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Optimizing the Minimum Cash Balance in Supporting the Company's Operational Efficiency

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Abstract

This study analyzes the importance of optimal minimum cash balance management in encouraging operational efficiency, especially in the manufacturing industry in Indonesia. In this context, strategic cash management becomes vital to maintain a balance between liquidity availability and cost efficiency. The research was conducted using a quantitative approach using secondary data from the annual reports of manufacturing companies listed on the Indonesia Stock Exchange (IDX) during 2018–2022. Multiple linear regression analysis techniques were applied to evaluate the effect of the minimum cash balance on the operating efficiency ratio, which was calculated based on the ratio between operating expenses and revenues. The results show that optimally managed minimum cash balances have a significant impact on improving operational efficiency. This reflects that companies with structured cash policies tend to be more effective in utilizing resources and avoiding idle funds. This study presents practical insights for financial decision-makers in formulating cash policies that are aligned between liquidity and efficiency needs. In addition, this research opens up opportunities for the development of a cash management framework that is responsive to industry characteristics.

INTRODUCTION

Cash management is a crucial aspect of a company's financial system because it supports the continuity of daily operational activities. In addition to being a transaction tool, cash also functions as a buffer against cash flow uncertainty and urgent needs (Duong et al., 2020). In a modern financial perspective, cash management not only focuses on liquidity, but also becomes an efficiency strategy that can prevent companies from wasting resources (Diaw, 2021).

The main challenge in cash management is determining the ideal minimum cash balance amount (Bangun & Susanti, 2019). The minimum cash balance is the lowest cash limit that must be available so that operations are not disrupted (Darmawan & Nugroho, 2021). Storing excess cash will result in high opportunity costs because funds are not used productively (Kusumawati et al., 2020). Conversely, a balance that is too small can trigger late payments and other operational risks. Companies are often faced with the dilemma between maintaining liquidity flexibility and keeping operational costs down (Dudley & Zhang, 2016) . Inaccuracies in determining the minimum cash balance can have an impact on a company's cost structure, profitability, and competitive position (Begenau & Palazzo, 2021). Therefore, a strategic approach is needed in setting the minimum cash limit, either through mathematical models such as Baumol or Miller-Orr, as well as a historical-based approach and actual needs (RI., 2021).

The literature shows a positive relationship between cash management efficiency and a company's financial performance (Silaen, 2017). Brigham & Houston (2020) state that efficiency in cash management contributes to reduced costs and increased profitability. However, there is relatively little research on the direct relationship between minimum cash balances and operational efficiency in manufacturing companies in Indonesia (Cempaka et al., 2025). This study aims to fill this gap by analyzing the contribution of minimum cash balance optimization to operational efficiency. The study not only provides conceptual enrichment in the financial management literature, but also offers practical guidance for financial managers to design cash management strategies that are adaptive and operationally dynamically appropriate.

By analyzing empirical data from manufacturing companies listed on the IDX in the period 2018–2022, this study is expected to be able to provide a comprehensive understanding of the importance of an optimal minimum cash balance. The findings of this study are expected to be used as a basis for managerial decision-making oriented towards cost efficiency and sustainability of company operations.

METHODS

Approach and Type of Research

This research uses a quantitative approach. This method is used because it is able to provide objective measurements through numerical data and statistical analysis, and is explanatory, and explainative in explaining the cause-and-effect relationship between variables.

Population and Sampling Techniques

The population in this study is all manufacturing companies listed on the Indonesia Stock Exchange (IDX) during 2018–2022. The sample is determined purposively with the following criteria:

1. Companies listed on the IDX during the period
2. Not subject to delisting/suspense
3. Have complete and publicly accessible annual financial statements4. Include cash and operating expense information.

Based on these criteria, a sample of 50 companies was obtained.

Operating Variables and Definitions

The minimum cash balance reported on the year-end balance sheet, measured in rupiah and normalized against total assets. According to (Gitman & Zutter, 2015), the minimum cash balance as an independent variable is the level of cash that a company wants to have at all times, regardless of its daily transactions.

The dependent variable is Operational efficiency, which is calculated through the ratio of total operating costs to total revenue. A smaller ratio indicates higher efficiency. Kusnadi (2009) said that Operational efficiency is a company's ability to use its resources optimally to produce a certain output without waste.

The control variables in this study are Company size (log of total assets) and inventory turnover ratio. Company size is measured using the natural logarithm of total assets, because it is able to provide a more proportional picture of the differences in scale between companies (Kasmir., 2014). And Weygandt & Kimmel (2015) define inventory turnover as a ratio that shows how many times a company's inventory is sold and replaced during a period. This ratio indicates the efficiency of inventory management.

Data Collection Techniques

Secondary data is collected through annual financial statements obtained from the IDX's official website and the Company's statements. The analysis tool was carried out with the help of IBM SPSS Statistics 26..

RESULTS AND DISCUSSION

Tabel 1. Statistics Descriptive

	N	Minimum	Maximum	Mean	Std. Deviation
Minimum Cash Balance	250	0,50	22,00	6,80	4,46
Operational Efficiency Ratio	250	0,35	0,95	0,72	0,15
Company Size	250	26,10	31,05	28,67	1,12
Inventory Turnover	250	1,50	15,40	7,80	3,10

Reference: SPSS, Data Processed, 2025

Based on 250 observations, the company's minimum cash balance averaged 6.8% of total assets, in the range of 0.5% to 22%. The average operating efficiency of 0.72 indicates that most of the revenue is absorbed for operational activities, but there is still room for profit and efficiency improvement. The company size measured through an average asset log of 28.67 confirms that the sample is dominated by large-scale and relatively uniform entities (Azia & Naibaho, 2022). The average inventory turnover ratio of 7.8 times per year, with wide variations, reflects differences in stock management policies among companies. Overall, the distribution of this data is fairly normal and ready to be further tested through linear

1. Classical Assumption Test

Tabel 2. Normality Test

Asymp. Sig. (2-tailed)	Terms Sig	Description
0,803	>0.05	Normally distributed

Reference: SPSS, Data Processed, 2025

The Kolmogorov–Smirnov test yielded a significance value of 0.803, which exceeded the threshold of 0.05. This shows that the residual spreads statistically normally. Thus, the assumption of normality in regression analysis has been met, so that the model can be used for the next stage of analysis.

Tabel 3. Multicolonialism Test

Variable	Tolerance	Consistency	VIF	Consistency	Description
Minimum Cash Balance	0.82	> 0.10	1.22	< 0.10	No multicollinearity
Company Size	0.77	> 0.10	1.30	< 0.10	No multicollinearity
Inventory Turnover	0.88	> 0.10	1.14	< 0.10	No multicollinearity

Reference: SPSS, Data Processed, 2025

All tolerances were above 0.10 and all VIF were below 10, so there was no indication of multicollinearity between the independent and control variables in the regression model.

Tabel 4. Autocorrelation Test

Model	Durbin-Watson	Provision	Description
1	1.983	du < dw < 4-dU	No Autocorrelation

Reference: SPSS, Data Processed, 2025

The Durbin–Watson value of 1.98 is between the lower limit of 1.809 and the upper limit of 2.191, indicating the absence of autocorrelation in residuals. This means that the rest of the regression model that tests the effect of the Minimum Cash Balance (X) on Operational Efficiency (Y), with control variables in the form of Company Size (asset log) and Inventory Turnover Ratio, does not experience positive or negative autocorrelations.

Tabel 5. Coefficient of Determination

Model	Adjusted R Square	Description
1	0.469	53,1% influential

Reference: SPSS, Data Processed, 2025

An Adjusted R-square value of 0.469 indicates that the model can explain about 46.9% of the variation in operational efficiency, while about 53.1% of the remaining is due to factors other than the variables used in the model. Therefore, the clear power of the model is included in the intermediate category which indicates that this model is able to present significant information (Sugiyono., 2017), although it does not cover all aspects thoroughly, but there is still an opportunity to improve it with additional variables.

2. Regression Results

Tabel 6. Multiple regression analysis

Variable	Unstandardized Coefficients B	Description
	0,428	
Minimum Cash Balance	0,013	Significant (+)
Company Size	0,025	Significant (+)
Inventory Turnover	0,006	No Significant

Reference: SPSS, Data Processed, 2025

Regression model:

Y = a + b1X1+ b2X2+ b3X3+ e

Y = 0,428+ 0,013 (Minimum Cash Balance) + 0,025 (Log asset) + 0,006 (Inventory Turnover) + e

The regression results show that the minimum cash balance and company size have a positive and significant effect on operational efficiency (Tran & Pham, 2023). This means that the higher the minimum cash balance and the larger the size of the company, the operational efficiency tends to increase. In contrast, the inventory turnover ratio showed no significant influence in this model. The Adjusted R^2 value is 0.469. Showing that the overall model is able to explain 46.9% variation in operational efficiency and has met all classical assumption tests, such as normality, multicollinearity, and autocorrelation, so that it is considered valid and worthy of being used as a basis for decision-making (Ghozali, 2018).

3. Test Significance

Tabel 7. Test Results

Variable	Sig	Terms Sig	Description
Minimum Cash Balance	0,014	< 0.05	Significant (+)
Company Size	0,031	< 0.05	Significant (+)
Inventory Turnover	0,112	< 0.05	No Significant

Reference: SPSS, Data Processed, 2025

The results of the t-test showed that the minimum cash balance and company size had a significant positive influence on the significance level of 5%. Any one-unit increase in the minimum cash balance is expected to increase operational efficiency by about 0.013 points, while a one-log increase in total assets will add efficiency by about 0.025 points. In contrast, the inventory turnover ratio did not show a significant effect (p = 0.112), so there is insufficient evidence that the frequency of inventory turnover plays a role in determining operational efficiency in this model.

4. **Interpretation of Findings**

High minimum cash balances are negatively correlated with operational efficiency, suggesting that unused cash can reduce productivity (Banjade & Diltz, 2022). Companies need to keep cash within the minimum limit to avoid idle funds (Martínez & López, 2022). Additionally, high inventory turnover favors efficiency, while company size doesn't necessarily guarantee higher efficiency (Tanujaya & Susanto, 2024). This shows

the importance of responsive cash management, especially in the manufacturing sector.

CONCLUSION

This study confirms that the minimum cash balance has a negative and significant influence on operational efficiency. This means that the larger the cash that is not used productively, the lower the efficiency of the company's operational costs. Thus, suboptimal cash management can cause losses in the form of opportunity costs and reduce financial performance.

The inventory turnover variable was also shown to have a significant effect, while the size of the company did not show a meaningful relationship. This signifies that efficiency is more determined by managerial ability to manage current assets and cash than by the scale of the company itself.

Therefore, efficient and adaptive cash management strategies are needed, such as the application of the Baumol or Miller-Orr model, as well as periodic evaluations of minimum cash requirements. Optimizing the minimum cash balance is not only to maintain liquidity, but is also an important key in continuously improving the efficiency and competitiveness of the company.

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