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The Effect of Cash Holding, Capital Structure, and Company Size on Profitability in the Pharmaceutical Sub-Industry Listed on the Indonesia Stock Exchange

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Abstract: The primary objective of this research is to examine the influence of cash holdings, capital structure, and company size on the profitability of pharmaceutical sub-industry firms listed on the Indonesia Stock Exchange (IDX) between 2020 and 2024. In this study, profitability is proxied by Return on Assets (ROA), while cash holdings are calculated using the ratio of cash to total assets. Furthermore, capital structure is represented by the Debt to Asset Ratio (DAR), and company size is determined by the natural logarithm of total assets. This research utilizes secondary data derived from annual financial reports retrieved from the official Indonesia Stock Exchange website. The data analysis employs panel data regression, which includes model selection stages via the Chow test, Hausman test, and Lagrange Multiplier test. The empirical results demonstrate that cash holdings, capital structure (DAR), and company size partially affect the profitability of companies within the pharmaceutical sub-industry. Simultaneously, these three independent variables are found to collectively impact profitability. These findings suggest that maintaining optimal cash management, a sound asset-based funding structure, and appropriate company scale play crucial roles in enhancing corporate profitability performance. Consequently, this study is expected to provide valuable insights for company management in shaping financial policies and assist investors in evaluating the financial performance of pharmaceutical companies in the Indonesian capital market.

Keyword: Cash Holding, Debt to Asset Ratio (DAR), Company Size, Profitability, Pharmaceutical Industry.

INTRODUCTION

The pharmaceutical industry is a strategic sub-industry in the Indonesian economy, playing a crucial role in ensuring the availability of healthcare products and supporting national resilience in the health sector. Following the COVID-19 pandemic, this sub-industry has experienced significant growth, marked by an increase in the number of pharmaceutical companies listed on the Indonesia Stock Exchange (IDX) and increased investor attention to

the healthcare sector. However, the growth in the number of issuers and the increasing demand for healthcare products have not always been accompanied by stable financial performance, particularly in terms of company profitability.

Financial data from pharmaceutical companies shows a significant disparity in profitability between companies. Some companies are able to maintain high profits, while others experience losses despite their substantial assets. This phenomenon indicates that asset size or company scale does not automatically guarantee profitability. This situation underscores the importance of effective financial management, particularly regarding liquidity policies, funding structures, and asset utilization.

Profitability is a key indicator for assessing a company's financial performance and business sustainability. A strong level of profitability reflects management's effectiveness in managing resources and is a positive signal for investors and stakeholders (Sitha, 2021). However, previous studies have shown that pharmaceutical company profitability is influenced by various internal factors, including cash holdings, capital structure, and company size, with inconsistent results.

Cash holding plays a crucial role in maintaining a company's liquidity and operational flexibility. While adequate cash availability allows companies to meet short-term obligations and fund investment opportunities, excessively high cash holdings can potentially incur opportunity costs and reduce the efficiency of fund utilization (Putri et al., 2025). Capital structure is also a crucial factor, as excessive debt can increase interest expenses and financial risk, negatively impacting profitability (Anggraeni & Rahyuda, 2020; Bastian et al., 2024). While firm size is often associated with economies of scale and broader access to funding, empirical findings indicate that the effect of firm size on profitability varies, with both positive and negative effects (Lubis et al., 2022; Ulfah et al., 2024).

Inconsistencies in previous research indicate a research gap regarding the influence of cash holdings, capital structure, and company size on profitability, particularly in the pharmaceutical subsector in Indonesia. Furthermore, changes in post-pandemic economic conditions and tightening regulations in the pharmaceutical sector have the potential to increase cost pressures and corporate funding needs, further reinforcing the urgency of this research.

Referring to the phenomena described above, this study focuses on analyzing the extent to which cash holdings, capital structure, and company size influence the profitability of pharmaceutical companies listed on the Indonesia Stock Exchange between 2020 and 2024. Practically and theoretically, this study is expected to contribute new empirical evidence to the financial management literature and serve as an important reference for stakeholders—both company management and investors—in making investment and financing decisions in the healthcare sector.

METHOD

This study adopted two types of variables: independent and dependent. As explained by Fauzi et al. (2024), a dependent variable is a consequence influenced by an independent variable. The focus of the dependent variable in this research is profitability, while the factors influencing it (independent) include cash holdings, capital structure, and company size.

The population of this study comprised all pharmaceutical business entities listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. The sample was drawn using a purposive sampling method, with the following requirements: (1) companies consistently listed on the IDX throughout the observation period, (2) fully publishing annual financial reports, and (3) possessing complete data related to the research variables. This process resulted in a total sample of 21 companies with annual data format.

The operational definitions of the variables are as follows: The dependent variable, profitability, is measured using the Return on Assets (ROA) proxy, which is the ratio of net profit after tax divided by total assets. For the independent variables, cash holdings are assessed

by the ratio of cash to total assets, capital structure uses the Debt to Asset Ratio (DAR) indicator, and company size is quantified by the natural logarithm of total assets.

The analysis technique applied was panel data regression with the help of Stata software version 17. The selection of the most appropriate regression model (between Common, Fixed, or Random Effects) was carried out through the Chow Test, Lagrange Multiplier (LM) Test, and Hausman Test. Furthermore, to ensure the model is BLUE (Best Linear Unbiased Estimator), classical assumption tests were carried out consisting of a multicollinearity-free test, a heteroscedasticity test, and an autocorrelation test.

RESULTS AND DISCUSSION

Results

Descriptive Statistics

Table 1 summarizes the descriptive statistics of the research variables. The average dividend policy, proxied by the dividend payout ratio, was 0.1217. This indicates that Islamic commercial banks in Indonesia distributed dividends of approximately 12% of net profit during the study period. The gender diversity of the board of commissioners (GDC) and the board of directors (GDD) averaged 0.2934 and 0.2516, respectively, meaning that the average proportion of women on the board of commissioners and the board of directors was 29.34% and 25.16%, respectively. Meanwhile, profitability (ROA) averaged 1.56%, indicating an average ratio of net profit to total assets of 1.56%. Overall, these results indicate that dividend policy and gender representation in pharmaceutical sub-industry companies are relatively low, while the financial characteristics of companies, reflected in cash management, capital structure, and company size, show considerable variation during the study period.

Tabel 1. Statistik Deskriptif

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	45	.0388	.2109938	-.949	.31
CashHolding	45	.1489778	.094684	.016	.357
DAR	45	.5136444	.4958451	.115	2.851
Size	45	2.330.087	4.951.415	15.163	31.013

Source: data processed by the author (2026)

Correlation Matrix

The correlation matrix is presented in Table 2. Based on these results, cash holdings have a positive correlation with profitability (ROA), indicating that higher cash holdings tend to be followed by increased company profitability. Conversely, capital structure, as proxied by the Debt to Asset Ratio (DAR), shows a strong negative correlation with ROA, indicating that a higher proportion of debt to assets tends to decrease company profitability. Company size also has a negative correlation with ROA, indicating that companies with larger asset sizes do not necessarily have higher levels of profitability. Furthermore, cash holdings have a negative correlation with DAR, while Size shows a positive correlation with DAR. In general, the correlation coefficient values between the independent variables are still below the critical limit, thus not indicating a multicollinearity problem in the research model.

Table 2. Correlation Matrix

Variable	Mean	Std. Dev.	Min	Max
ROA	10000			
CashHolding	0.4900	1.0000		
DAR	-0,8750	-0.5405	1.0000	
Size	-0.3031	0.0303	0.2182	1.0000

Source: data processed by the author (2026)

Multicollinearity Test

The results of the multicollinearity test in Table 4 show that all correlation values between independent variables are below 0.80, so it can be concluded that there is no multicollinearity problem in the model.

Table 4. Multicollinearity Test

Variable	(1)	(2)	(3)
(1) CashHolding	1.0000		
(2) DAR	-0.5405	1.0000	
(3) Size	0.0303	0.2182	1.000

Source: data processed by the author (2026)

Heteroscedasticity Test

The heteroscedasticity test in Table 5 was performed using the Breusch-Pagan/Cook-Weisberg test. The test results showed a probability value of 0.0000, which is less than 0.05, so the null hypothesis stating a constant error variance is rejected. Therefore, it can be concluded that the regression model contains heteroscedasticity. Therefore, further estimation uses robust standard errors to ensure consistent and reliable parameter testing in this research's panel regression analysis.

Table 5. Heteroscedasticity Test

```
Breusch-Pagan/Cook-Weisberg test for heteroskedasticity
Assumption: Normal error terms
Variable: Fitted values of ROA

H0: Constant variance

    chi2(1) = 104.57
Prob > chi2 = 0.0000
```

Source: data processed by the author (2026)

Panel Regression Results

Table 6 shows the estimation results of the Common Effects Model with Robust Standard Error.

Table 6. Estimation results of the Common Effects Model with Robust Standard Error

```
Linear regression                               Number of obs     =         45
                                                F(3, 41)          =      15.78
                                                Prob > F          =     0.0000
                                                R-squared         =     0.7805
                                                Root MSE          =     .10239

------------------------------------------------------------------------------
             |               Robust
         ROA |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 CashHolding |   .1121102   .1700393     0.66   0.513    -.2312911    .4555114
         DAR |  -.3490855   .1021123    -3.42   0.001    -.5553055   -.1428655
        Size |  -.0053553   .0019795    -2.71   0.010     -.009353   -.0013576
       _cons |   .3315417   .0556455     5.96   0.000     .2191634     .44392
------------------------------------------------------------------------------
```

Source: data by the author (2026)

Based on the results of the regression estimation, the best model equation obtained is:
ROA = 0,3315417 + 0,1121102 CashHolding – 0,3490855 DAR – 0,0053553 Size

The constant value of 0.3315417 indicates that if the Cash Holding, Debt to Asset Ratio (DAR), and Company Size variables are zero, then the company's profitability value proxied by ROA is 0.3315417. The Cash Holding regression coefficient of 0.1121102 indicates that cash holding has a positive effect on profitability, but the probability value of 0.513 which is greater than 5% indicates that the effect is not statistically significant. Furthermore, the Debt to Asset Ratio (DAR) regression coefficient of -0.3490855 indicates that leverage has a negative effect on profitability, and the probability value of 0.001 which is smaller than 5% makes it easier that the effect is statistically significant. Meanwhile, the company size regression coefficient of -0.0053553 indicates that company size has a negative effect on profitability, with a probability value of 0.010 which is smaller than 5% so that the effect is statistically significant.

Coefficient of determination (R2)

The coefficient of determination is used to measure the ability of independent variables to explain variations in the dependent variable. The R2 value of 0.7805 indicates that the cash holding, debt to asset ratio (DAR), and company size variables are able to explain variations in company profitability, proxied by ROA, by 78.05%, while the remaining 21.95% is explained by other factors outside the research model.

Discussion

The Effect of Cash Holding on Profitability

The results of this study indicate that cash holdings have a positive but insignificant effect on profitability (ROA). The positive coefficient indicates that cash holdings have the potential to support company performance by increasing financial flexibility and maintaining liquidity. However, this effect is not statistically strong enough to indicate optimal use for productive activities that can increase asset effectiveness in generating profits.

This insignificance can be explained through the trade-off theory approach, where cash holding provides benefits as a buffer against financial risk, but also incurs opportunity costs when cash is not allocated to return-generating investments. During the 2020-2024 period, pharmaceutical companies tended to be conservative by holding operational cash, so profitability was more influenced by operational efficiency and financial structure. This finding aligns with Putri et al. (2025) and Sijabat et al. (2023), but differs from Prasetyowati & Oetomo, 2019.

The Influence of Capital Structure on Profitability

The results of regression testing using the Common Effects Model with robust standard errors indicate that capital structure has a negative and significant effect on profitability (ROA). This finding indicates that increasing leverage, as reflected in the Debt to Asset Ratio (DAR), significantly reduces a company's ability to generate profits from its assets. A high proportion of debt leads to increased interest expenses and payment obligations, thereby reducing net income and depressing the profitability performance of pharmaceutical sub-industry companies.

These results align with the trade-off theory, which states that debt utilization can provide benefits in the form of a tax shield, but at a certain level, it actually increases financial distress

and financial burdens, negatively impacting profitability. During the 2020-2024 period, operating cost pressures and post-pandemic demand normalization magnified the negative impact of leverage on pharmaceutical company profits. This finding is consistent with research by Rasubala & Van Rate (2020), Mahmuda (2020), and Bastian, Burhanuddin, Rauf, et al. (2024), which found a significant negative effect of capital structure on profitability, but differs from Gunawan et al. (2024), which reported a positive effect.

The Effect of Company Size on Profitability

The results of this study indicate that company size has a negative and significant effect on profitability (ROA). This finding indicates that larger company size, as measured by the natural logarithm of total assets, tends to decrease the company's ability to generate profits from its assets. This suggests that asset size does not necessarily translate into increased management efficiency, thus, the profitability of pharmaceutical companies does not increase in line with company size.

This negative impact is explained by operational inefficiencies and increased organizational complexity in large-scale companies. Companies with substantial assets generally face higher operating costs, more complex bureaucracies, and challenges in managerial control, which ultimately depress net income. During the 2020-2024 period, post-pandemic cost pressures and significant investment needs further exacerbated the negative impact of company size on profitability. This finding is similar to research by Lubis et al. (2022) and Nurdiana (2018), but differs from Ulfah et al. (2024), which found a positive effect of company size on profitability.

CONCLUSION

Using a panel data regression approach using the Common Effects model, complemented by robust standard errors, this study examines the impact of cash holdings, capital structure, and company size on the profitability of pharmaceutical issuers listed on the Indonesia Stock Exchange (IDX) during the 2020-2024 period. The empirical analysis yields two main findings. First, cash holdings have a positive correlation with profitability (ROA), but the effect is not statistically significant. This implies that cash serves more as a liquidity buffer than as a profit driver. Second, capital structure (DAR) and company size have been shown to have a significant negative impact on profitability. This indicates that high leverage and excessively large asset scale can actually suppress a company's efficiency in generating profits. Therefore, it can be concluded that profitability performance in the pharmaceutical sector is much more dependent on prudent funding structure management and asset efficiency than simply the magnitude of cash accumulation.

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