded the highest profit per employee (IDR670.0 million) with a lean organizational structure. PEHA again occupied the weakest position on all three productivity ratios.

Table 4. Productivity Ratios 2025

Company	FATO (x)	Sales/Employee (IDR million)	Profit/Employee (IDR million)
SOHO	26.92	3,457.1	192.5
MERK	6.09	3,298.5	670.0
DVLA	4.35	1,268.0	93.2
KLBF	4.24	2,142.6	227.1
TSPC	4.17	3,157.8	333.9
PEHA	2.03	873.6	25.5

FATO: Fixed Asset Turnover. Companies are ranked by FATO.

4. Research and Development Investment

KLBF stands out as the R&D leader in nominal scale, directed toward biologic drugs and oncology, as presented in Table 5. PEHA recorded the highest R&D intensity (2.82% of sales), even though the nominal figure is small and declined 46.0% from the previous year. DVLA and MERK do not disclose the nominal amount of R&D expense, although they describe their R&D activities narratively. This indicates a disclosure-practice gap that limits consistent comparison of innovation investment across the sector, even though the government has provided a super deduction incentive of up to 300% to encourage such investment (K. P. R. Indonesia, 2026)

These figures should be read against the economics of pharmaceutical innovation. Estimates of the capitalized cost of bringing a single new molecular entity to market run into the billions of US dollars (DiMasi et al., 2016) , and the distribution of returns across approved products is highly skewed, with a small minority of products covering the development cost of an entire portfolio (Grabowski & Vernon, 1990). KLBF's R&D expenditure of approximately IDR494.5 billion, the largest in the sample, is equivalent to only a small fraction of the development cost of one new drug on those estimates. The R&D intensity figures in Table 5 should therefore not be interpreted as capacity for original drug discovery. They more plausibly reflect investment in formulation development, generic and biosimilar development, bioequivalence studies, and process improvement, which is the realistic innovation frontier for issuers of this scale. Read this way, PEHA's leading R&D intensity of 2.82% is less an indicator of innovative strength than a reflection of a small revenue denominator, since the same expenditure represents a far smaller share of sales at KLBF.

Table 5. Research and Development (R&D) Expense Intensity 2025

Company	R&D Expense (IDR billion)	R&D/Sales (%)
PEHA	26.55	2.82
KLBF	≈494.5*	1.40*
SOHO	28.06	0.26
TSPC	2.50	0.018
DVLA	Not disclosed	–
MERK	Not disclosed	–

*Estimated from the percentage disclosed by KLBF management; the explicit nominal figure is not stated in the report. Companies are ranked by R&D intensity.

5. Human Resources: Employee Retention

TSPC and MERK recorded the lowest turnover, as presented in Table 6, consistent with their high profit per employee in Table 4 and in line with findings that employee turnover is associated with the operational efficiency of pharmaceutical companies (Fatmawati & Ismunawan, 2026) DVLA and PEHA recorded the highest turnover. For PEHA, this finding complements a consistent cross-category pattern pointing to structural challenges in asset effectiveness (Table 3) and productivity (Table 4).

From a resource-based perspective, human capital becomes a source of sustained competitive advantage only when it is valuable, rare, and difficult to imitate or substitute (Barney, 1991) In GMP-regulated pharmaceutical manufacturing, a substantial share of the operational knowledge that determines batch consistency, deviation handling, and audit readiness is tacit and accumulated on the job, so it leaves the firm together with the employee. The retention gap between TSPC (5.6%) and PEHA (approximately 17.3%) is therefore not merely a matter of recruitment and replacement cost. It also determines whether process knowledge is retained long enough to compound into a durable operational advantage, which offers one plausible explanation for the persistent productivity gap between the two companies in Table 4.

Table 6. Number of Employees and Turnover Rate 2025

Company	Number of Employees	Turnover Rate 2025 (%)
TSPC	4,435	5.6
MERK	364	7.0
SOHO	3,118	7.1
KLBF	16,487	9.28
DVLA	1,760	16.0
PEHA	1,077	≈17.3*

*Calculated by the authors (186 employees who left ÷ year-end employee headcount), as the company does not disclose an explicit percentage figure. Companies are ranked by turnover rate.

6. Solvency and Capital Structure

PEHA recorded the most extreme DER (224.51%) and the highest DAR (69.18%) in the entire sample, almost ten times KLBF's DER, which is the most conservative at 24.15%, as presented in Table 7. This capital structure is the most plausible explanation for PEHA's ROA lagging far behind (Table 3), since interest expense from a large debt base erodes operating profit, even though PEHA's short-term liquidity remains adequate (Current Ratio of 228.67%). KLBF, MERK, and TSPC, the three companies with the highest ROA (Table 3), are also the three most conservative companies in terms of capital structure. This points to an association between a conservative capital structure and better asset utilization effectiveness within this study's sample (Brigham & Houston, 2021) Because the design is descriptive and covers only six companies in a single year, this pattern should be read as an association rather than as evidence of causation. Its theoretical interpretation is developed in subsection 9.

Table 7. Debt to Equity Ratio (DER), Debt to Asset Ratio (DAR), and Current Ratio (CR) 2025

Company	DER (%)	DAR (%)	Current Ratio (%)
KLBF	24.15	19.45	346.85
MERK	30.39	23.31	425.85
TSPC	35.46	26.18	314.68
DVLA	58.82	37.04	244.81
SOHO	138.38	58.05	163.33
PEHA	224.51	69.18	228.67

Companies are ranked by DER, from the most conservative to the most leveraged.

7. Dependence on Imported Raw Materials and Exchange Rate Exposure

The 80–94% dependence on imported raw materials (K. P. R. Indonesia, 2026) makes exchange rate risk an inherent structural risk for the entire sample. As presented in Table 8, DVLA shows the most systematic approach through a natural hedge derived from its own export revenue, and also reports the largest profit sensitivity among the companies that disclose quantitative data, at approximately IDR657.8 million per 1% movement in the IDR/USD rate (IQVIA, 2026; PT Darya-Varia Laboratoria Tbk, 2026). PEHA shows a small residual exposure of approximately IDR30.9 million per 1% (PT Phapros Tbk, 2026), consistent with its claim that the majority of its revenue is already Rupiah-denominated. SOHO, TSPC, and KLBF do not present a numerical sensitivity table, so the comparison of exposure magnitude in this category is partial and cannot be ranked across the full sample.

Table 8. Exchange Rate Risk Mitigation Strategies and Profit Sensitivity 2025

Company	Disclosed Mitigation Strategy	Profit Sensitivity per 1% Movement in IDR/USD (IDR million)
DVLA	USD funds from exports used as a natural hedge	≈657.8
KLBF	Pays some suppliers in their country-of-origin currency	Not disclosed
TSPC	Minimizes foreign-currency loans; diversifies cash across currencies	Not disclosed
PEHA	Exposure stated as minimal (majority of revenue in Rupiah)	≈30.9
SOHO	Exposure from foreign-currency cash, receivables, and payables	Not disclosed
MERK	No specific strategy disclosed	Not disclosed

Sensitivity figures are the authors' normalization of the foreign-currency risk sensitivity analysis disclosed in the Notes to the Consolidated Financial Statements (financial risk management – foreign currency risk) of the 2025 Annual Report of DVLA and PEHA, expressed as the change in profit before tax per 1% movement in the IDR/USD exchange rate. Companies marked "Not disclosed" do not present a numerical sensitivity table in their 2025 Annual Report.

8. Cross-Category Synthesis

To make the divergence between efficiency and effectiveness visible across all categories at once, each company was ranked from 1 (best) to 6 (weakest) in five categories that can be ranked uniformly across the full sample: production cost efficiency (GPM), asset utilization effectiveness (ROA), productivity (profit per employee), employee retention (turnover rate, inverted so that lower turnover ranks better), and solvency (DER, inverted so that lower leverage ranks better). R&D intensity is reported for information but excluded from the mean rank, because DVLA and MERK do not disclose nominal R&D expense and their ranks would therefore be undefined. Exchange rate exposure is likewise excluded, since only two companies disclose quantitative sensitivity. Table 9 presents the result.

Table 9. Cross-Category Performance Ranking Matrix 2025 (1 = best, 6 = weakest)

Company	GPM	ROA	Profit/ Emp.	Reten-tion	Sol-vency	Mean Rank	R&D Int.
MERK	3	1	1	2	2	1.8	nd
KLBF	4	2	3	4	1	2.8	2
TSPC	5	3	2	1	3	2.8	4
DVLA	1	5	5	5	4	4.0	nd
SOHO	6	4	4	3	5	4.4	3
PEHA	2	6	6	6	6	5.2	1

nd: not disclosed. The mean rank is calculated across the five rankable categories and excludes R&D intensity, which is shown for information only. Companies are ordered by mean rank.

The matrix confirms the central argument of this study in a single view. MERK holds the most consistent position (mean rank 1.8) without leading in production cost efficiency, where it ranks only third. DVLA displays the sharpest internal contradiction: first in production cost efficiency but fifth in asset effectiveness, productivity, and retention alike, producing a mean rank of 4.0. PEHA is the clearest case of all, ranking second in production cost efficiency yet last in every other rankable category, which yields the weakest mean rank in the sample (5.2). An assessment based on gross margin alone would therefore place DVLA and PEHA among the sector's strongest performers, whereas the multi-dimensional view places them fourth and sixth. This gap between the single-dimension and multi-dimensional readings is the practical consequence of treating efficiency and effectiveness as one construct rather than two, and it is the main managerial risk this study seeks to make visible.

The matrix also shows that the two dimensions are not simply unrelated. The three companies with the strongest mean ranks (MERK, KLBF, TSPC) are also the three most conservatively financed, whereas the two weakest (SOHO, PEHA) are the two most leveraged. Solvency rank aligns with mean rank across the entire sample, which no other single category does. This makes capital structure the most systematic discriminator of overall performance among the six companies studied, and it motivates the theoretical interpretation developed in the following subsection.

9. Theoretical Interpretation of the Capital Structure Pattern

The association between conservative capital structure and higher asset utilization effectiveness observed in Tables 7 and 9 can be read through the established capital structure literature. Modigliani and Miller (1958) first showed that, under perfect capital markets, firm value is independent of the financing mix, and their subsequent correction introduced the corporate tax shield, which makes debt value-enhancing up to a point (Modigliani & Miller, 1963) Trade-off reasoning extends this by balancing the tax shield against the expected costs of financial distress, implying an interior optimum rather than a corner solution (Myers & Majluf, 1984) . PEHA's DER of 224.51%, roughly nine times KLBF's, lies far enough beyond the sample's central tendency to suggest that distress-related costs, such as higher borrowing spreads, constrained working capital, and reduced strategic flexibility, outweigh whatever tax shield the debt generates. Agency theory offers a complementary reading: at high leverage, conflicts between shareholders and creditors raise monitoring costs and can distort investment decisions (Jensen & Meckling, 1976) , which is consistent with PEHA simultaneously recording the sample's weakest asset turnover and a 46.0% decline in R&D expense.

An important caveat follows from pecking order reasoning. If firms prefer internal financing and resort to debt only when retained earnings are (Myers & Majluf, 1984), then high profitability itself produces low leverage rather than the reverse. Under this reading, KLBF, MERK, and TSPC may carry conservative capital structures because they are profitable, rather than being profitable because they are conservatively financed. Cross-sectional evidence on the determinants of capital structure consistently finds profitability to be negatively related to leverage (Titman & Wessels, 1988), a pattern that holds across major economies (Rajan & Zingales, 1995), and it is precisely the pattern visible in Table 7. The direction of the relationship therefore cannot be resolved by the descriptive, single-year design used here. The finding is accordingly reported as a robust association rather than as a causal mechanism, and this constraint is restated among the study limitations below.

Study Limitations

Seven limitations should be borne in mind when interpreting the findings of this study.

First, the sample is subject to selection bias. Three issuers (INAF, KAEF, and PYFA) were excluded solely because they recorded a net loss in 2025. Although this exclusion was necessary to keep profitability-based ratios interpretable, it systematically removes the weakest performers from the sample and therefore risks overstating the average efficiency and effectiveness of the sector. The figures

reported here describe six profitable issuers, not the listed pharmaceutical sector as a whole.

Second, the study uses a single fiscal year (2025) with a cross-sectional design. It therefore cannot identify trends, structural shifts, or the persistence of performance over time, and a single year may reflect non-recurring events in any given company.

Third, with only six observations and a purely descriptive analysis, no inferential statistical testing was possible. All patterns reported, including the association between conservative capital structure and higher ROA, are descriptive associations and must not be read as causal relationships.

Fourth, and following directly from the previous point, the direction of the relationship between capital structure and asset utilization effectiveness cannot be established. Pecking order reasoning implies that profitability may drive leverage rather than the reverse (Myers & Majluf, 1984), and the design used here cannot distinguish between the two. Any managerial inference drawn from this association should be treated as provisional.

Fifth, business-model heterogeneity limits the comparability of certain ratios. Consolidated Gross Profit Margin is not strictly comparable between issuers dominated by manufacturing (DVLA, MERK) and issuers with a large third-party distribution segment (SOHO, TSPC), even though segment-level data partially mitigate this problem. The ranking matrix in Table 9 inherits this limitation.

Sixth, non-financial disclosure practices are not standardized. R&D expense is not disclosed in nominal terms by DVLA and MERK, KLBF's figure is an estimate derived from a disclosed percentage, production capacity utilization is disclosed explicitly only by MERK, PEHA's turnover rate had to be calculated by the authors, and quantitative exchange rate sensitivity is disclosed by only two companies. These gaps forced the exclusion of two categories from the ranking matrix and make several comparisons partial rather than complete.

Seventh, the study relies entirely on secondary data. Although the financial statements are audited, the non-financial narrative sections are self-reported by management and were not independently verified, and no primary data such as interviews with company management were collected to corroborate the operational interpretations offered here.

Conclusion

This study shows that efficiency and effectiveness are two distinct financial performance dimensions that do not always move in the same direction among Indonesian listed pharmaceutical companies in 2025. DVLA and PEHA excel in production cost efficiency, yet MERK, KLBF, and TSPC lead in asset utilization effectiveness, productivity, and human resource retention. The cross-category

ranking matrix quantifies this divergence: an assessment based on gross margin alone would rank DVLA first and PEHA second, whereas the multi-dimensional mean rank places them fourth and sixth. PEHA's case is the clearest illustration, ranking second in production cost efficiency yet last in every other rankable category, a pattern most plausibly associated with a capital structure carrying extreme leverage (Debt to Equity Ratio of 224.51%, far above every other sample company) rather than with operational factors alone.

Capital structure emerged as the most systematic discriminator of overall performance in this sample, being the only single category whose ranking aligns with the multi-dimensional mean rank across all six companies. The established capital structure literature supports two competing readings of this alignment, one in which excessive leverage erodes returns through distress and agency costs, and one in which profitability itself drives the choice of conservative financing. The descriptive single-year design used here cannot adjudicate between them, so the relationship is reported as an association.

From an industrial pharmacy management perspective, this study also reveals structural challenges facing the entire sample, namely a high dependence on imported raw materials and heterogeneity in non-financial disclosure practices covering production capacity, R&D intensity, and exchange rate sensitivity. These gaps limit transparency and the comparability of innovation performance across companies, and they were severe enough to force two categories out of the ranking matrix. Taken together, these findings confirm that performance evaluation of pharmaceutical issuers cannot rely on a single performance proxy. It must consider the efficiency and effectiveness dimensions separately, complemented by the pharmaceutical operational and financing context underlying those ratio figures. Given the limitations set out above, these conclusions apply to the six profitable issuers examined and should not be extended to the listed pharmaceutical sector as a whole.

Suggestions

For pharmaceutical company management, the findings suggest that operational efficiency programs should be accompanied by an evaluation of capital structure, because production cost efficiency can be neutralized at the bottom line by an excessive interest burden, as PEHA's case illustrates. Issuers carrying high leverage are advised to prioritize capital restructuring or debt refinancing before pursuing further operational efficiency initiatives. Management should also treat employee retention as an operational rather than purely administrative indicator, given the tacit and firm-specific nature of process knowledge in GMP-regulated manufacturing.

For regulators and industry associations, greater standardization of non-financial disclosure in annual reports is recommended, particularly for production capacity utilization, nominal R&D expense, employee turnover rate, and quantitative foreign exchange sensitivity. Standardized disclosure would allow innovation and operational performance across the sector to be compared consistently, and it would strengthen the evidence base for policies such as the R&D super deduction incentive and the acceleration of Active Pharmaceutical Ingredient localization. As this study shows, the absence of such standards is not a minor inconvenience: it removed two of seven categories from the comparative ranking.

For future research, a multi-year panel design is recommended so that trends and the persistence of performance can be observed, and so that the direction of the relationship between capital structure and asset utilization effectiveness can be tested rather than merely described. Subsequent studies could also include loss-making issuers by adopting efficiency measures that remain interpretable when profit is negative. Data Envelopment Analysis is the natural candidate, building on the measurement of productive efficiency (Farrell, 1957) and its constant-returns (Charnes et al., 1978) and variable-returns-to-scale (Banker et al., 1984) formulations. Complementing the ratio analysis with primary data from company management would further strengthen the operational interpretation of the ratio figures.

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Author Contribution

TSSK: Investigation; manuscript writing. L: Manuscript review and editing.

Ethics Approval

This study did not involve human subjects or experimental animals. All data analyzed are secondary data obtained from the audited 2025 Annual Reports published publicly by each company, so ethical clearance was not required.

Conflict of Interest

None to declare.

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