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FINANCIAL PERFORMANCE EVALUATION OF PHARMACEUTICAL COMPANIES IN SOUTHEAST ASIA: THE INFLUENCE OF CASH CONVERSION CYCLE, SALES GROWTH AND FIRM SIZE DURING THE COVID-19 PANDEMIC

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Abstract

This study investigates the effects of the Cash Conversion Cycle (CCC), sales growth, and firm size on the financial performance of pharmaceutical companies in Southeast Asia during the COVID-19 pandemic (2020–2021). The research focuses on pharmaceutical firms listed in Indonesia, Singapore, and Malaysia, with a total sample of [insert number] companies. Using secondary data collected from Bloomberg, the study employs a quantitative approach and applies multiple linear regression analysis, with Return on Assets (ROA) serving as the indicator of financial performance. The results reveal that CCC has no significant impact on ROA, while sales growth negatively affects ROA, and firm size positively influences ROA. These findings suggest that during periods of global disruption like the pandemic, firm size becomes a key driver of financial resilience, while aggressive sales growth strategies may undermine profitability, possibly due to increased operational risks and supply chain challenges. Although CCC efficiency did not significantly impact profitability in this context, managing firm scale and adapting growth strategies remain crucial for sustaining financial performance during crises.

Keywords: Cash Conversion Cycle, Sales Growth, Firm Size, Return on Assets.

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INTRODUCTION

The COVID-19 pandemic has significantly impacted multiple sectors worldwide, particularly the pharmaceutical industry, which faced considerable challenges in maintaining financial performance under adverse economic conditions. One critical metric for assessing financial performance is Return on Assets (ROA), which reflects how effectively a company utilizes its assets to generate profits. Studies have shown that the pandemic disrupted supply chains and altered demand dynamics, affecting profitability and solvency ratios across industries, including pharmaceuticals (Ichsani et al., 2022). In China, Wang (2023) found that the pandemic had a positive impact on pharmaceutical companies' financial performance, highlighting a complex and context-dependent relationship. Moreover, Zheng et al. (2023) emphasized that corporate culture and social responsibility initiatives during the pandemic played a crucial role in sustaining or enhancing ROA, reinforcing the importance of adaptive capabilities during crises.

Amid these dynamics, understanding the internal factors that influence financial resilience in pharmaceutical firms becomes critical. This study specifically examines the effects of the Cash Conversion Cycle (CCC), sales growth, and firm size on the financial performance of pharmaceutical companies during the COVID-19 pandemic, focusing on firms listed in Indonesia, Singapore, and Malaysia. These countries were selected due to their significant pharmaceutical markets in Southeast Asia and the relative availability of financial data. CCC serves as a proxy for operational cash flow efficiency, while sales growth and firm size are indicators of a company's ability to adapt and thrive under pandemic-induced market pressures. By investigating these factors, this study seeks to provide a deeper understanding of how pharmaceutical firms managed financial challenges during 2020–2021 and to offer insights into strategies for future crisis resilience.

Research consistently shows that efficient CCC is essential for improving profitability. For example Mandalaputri et al., (2021), highlight that CCC significantly affects a company's profitability, indicating that efficient working capital management can improve financial results. Similarly, according to Farhan Ullah et al., (2021), emphasizing the importance of CCC in determining a company's return performance, showing a negative relationship between extended CCC and profitability, underlining the need for companies to manage their working capital effectively. In addition, the relationship between sales growth and financial performance in larger companies often benefits from economies of scale, which can improve their profitability during economic downturns. This statement is supported by Shaik (2021), which reveals a positive relationship between company size and profitability, indicating that larger companies tend to perform better financially.

During a crisis such as COVID-19, the interaction between these variables becomes particularly relevant to the pharmaceutical industry. The ability to maintain a healthy CCC, while achieving sales growth can be critical to survival and profitability in turbulent times. This is in line with findings from Hossain (2020), which states that efficient working capital management is crucial to improving profitability, especially in the manufacturing sector.

This study aims to provide results on how pharmaceutical companies in Indonesia, Singapore and Malaysia can improve their financial performance by increasing the Cash Conversion Cycle (CCC), increasing sales growth, and increasing firm size amidst economic challenges, especially those posed by the COVID-19 pandemic. An effective CCC is crucial, as it directly impacts the liquidity and overall financial health of the company. Studies have shown that shorter CCC can improve profitability and operational efficiency by optimizing working capital management (Chowdhury et al., 2018; Ebben & Johnson, 2011; Napompech, 2012; Ruguru, 2023).

The relationship between CCC and financial performance has been well documented. Previous research has shown that efficient CCC is positively correlated with profitability, as firms that effectively manage their working capital can reduce the time cash is tied up in operations, thereby increasing liquidity and allowing for reinvestment in growth opportunities (Chowdhury et al., 2018; Napompech, 2012; Nobanee et al., 2011; Ruguru, 2023). The pharmaceutical industry, especially in emerging markets such as Southeast Asia, faces unique challenges that require tailored financial strategies. Findings from research on working capital management in the pharmaceutical industry highlight the importance of tailoring these strategies to local economic conditions and market dynamics (Chowdhury et al., 2018; Karim, 2017).

Additionally, scaling up a company can provide a competitive advantage in terms of negotiating better payment terms with suppliers and optimizing inventory management, which is critical to maintaining a healthy CCC (Darkwah et al., 2016; Obradovich et al., 2014). The pandemic has further highlighted the need for pharmaceutical companies to adopt best practices in customer retention and sales growth strategies to address economic fluctuations (Mamada et al., 2023).

The findings of this study provide empirical insights into how these companies navigated the financial dynamics during the pandemic and highlight the importance of resource management to achieve optimal profitability. Researchers have found that pharmaceutical companies can enhance their competitiveness and ensure business continuity during a crisis while contributing to public health. The results of this study collectively suggest that pharmaceutical companies can strengthen their competitiveness and ensure business continuity through effective resource management and strategic investments, even amidst global economic challenges resulting from the COVID-19 pandemic. This study is expected to guide company management in achieving optimal profitability while making significant contributions to public health.

LITERATURE STUDY

Effect of Cash Conversion Cycle on Return on Assets (ROA)

The Cash Conversion Cycle (CCC) is a key financial metric that measures how efficiently a company manages its working capital and cash flow operations. It reflects the time taken to convert inventory and other inputs into cash from sales. A shorter or negative CCC is generally desirable, indicating that a firm collects cash faster than it pays its suppliers, thereby enhancing liquidity and profitability (Basyith et al., 2021). Conversely, a longer CCC may lead to liquidity constraints and reduced profitability.

During the COVID-19 pandemic, pharmaceutical companies faced significant challenges such as fluctuating demand and widespread supply chain disruptions. Effective working capital management, particularly optimizing the CCC, became critical for sustaining financial performance under these adverse conditions (Syaharani & Chalid, 2021). Prior studies have reported a negative relationship between CCC and profitability, suggesting that firms capable of shortening their CCC are better positioned to maintain or enhance financial outcomes during crises. However, much of the existing research focuses on manufacturing sectors in general, with limited empirical evidence specifically addressing the pharmaceutical industry in Southeast Asia during the pandemic period. Given the unique role of pharmaceutical firms in public health and the intensified pressures of the COVID-19 environment, it is essential to reassess whether CCC remains a significant determinant of financial performance in this context. Therefore, this study proposes the following hypothesis:

H1: Cash Conversion Cycle has a negative effect on Return on Assets (ROA)

The Effect of Sales Growth on Return on Assets (ROA)

Sales growth is an important metric for evaluating a company's performance, as it measures the increase in sales over a given period compared to the previous period, usually expressed as a percentage and serves as an indicator of how effectively a company has increased its revenue through the sale of goods or services. A variety of factors can influence sales growth, including marketing strategy, product development, market conditions, and consumer demand, all of which play a significant role in shaping a company's financial trajectory.

Sales growth not only reflects the current performance of the company, but also serves as an indicator of future success. For example, sustainable sales growth is associated with a greater chance of survival for the company (Singh & Mitchell, 2005). In addition, the impact of sales growth affects direct financial returns, it can influence strategic decisions and operational efficiency within the company (Bilal et al., 2016). The research conducted by Nuševa et al., (2024), shows that increasing sales growth rates have a positive impact on ROA, reinforcing the idea that profitability is significantly influenced by sales performance This finding is in line with previous studies that consistently show a positive correlation between sales growth and profitability metrics, including ROA. According to Ramakrishnan et al., (2015), supports this statement, noting that sales growth is an important determinant of company

performance, indicating a significant positive relationship between sales growth and ROA.

H2: Sales Growth has a positive effect on Return on Assets (ROA)

The Effect of Firm Size on Return on Assets (ROA)

Firm size is an indicator that reflects an organization's operational capabilities, financial capabilities, and market position. Generally, total assets can be used to determine a firm size, since it provides insight into its resources. Companies with greater scale have better access to the capital, which can enhance their competitive edge. Conversely, smaller companies often demonstrate greater flexibility and adaptability to market changes, allowing them to respond quickly to evolving consumer demands and competitive pressures.

Previous research according to C. T. Lim et al., (2023), shows a positive statistical relationship between firm size and ROA, confirming that larger firms often achieve better financial performance. In addition, a non-linear relationship between firm size and profitability has been explored, with evidence suggesting that while larger firms generally perform better, returns may not increase proportionally with size. Studies of US public companies show that returns are positively correlated with firm size (Lee, 2009).

H3: Firm Size has a positive effect on Return on Assets (ROA)

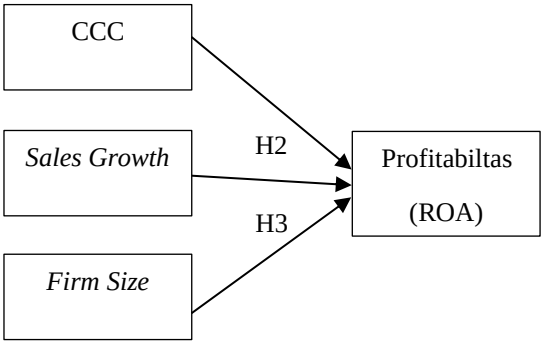

Figure 1. Framework of Thought

RESEARCH METHODOLOGY

RESEARCH METHODOLOGY

This study investigates the relationship between corporate profitability and various independent variables, specifically focusing on the pharmaceutical sector in Indonesia, Singapore, and Malaysia during the period 2020-2021. The dependent variable, corporate profitability is quantified by utilizing the ROA, while the independent variables include CCC, sales growth, and firm size. This study uses secondary data obtained from the company's annual report and applies a quantitative method, taken from Bloomberg to provide a solid basis for the analysis.

The selection of pharmaceutical companies for this study was conducted using purposive sampling, a method that allows researchers to select subjects based on certain characteristics, thus ensuring a representative sample. This technique resulted in three pharmaceutical companies from Indonesia, two from Singapore, and two from Malaysia, which is in line with the research focus on the pharmaceutical industry in these regions. The use of purposive sampling is supported by previous studies that emphasize its effectiveness in obtaining relevant data for specific research purposes (Alfinur & Hidayat, 2021; Pramesti et al., 2021).

This study uses multiple linear regression analysis with the ordinary least squares (OLS) method, which functions to estimate a line by minimizing the sum of the squares of errors in each observation of the line (Gujarati et al., 2015). Systematically, the multiple linear regression analysis equation using the OLS method can be written as follows:

$$ROA = \alpha + \beta_1 CCC + \beta_2 SG + \beta_3 FS + \varepsilon$$

Where:

ROA	= Return On Asset
α	= Constants
β	= Regression Coefficient
CCC	= Cash Conversion Cycle
SG	= Sales Growth
FS	= Firm Size
ε	= Error

After conducting multiple linear regression analyses, the next step is hypothesis testing. This hypothesis testing aims to assess the accuracy of the sample regression function in predicting actual values statistically, which is measured through the coefficient of determination, F statistic value, and t statistic value (Gujarati et al., 2015).

RESULT AND DISCUSSION

Descriptive Statitical Analysis

The first step in data analysis is to determine the descriptive statistics of the data studied. Table 1 shows descriptive statistics that include the minimum value, maximum value, average, and standard deviation or level of variation of the data.

Table 1. Results of Descriptive Statistical Analysis

	ROA (Y)	CCC (X1)	SG (X2)	FS (X3)
Mean	-0.582	133.816	17.680	28.781
Median	5.920	119.180	9.055	28.970
Maximum	14.390	303.310	83.060	30.880
Minimum	-48.090	16.610	-5.510	25.890
Std. Dev.	20.110	92.091	23.473	1.649

Source: data processed by *EViews 12*

Classical Assumption Test

Normality Test

The results of the normality test are carried out on the residual variables in the regression model to determine whether the variables follow a normal distribution or not.

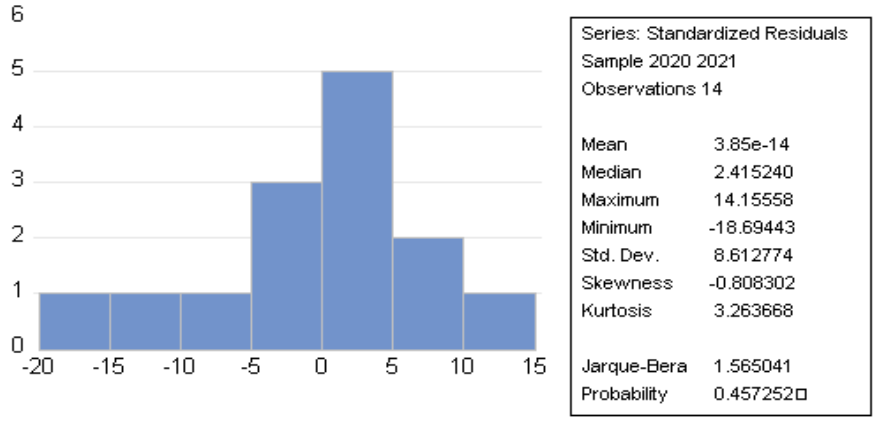

Table 2. Normality Test Results

The test results shown in Table 2 show that the probability value is greater than 0.10. This is in accordance with the test rules, where the probability value is 0.457252, so it can be concluded that the data is normally distributed.

Hypothesis Test Results

Significance Test of Individual Parameters (t-Test)

The t-test is used to assess the influence of each independent variable on the dependent variable partially, in order to determine whether the influence is significant or not. Each independent variable is tested individually for influence on the dependent variable using the t-test.

Table 3. t-Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-148.2019	55.86677	-2.652774	0.0242
CCC	-0.035386	0.032319	-1.094906	0.2992
SG	-0.542379	0.141255	-3.839713	0.0033
FS	5.626694	1.864985	3.017019	0.0130

Source: data processed by EViews 12

The cash conversion cycle (CCC) does not significantly impact return on assets (ROA), as demonstrated by its probability value of 0.2992 which is greater than 0.01. Meanwhile, sales growth (SG) has a negative effect on return on assets (ROA), which is reflected in the coefficient value of

-0.542379 and a significance level of 0.0033, which is smaller than 0.05. On the other hand, firm size (FS) has a positive effect on return on assets (ROA), as seen from the coefficient value of 5.626694 with a significance level of 0.0130, which is also smaller than 0.05.

Simultaneous Significance Test (F Test)

The F test is used to determine whether the independent variables have a simultaneous effect on the dependent variable. Therefore, the F value calculated in the test is compared with the F value from the table.

Table 4.
F Test Results

F-statistic	14.83947
Prob (F-statistic)	0.000517

Source: data processed by *EViews 12*

Based on Table 4 above, it can be seen that the F test shows the probability of F-statistic of 0.000517 with a significance level of 5%. Since 0.000517 <0.05, it can be concluded that cash conversion cycle (CCC), sales growth (SG) and firm size (FS) simultaneously have a significant effect on return on assets (ROA).

Coefficient of Determination Test (R^2)

The coefficient of determination analysis is used to measure how much the independent variables contribute together to the dependent variable. The higher the R^2 value (closer to one), the stronger the relationship between the dependent variable and the independent variable.

Table 5.
Results of Determination Coefficient (R^2)

R-squared	0.816576
Adjusted R-squared	0.761548

Source: data processed by *EViews 12*

Based on table 5, the results of the determination coefficient (R2) show that the Adjusted R-squared values are 0.761548 or 76.15%. This means that the dependent variable ROA in pharmaceutical companies in Indonesia, Singapore, and Malaysia is influenced by the independent variables, namely CCC, SG, and FS. Meanwhile, the remaining 23.85% is explained by other factors outside of the independent variables.

The Effect of Cash Conversion Cycle (CCC) on Return on Assets (ROA)

The analysis results indicate that the Cash Conversion Cycle (CCC) does not have a significant effect on Return on Assets (ROA) among pharmaceutical companies in Southeast Asia during the COVID-19 pandemic, leading to the rejection of Hypothesis 1. This finding aligns with previous studies (Patricia & Izuchukwu, 2022; Basyith & Fitriya, 2023; Farhan Ullah et al., 2021; Purnamasari & Windarti, 2023), which also suggest that CCC may lose its predictive power during periods of extraordinary economic disruption. The pandemic induced dramatic changes in consumer behavior, supply chain dynamics, and cash flow patterns, making traditional measures of working capital efficiency such as CCC less reliable indicators of short-term profitability.

Specifically, pharmaceutical firms faced unpredictable demand surges, logistical bottlenecks, and government-imposed supply controls, which could have weakened the typical relationship between CCC and financial performance. However, not all studies unanimously find CCC insignificant during crises; some research highlights that firms with robust operational flexibility managed to sustain CCC efficiency even under pressure. This suggests that firm-specific factors such as supply chain resilience, product portfolio diversity, and operational agility could moderate the CCC-ROA relationship.

From a managerial perspective, these findings imply that during systemic shocks like COVID-19, pharmaceutical companies may need to shift their focus from traditional working capital metrics to more dynamic liquidity management strategies, such as strengthening cash reserves and improving supply chain adaptability. This study contributes to the growing literature on financial resilience by highlighting the contextual limitations of CCC as a universal predictor of profitability in times of global crises.

The Effect of Sales Growth on Return on Assets (ROA)

Based on the results of the hypothesis test, the independent variable sales growth (SG) has a negative and significant effect on return on assets (ROA) in pharmaceutical companies during the COVID-19 pandemic. This finding specifically shows that increasing sales growth does not always have a positive impact on profitability, as evidenced by the negative coefficient associated with ROA. Therefore, particularly during crisis periods such as pandemics, the operational challenges and costs of increasing sales may outweigh any benefits, resulting in a decline in profitability metrics. Therefore, Hypothesis 2, which states a positive relationship between sales growth (SG) and profitability is rejected based on these results.

Research supports the idea that sales growth can have complex implications for profitability, especially in volatile economic environments. A previous study highlighted that sales growth is not always positively correlated with profitability in the pharmaceutical sector, which is in line with the findings of this analysis (H. Lim & Rokhim, 2020). Furthermore, the study shows that the COVID-19 outbreak has a negative impact on companies' financial performance, indicating that external shocks can disrupt the usual profitability patterns, including the relationship between sales growth and ROA (Sun & Li, 2021). This is particularly relevant for pharmaceutical companies, which may face unique operational challenges during a health crisis.

In addition, the need for careful management of sales growth is underlined by findings from (Clampit et al., 2021), which emphasizes the importance of operational efficiency and cost management in maintaining profitability amid fluctuating sales. The implications of these findings suggest that corporate management should adopt a more cautious approach to sales growth, ensuring that increased sales do not lead to disproportionate increases in costs that could erode profitability. This perspective is further supported by research conducted by (Hasanudin, 2021), which reveals that although sales growth is critical for survival, it must be balanced with operational efficiency to maintain profitability.

The Effect of Firm Size on Return on Assets (ROA)

The results of the hypothesis test revealed that firm size (FS) has a positive effect on return on assets (ROA) in pharmaceutical companies in Indonesia, Singapore, and Malaysia during the 2020-2021 COVID-19 period. This finding is in line with existing literature that supports the idea that firm size is a significant determinant of profitability. For example, (H. Lim & Rokhim, 2020), found a strong positive relationship between firm size and ROA in Indonesian pharmaceutical companies, indicating that larger firms tend to achieve higher profitability. However, their study mainly focused on liquidity and sustainable growth rate, with firm size showing a positive relationship with ROA but a negative relationship with earnings per share (EPS), indicating differences in profitability metrics.

Findings from (López-Toro et al., 2021), reflects that firm characteristics, including size, play an important role in determining financial performance in the pharmaceutical sector, thus strengthening the positive correlation between firm size and ROA. This is particularly relevant in the context of the COVID-19 pandemic, where larger firms may have more resources to better cope with economic challenges, thereby increasing their profitability. Larger firms have several distinct advantages in leveraging their assets to increase profitability, especially during economic crises. This assertion is supported by various studies that emphasize the relationship between firm size, asset management, and profitability. A resource-based theory emphasizes asset optimization as a means to achieving success, and states that larger firms, when managed efficiently, can significantly increase operating income and profitability (Alarussi & Alhaderi, 2018).

CONCLUSION

The cash conversion cycle (CCC) has no significant effect on the return on assets (ROA) of pharmaceutical companies in Indonesia, Singapore, and Malaysia during the COVID-19 pandemic. On the contrary, sales growth (SG) has a significant negative effect on ROA, while firm size (FS) shows a significant positive effect. According to this research, working capital management through CCC may not directly influence profitability during times of crisis when external factors such as surges in demand and disruptions in supply chains are more significant. On the contrary, firm size (FS) is an important factor that supports financial performance, indicating that economies of scale and the capacity to adapt to changes in the business environment are critical to the success of pharmaceutical companies in maintaining profitability during challenging periods. These results provide important insights for pharmaceutical company management in designing financial strategies that are more responsive to uncertain market conditions in the future.

Based on the results of this study, there are several recommendations for future research. The scope of the study should be expanded by including other relevant variables such as leverage, capital expenditure, and market competition that can provide a deeper understanding of what influences pharmaceutical companies' financial performance during the crisis. Further studies can examine CCC, sales growth, and firm size in other industries that are also affected by the pandemic, such as technology or healthcare. A more comprehensive approach, including longitudinal or panel data analysis, can provide a better understanding of how the financial dynamics of companies develop during and after the pandemic. Finally, considering the possible differences

As shown in Table 3, the hypothesis testing suggests that ESG was positively between countries, comparative research by including more countries in Southeast Asia or other regions can reveal more general or specific patterns related to the financial management of pharmaceutical companies during the global crisis period.

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