

An Analysis of the Role of Profitability as a Mediator of the Effect of Growth Opportunity on Cash Holding Supported by a Test of the Effect of Leverage on Cash Holding

Analisis Peran Profitability Sebagai Pemediasi Pengaruh Growth Opportunity terhadap Cash Holding Didukung dengan Pengujian Pengaruh Leverage terhadap Cash Holding

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ABSTRACT

This study aims to examine the mediating role of profitability in the relationship between growth opportunity and cash holding, while also examining the effect of leverage on cash holding in transportation and logistics companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2025 period. Cash holding is particularly important in capital intensive industries because firms must balance operational continuity, investment needs, and financial uncertainty. This study employs a quantitative approach using the Partial Least Square Structural Equation Modeling (PLS-SEM) method. The results show that growth opportunity does not have a direct effect on cash holding, but has a positive and significant effect on profitability. Furthermore, profitability measured by ROA has a positive and significant effect on cash holding and mediates the relationship between growth opportunity and cash holding through a full mediation mechanism. Leverage has a negative effect on cash holding. These results highlight that growth opportunity influences cash accumulation only when it is translated into higher profitability, while greater leverage reduces firms' cash reserves.

Keywords: cash holding, growth opportunity, profitability, leverage.

ABSTRAK

Penelitian ini bertujuan untuk menganalisis peran profitabilitas sebagai variabel mediasi dalam hubungan antara peluang pertumbuhan dan kepemilikan kas serta menganalisis pengaruh tingkat utang terhadap kepemilikan kas pada perusahaan sektor transportasi dan logistik yang tercatat di Bursa Efek Indonesia periode 2021–2025. Kepemilikan kas menjadi aspek penting pada industri padat modal karena perusahaan perlu menyeimbangkan antara kebutuhan operasional, investasi, dan ketidakpastian keuangan. Penelitian ini menggunakan pendekatan kuantitatif dengan metode pemodelan persamaan struktural berbasis varians (PLS-SEM). Hasil penelitian menunjukkan bahwa peluang pertumbuhan tidak berpengaruh secara langsung terhadap kepemilikan kas, tetapi berpengaruh positif dan signifikan terhadap profitabilitas. Selanjutnya, profitabilitas yang diprosikan dengan ROA berpengaruh positif dan signifikan terhadap kepemilikan kas serta berperan sebagai mediator penuh dalam hubungan antara peluang pertumbuhan dan kepemilikan kas. Selain itu, tingkat utang berpengaruh negatif terhadap kepemilikan kas. Hal ini menunjukkan bahwa peningkatan kas perusahaan lebih dipengaruhi oleh kemampuan menghasilkan laba, sementara penggunaan utang yang lebih tinggi dapat mengurangi jumlah kas yang dipertahankan.

Kata kunci: kepemilikan kas, peluang pertumbuhan, profitabilitas, tingkat utang.

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INTRODUCTION

Cash holding in a company represents the level of liquid assets available, consisting of cash and cash equivalents, that are used to fulfill operational needs and capitalize on growth opportunity (Bhanumurthy *et al.*, 2018). Adequate cash reserves enable a firm to maintain financial flexibility, allowing the firm to operate without excessive reliance on external funding. Nevertheless, excessive cash holding may create inefficiencies as funds remain utilized, whereas insufficient cash may interrupt operational continuity. Therefore, a cash holding policy must be optimally established to maintain flexibility in capitalizing on growth opportunity without sacrificing the effectiveness of fund management.

Cash management has become increasingly important within the transportation and logistics sector, an industry characterized by substantial operational expenses, including fuel costs, fleet maintenance, and infrastructure related investment. In recent years, firms operating in this sector have experienced financial pressure driven by the COVID-19 pandemic, macroeconomic uncertainty, and increasing fuel costs. These conditions require companies to manage cash carefully while continuing to capitalize on growth opportunity.

Table 1. Cash Holding of Transportation and Logistics 2021–2025 period

Companies	2021	2022	2023	2024	2025
GIAA	0.76 %	8.37 %	4.31 %	3.31 %	3.60 %
BIRD	14.33 %	12.92 %	12.97 %	13.80 %	10.57 %
SMDR	28.32 %	36.15 %	30.85 %	25.85 %	23.91%

Based on Table 1, changes in cash holding do not show a consistent pattern across companies. GIAA experienced a significant increase in 2022, followed by a decline in subsequent years. BIRD showed relatively stable fluctuations, while SMDR saw an increase at the beginning of the period, followed by a downward trend. These differing patterns indicate that cash holding policies are influenced by each company's internal strategies and conditions.

In line with this, cash holding has become a key aspect of corporate financial management. Arora (2019) notes that companies in India hold a certain level of cash reserves to prepare for unexpected operational and investment needs. Trinh *et al.* (2022) explain that corporate cash holding policies are influenced by internal and external factors, meaning that the level of cash holding varies across firms and over time. Bagh *et al.* (2021) found variations in cash holding behavior in frontier and emerging markets, confirming that cash holding strategies are adjusted according to firm specific circumstances.

Given the fluctuations in cash holding, companies must carefully establish a cash holding policy. Begum (2025) states that corporate decisions regarding cash holding are affected by various factors, including growth opportunity, leverage, cash flow volatility, profitability, and net working capital position. These determinants help firms establish a suitable cash reserve level that supports ongoing operations while maintaining sufficient funds for future financial requirements.

Amid these pressures, some companies are actually striving to remain aggressive in capitalizing on growth opportunity. GIAA has partnered with MetraMediaHub (TelkomMetra) to launch a Wireless In-Flight Entertainment (W-IFE) service on its aircraft fleet (TelkomMetra, 2024). Meanwhile, in 2024, BIRD demonstrated a growth opportunity through a strategic collaboration with Hyundai Motors Indonesia, namely the

acquisition of 10 units of the all-new KONA Electric for use in the Capital City of Nusantara (Radio Republik Indonesia, 2024). Meanwhile, SMDR is also expanding its growth opportunity through a strategic collaboration with PSA Singapore (Bisnis.com, 2021). This phenomenon indicates that transportation and logistics companies are in a dilemma: on one hand, they have growth opportunity, but on the other, they must manage their cash holding to capitalize on these opportunities.

Table 1 shows that growth opportunity is not consistently related to the level of cash holding. This suggests that companies with high growth opportunity do not always accumulate higher amounts of cash. Some companies increase their cash holding as growth opportunity expands, while others actually reduce their cash holding when growth opportunity increases because funds are immediately channeled toward expansion.

Previous studies provide inconsistent evidence regarding the relationship between growth opportunity and cash holding. Several studies find that growth opportunity has a negative relationship, suggesting that firms with high growth opportunity tend to utilize available cash for expansion activities rather than retain it as reserves (Das & Goel, 2021; Diaw, 2021). Conversely, other studies show positive effect on cash holding, arguing that firms with greater growth prospects tend to maintain higher cash reserves to support future investment opportunities and reduce dependence on external financing (Arora, 2019; Bagh *et al.*, 2021; Trinh *et al.*, 2022). Furthermore, some studies find that growth opportunity has no significant effect on cash holding, indicating that the relationship may depend on firm characteristics, market conditions, and financing constraints (Alnori *et al.*, 2022; Batuman *et al.*, 2022).

This inconsistency suggest the need to examine the underlying mechanism through which growth opportunity influences cash holding. Therefore, this study introduces profitability as a mediating variable. Profitability is considered relevant because growth opportunity does not automatically increase cash holding, instead their impact may depend on the firm's ability to generate internal funds from operational performance. Firms with higher profitability generally have stronger internal funds, which can influence their cash holding decisions (Al Barak, 2025; Vuković *et al.*, 2022).

Growth opportunity can influence cash holding indirectly through profitability. Firms with higher growth opportunity have greater potential to expand operational activities, improve efficiency, and generate higher profits. This relationship is supported by the Resource Based View, which explains that firms able to utilize their internal resources effectively can achieve better performance and create competitive advantages. Therefore, growth opportunity is expected to contribute to increased profitability (Barney, 1991; Chandra *et al.*, 2019; Kopong & Nurzanah, 2016; Wernerfelt, 1984).

Furthermore, profitability plays an important role in determining cash holding decisions. Firms with higher profitability generally generate stronger internal cash flows, which increase their ability to retain cash for operational needs and future investment. This argument is consistent with the Pecking Order Theory, which states that firms prefer internal financing sources before relying on external funding. Therefore, profitability influences the level of cash holding maintained by firms (Bagh *et al.*, 2021; Batuman *et al.*, 2022; Myers & Majluf, 1984).

Based on this mechanism, profitability serves as an intermediate variable explaining how growth opportunity affects cash holding. Firms with high growth opportunity can improve profitability through business expansion and the resulting internal funds may influence firms' cash holding policies.

Therefore, this study extends previous research by explaining not only whether growth opportunity affects cash holding, but also how this relationship occurs through profitability as an internal financial mechanism. This approach provides a more comprehensive understanding of cash holding decisions, particularly in capital intensive industries where growth activities do not always directly translate into higher cash reserves. Profitability is considered relevant because growth opportunity does not automatically generate available internal funds, instead its effect on cash accumulation depends on the firm's ability to convert expansion potential into actual financial performance.

In addition to growth opportunity and profitability, leverage is also considered an important determinant of cash holding. Firms with higher leverage face greater debt obligations, which reduce available internal funds and limit their ability to maintain large cash reserves. From the Agency Theory perspective, debt can also act as a monitoring mechanism that prevents managers from accumulating excessive cash. Therefore, leverage is expected to influence cash holding decisions (Diaw, 2021; Jensen & Meckling, 1976; Trinh *et al.*, 2022).

Therefore, this study aims to examine (1) the effect of growth opportunity on cash holding, (2) the effect of growth opportunity on profitability, (3) the effect of profitability on cash holding, (4) the mediating role of profitability in the relationship between growth opportunity and cash holding, and (5) the effect of leverage on cash holding in transportation and logistics firms listed on the Indonesia Stock Exchange for the period 2021–2025.

LITERATURE REVIEW

Pecking Order Theory

Myers and Majluf (1984) explain that companies choose financing sources based on a specific order of preference. Internal funds are preferred as the primary source, followed by debt financing, while equity issuance is regarded as the final option. This preference is driven by information asymmetry between managers and external investors, which leads companies to favor internal financing as a way to reduce information costs and avoid adverse perceptions in the market. In cash policy, this theory suggests that cash holding represents the residual outcome of this financing hierarchy.

Resource Based View

The Resource Based View emphasizes the importance of internal resources in achieving superior firm performance. Valuable and unique internal resources that are difficult to replicate and replace can help firms improve their performance, as explained by Wernerfelt (1984) and Barney (1991). These resources consist of both tangible and intangible assets, and cash can also support firms in utilizing their resources effectively by providing financial flexibility for operational and investment activities.

Agency Theory

Jensen and Meckling (1976) explain that agency conflicts occur when the goals of managers are not fully aligned with the interest of shareholders. In practice, conflicts of interest can arise because managers do not always implement policies aligned with the owners' interest. Managers often possess more detailed firm specific information than external stakeholders, creating an information advantage that may lead them to take actions for personal benefit (Ghozali, 2020).

Cash Holding

Cash includes all funds held by a company, whether immediately available or deposited in a bank in the form of checking accounts, demand deposits, or similar savings accounts (Brigham & Houston, 2019). Cash holding, on the other hand, indicates the extent to which a company retains liquid assets, particularly cash and cash equivalents, to fulfill operational requirements and fund investment activities (Bhanumurthy *et al.*, 2018). Cash availability is fundamental for maintaining operational stability, managing uncertainty and capitalizing on investment opportunity.

Growth Opportunity

Growth reflects an increase in the assets used in a company's operational activities. Growth opportunity reflects a company's future growth prospects as well as its potential for business expansion (Brigham & Houston, 2019). When firms have strong growth prospects, they typically need greater financial resources to support investment and business development.

Profitability

Profitability reflects the extent to which a company succeeds in generating profits, which is the primary objective of most businesses. These profits result from management decisions and serve as a measure of the company's management effectiveness (Sutrisno, 2009).

Leverage

Brigham and Houston (2019) define leverage as the level of debt used by a company to support its operational financing. Sutrisno (2009) defines leverage as the proportion of total funding that is derived from borrowing. If the leverage ratio equals zero, it means the company operates entirely with internal capital without any debt financing. Leverage represents the proportion of company assets financed through debt and reflects the extent to which firms rely on external financing to support their operations (Pangestuti *et al.*, 2022).

Research Hypotheses

Based on the Pecking Order Theory proposed by Myers and Majluf (1984), firms tend to prioritize internal financing sources before relying on external funding. Therefore, companies with higher growth opportunity may utilize available internal funds to finance expansion and investment activities, which can reduce the amount of cash retained. Consistent with this argument, previous studies found that firms with greater growth opportunity tend to allocate cash toward investment activities rather than maintaining higher cash reserves (Bagh *et al.*, 2021; Diaw, 2021).

H1: Growth Opportunity has a negative effect on cash holding.

Growth opportunity drives firms to utilize internal resources to support expansion and improve performance. According to Resource Based View, internal resources can be transformed into competitive advantage when used efficiently (Barney, 1991; Wernerfelt, 1984). Firms that have greater growth opportunity tend to strengthen their operational activities and expand their market coverage, which can contribute to higher profitability (T. Chandra *et al.*, 2019; Kopong & Nurzanah, 2016).

H2: Growth Opportunity has a positive effect on profitability.

Profitability describes the firm's capability to produce internal cash flow from its operations. Consistent with Pecking Order Theory, internal funds are prioritized before external financing (Myers & Majluf, 1984). Higher profitability leads to stronger internal

cash flow, which allows firms to maintain larger cash reserves for supporting daily operations as well as serving as a buffer against uncertainty (Al Barak, 2025; Alnori *et al.*, 2022; Bagh *et al.*, 2021; Batuman *et al.*, 2022; Vuković *et al.*, 2022).

H3: Profitability has a positive effect on cash holding.

Growth Opportunity can influence cash holding indirectly through profitability. Companies that have high growth opportunity usually increase investment and operational activities, which can improve profitability (Chandra *et al.*, 2019; Kopong & Nurzanah, 2016). Higher profitability strengthens internal cash flow and allows companies to maintain higher cash reserves (Alnori *et al.*, 2022; Bagh *et al.*, 2021; Batuman *et al.*, 2022; Vuković *et al.*, 2022). Therefore, profitability is expected to act as a mediating variable between growth opportunity and cash holding.

H4: Profitability mediates the effect of growth opportunity on cash holding.

Leverage reflects the extent to which a company utilizes debt as a funding source. From Agency Theory perspective, debt can function as a monitoring mechanism that limits managers from holding excessive cash (Jensen & Meckling, 1976). Companies with higher leverage must allocate cash to debt obligations, which reduces the level of cash holding (Alnori *et al.*, 2022; Batuman *et al.*, 2022; Das & Goel, 2021; Diaw, 2021; Trinh *et al.*, 2022).

H5: Leverage has a negative effect on cash holding.

Based on the theoretical framework and hypothesis development, this study proposes the following conceptual framework (Table 1).

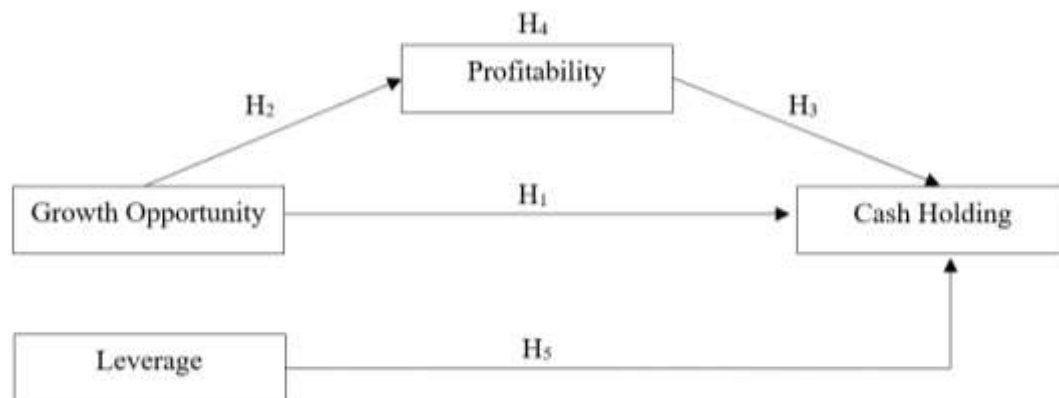


Figure 1. Conceptual Framework

RESEARCH METHOD

This research adopts an associative quantitative method to investigate the effect of growth opportunity and leverage on cash holding, incorporating profitability as a mediating factor. The dataset used in this study consists of secondary data collected from the annual financial statements of transportation and logistics companies listed on the Indonesia Stock Exchange during 2021–2025. All companies in this sector constitute the population, while the final sample is determined through purposive sampling. The selection criteria require companies to have been publicly listed before 2021, consistently reported their annual financial statements, and remained active without delisting or suspension throughout the observation period. Based on these criteria, 18 companies are

included as the final sample, generating 90 firm year observations over the 2021–2025 period.

Given the predictive objective of this study and the inclusion of a mediation relationship, PLS-SEM is considered appropriate because it is suitable for exploratory and predictive research models, can estimate complex structural relationships, evaluate predictive capability, and does not require strict multivariate normality assumptions (Hair *et al.*, 2021). The data were analyzed using Structural Equation Modeling (SEM) with the Partial Least Square (PLS) approach by employing SmartPLS version 4.0.0.9. The structural model evaluation was conducted using several indicators, including the coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2). Hypothesis testing was conducted using the bootstrapping method, where significant effects are determined when the p-value is below 0.05 (Hair *et al.*, 2021).

The mediation effect was assessed based on the significance of the indirect effect and the relationship between direct and indirect paths. Full mediation occurs when the indirect effect significant while the direct effect is insignificant, whereas partial mediation occurs when both effects are significant (Duryadi, 2021). Cash holding, growth opportunity, profitability, and leverage are utilized as the main variables in this research. The measurement proxies are selected based on previous empirical studies and the availability of financial data during the observation period. The operational definitions and measurement approaches are presented in Table 2.

Cash holding is measured using the ratio of cash and cash equivalents to total assets because it represents the proportion of liquid resources maintained by the company (Alnori *et al.*, 2022). Growth Opportunity is measured using sales growth rate, which reflects changes in sales as an indicator of company development (Lintungan & Surjadi, 2023). This measurement is applied because sales growth can represent changes in the company's business activities over time.

Sales growth is selected as the proxy for growth opportunity because it directly reflects the expansion of business activities and operational development. Alternative proxies such as market to book ratio are more commonly applied in capital market oriented studies. However, sales growth is considered more relevant for transportation and logistics companies because growth in this sector is closely related to increases in operational capacity and service activities.

Profitability is measured using ROA because it indicates the company's ability to generate profit based on its total assets (Alnori *et al.*, 2022). Meanwhile, leverage is measured using DAR, which reflects the proportion of company assets financed by debt and the company's reliance on external financing (Bagh *et al.*, 2021; Batuman *et al.*, 2022; Trinh *et al.*, 2022).

Table 2. Operational Definition and Measurement of Variables

Variable	Measurement Proxy	Formula
Cash Holding	Cash and cash equivalents to total assets (Alnori <i>et al.</i> , 2022).	$Cash\ Holding = \frac{Cash + Cash\ Equivalents}{Total\ Asset}$
Growth Opportunity	Sales Growth Rate (Lintungan & Surjadi, 2023).	$Sales\ Growth\ Rate = \frac{Sales_t - Sales_{t-1}}{Sales_{t-1}} \times 100\%$
Profitability	Return on Asset (Alnori <i>et al.</i> , 2022; Daulay & Prasetyo, 2025; Sitepu <i>et al.</i> , 2017).	$ROA = \frac{Net\ Income}{Total\ Asset}$

Variable	Measurement Proxy	Formula
Leverage	Debt to Asset Ratio (Bagh <i>et al.</i> , 2021; Batuman <i>et al.</i> , 2022; Pangestuti <i>et al.</i> , 2022; Trinh <i>et al.</i> , 2022).	$DAR = \frac{Total\ Debt}{Total\ Asset}$

RESULTS AND DISCUSSIONS

Descriptive Statistical Analysis

Summary measures of the variables used in this research are displayed in Table 3, consisting of the average value, lowest and highest value, as well as the standard deviation.

Table 3. Results of Descriptive Statistical Analysis

Name	N	Minimum	Maximum	Mean	Standard Deviation
CH	90	0.001	0.362	0.098	0.101
GO	90	-0.559	1.632	0.098	0.368
PROF	90	-0.580	0.599	0.028	0.125
LEV	90	0.092	1.849	0.497	0.296

Referring to Table 3, cash holding shows an average value of 0.098, which implies that, on average, firms retain cash equivalent to around 9.8 percent of their total assets. Meanwhile, growth opportunity also records a mean value of 0.098, accompanied by a relatively high standard deviation, indicating considerable variation in sales growth rates across the observed companies. In terms of profitability, the average value is 0.028, suggesting that firms' ability to generate profits during the observation period was relatively low. Lastly, leverage exhibits an average value of 0.497 meaning that nearly 49.7 percent of total assets are financed through debt. The descriptive results further indicate a fairly high level of dispersion among the sampled firms.

Inner Model Evaluation

a. Coefficient of Determination (R²)

Table 4. R-Square Result

	R-square	Results
CH	0.170	Weak
PROF	0.136	Weak

Based on Table 4, the model explains 17 percent of the variation in cash holding, as indicated by an R² value of 0.17, while the remaining variation is influenced by factors outside the model. This suggests that cash holding decisions are complex and cannot be fully explained by profitability, leverage, and growth opportunity alone. Other factors, such as firm characteristics, market conditions, financing structure, and cash flow conditions may also contribute to differences in cash holding policies among firms (Begum, 2025).

One additional factor that may explain variations in cash holding is cash flow volatility. High cash flow volatility reflects greater uncertainty in operating condition, encouraging firms to maintain higher cash reserves as a precaution against future funding needs (Chandra & Ardiansyah, 2022). This issue is particularly relevant in the transportation and logistics sector, which faces changes in operating costs and industry dynamics, such as fuel price fluctuations that may affect firms' cash flow stability (Putri, 2025).

b. Effect Size (f^2)

Table 5. Effect Size Results

	CH	GO	LEV	PROF
CH				
GO	0.017			0.158
LEV	0.038			
PROF	0.081			

The f-squares results presented in Table 5 indicate the magnitude of each exogenous variable's contribution to the endogenous variables. Growth opportunity contributes a small effect to cash holding with an f^2 value of 0.017, but shows a moderate effect on profitability with an f^2 value of 0.158. In addition, profitability has a small effect on cash holding with an f^2 value of 0.081 and leverage also demonstrates a small effect with an f^2 value of 0.038.

These findings suggest that the contribution of each independent variable to cash holding is relatively small. Profitability has the largest f-square value compared to the other variables in explaining cash holding, although it still falls within the category of a small effect. Based on the analysis, growth opportunity contributes more to changes in profitability than to the direct determination of cash holding.

Although several relationships among variables are statistically significant, the relatively small effect size values indicate that their practical contribution to changes in cash holding is limited. This implies that increases in growth opportunity, profitability, or changes in leverage do not necessarily result in substantial changes in firms' cash policies. In addition to these variables, previous studies suggest that cash holding decisions may also be influenced by other firm specific factors, such as working capital position, cash flow conditions, and financing strategies (Begum, 2025). Furthermore, in the transportation and logistics companies, operational characteristics such as high operating costs and investment requirements may also contribute to differences in firms' cash policies.

c. Predictive Relevance (Q^2)

Table 6. Predictive Relevance Results

	Q^2_{predict}
CH	0.054
PROF	0.082

According to Table 6, the predictive relevance for cash holding is 0.054, while profitability has a value of 0.082. Since both values are greater than zero, the model is considered to have good predictive relevance.

d. Hypothesis Testing and Mediation

To provide a clear visualization of the structural equation modeling estimation and path coefficients among variables, the bootstrapping graphical output of the research model is presented in Figure 2.

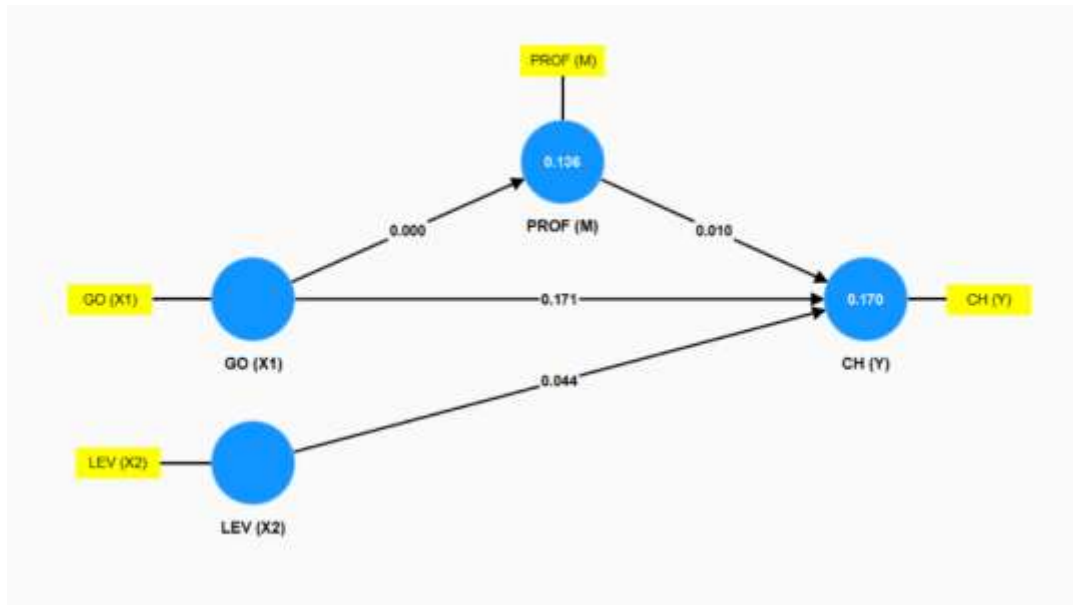


Figure 2. Graphical Output (Bootstrapping)

Table 7. Path Coefficient

	Original sample (O)	p-value	Results
GO -> CH	0.126	0.171	Rejected
GO -> PROF	0.369	0.000	Accepted
PROF -> CH	0.282	0.010	Accepted
LEV -> CH	-0.180	0.044	Accepted

Based on Table 7, the empirical results show no significant relationship between growth opportunity and cash holding, as the p-value of 0.171 exceeds the 0.05 significance level despite a coefficient of 0.126. Therefore, the first hypothesis cannot be supported. Conversely, growth opportunity exhibits a significant positive association with profitability, supported by a coefficient of 0.369 and a p-value of 0.000. Profitability also plays a significant role in increasing cash holding, with a coefficient of 0.282 and a p-value of 0.010. Hence, both the second and third hypothesis are accepted.

Table 8. Specific Indirect Effect

	Original sample (O)	p-value	Results
GO -> PROF -> CH	0.104	0.030	Accepted

The mediation test results presented in Table 8 reveal a significant relationship between growth opportunity and cash holding through profitability, as reflected by a coefficient of 0.104 and a p-value of 0.030. Meanwhile, the direct relationship between growth opportunity and cash holding is not statistically significant. Therefore, profitability demonstrates a full mediation mechanism when measured using ROA.

In addition, leverage based on Table 7 demonstrates a negative and significant relationship with cash holding, with a coefficient of -0.180 and a p-value of 0.044, which falls below the 0.05 level of significance. This finding implies that firms with higher leverage tend to hold less cash. Accordingly, the fifth hypothesis is accepted.

e. Robustness Analysis

1) Subgroup Analysis

To examine whether the research findings are influenced by differences in firm characteristics, a subgroup analysis was conducted based on firm size, measured by total assets. The sample was divided into two groups based on the median value of

total assets that is firms with total assets below the median value (small firms) and firms with total assets above the median value (large firms).

Table 9. Subgroup Analysis Results (Based on Firm Size)

	Difference	1-tailed p-value	2-tailed p-value
GO -> PROF -> CH	-0.069	0.760	0.479

A shown in Table 9 indicate that the difference in the indirect effect of growth opportunity on cash holding through profitability between the two groups is not statistically significant, with a coefficient difference of -0.069 and p-value of 0.479. These findings suggests that the mediating role of profitability does not significantly differ between smaller and larger firms. Therefore, the main findings are relatively stable and are not affected by differences in firm size.

2) Alternative Proxy Test

To examine the sensitivity of the research findings to the use of alternative profitability measures, this study replaces the profitability proxy from ROA to ROE. The re-estimation results show differences compared to the baseline model using ROA.

Table 10. Path Coefficient (Alternative Proxy ROE)

	Original sample (O)	p-value	Results
GO -> CH	0.230	0.030	Accepted
GO -> PROF (ROE)	-0.033	0.394	Rejected
PROF(ROE) -> CH	0.031	0.371	Rejected

In the model using ROE, the relationship between growth opportunity and cash holding becomes significantly positive, with a coefficient of 0.230 and p-value of 0.030. Meanwhile, the relationship between growth opportunity and profitability (ROE) is not significant, with a coefficient of -0.033 and p-value of 0.394. The relationship between profitability (ROE) and cash holding is also insignificant, with a coefficient of 0.031 and p-value of 0.371.

Table 11. Specific Indirect Effect (Alternative Proxy ROE)

	Original sample (O)	p-value	Results
GO -> PROF (ROE) -> CH	-0.001	0.48	Rejected

Furthermore, the indirect effect of growth opportunity on cash holding through profitability (ROE) is not significant, with a coefficient of -0.001 and a p-value of 0.480. The differences indicate that the mediation effect varies depending on the profitability proxy applied in the relationship between growth opportunity and cash holding is sensitive to the selection of profitability proxies. This variation may occur because ROE not only reflects a firm's ability to generate profits but is also influenced by its capital structure. In the transportation and logistics industry, which is characterized by high capital intensity, ROA provides a better representation of the firm's ability to utilize operational assets in generating profits. Therefore, ROA is considered a more suitable profitability measure for this study context.

3) Missing Data Sensitivity

This study employs a balanced panel dataset consisting of 90 firm year observations covering the 2021–2025 period. All observations are complete and no missing values are identified in the dataset. Therefore, no additional treatment for missing data was required and the estimation results were obtained from the complete balanced dataset.

Discussion

The Effect of Growth Opportunity on Cash Holding

Based on the analysis, growth opportunity is not a significant determinant of cash holding. This implies that firms with higher growth opportunity do not always maintain higher levels of cash. Therefore, cash retention decisions in this sector are not determined solely by growth prospects.

From a theoretical perspective, these results do not support the prediction of Pecking Order Theory developed by Myers and Majluf (1984), which posits that firms tend to prioritize internal financing before resorting to external funding sources. According to this theory, firms with higher growth opportunity are expected to rely more on internal cash to finance investments, thereby reducing cash holding. However, the findings of this study do not provide empirical support for this expectation.

This condition can be explained by the characteristics of the transportation and logistics sector, which is capital-intensive and has a high operational cost structure. Investments in fleets, infrastructure, and distribution networks require substantial funding and long-term planning. Therefore, expansion decisions depend not only on cash availability but also on economic risks, regulations, and access to external funding sources. In uncertain situations, firms tend to prioritize financial stability over adjusting cash policies based solely on growth opportunity (Rodrigue, 2024).

Growth opportunity does not appear to be the primary factor determining cash holding levels, including Shariah-compliant firms found by Alnori *et al.* (2022). In uncertain economic environments, firms generally shift their focus toward sustaining operational stability instead of expanding, which in turn limits the extent to which growth opportunity affects cash holding decisions (Batuman *et al.*, 2022).

The Effect of Growth Opportunity on Profitability

Profitability rises along with higher growth opportunity, as firms with strong growth potential are more effective in using their assets and resources to generate income. The Resource Based View suggests that competitive advantage is derived from a firm's capability to effectively deploy valuable resources that are difficult for competitors to imitate (Barney, 1991; Wernerfelt, 1984). In this context, firms with higher growth opportunity tend to allocate their resources into strengthening operational capacity, enhancing efficiency, and developing service innovations. These strategies ultimately lead to increased revenue and profitability.

This finding is consistent with Chandra *et al.* (2019) and Kopong & Nurzanah (2016), who indicate that greater growth opportunity drives expansion and increased operational activity, thereby boosting corporate profits. Additionally Bagh *et al.* (2021) demonstrate that companies in emerging markets with high growth opportunity are more active in making productive investments that contribute to improved financial performance. In the transportation and logistics sector, growth opportunity drives companies to improve asset productivity and operational efficiency amid high cost pressures. As a result, it serves not only as an indicator of expansion prospects but also as a driver of higher profitability.

The Effect of Profitability on Cash Holding

Higher profitability contributes to an increase in cash holding, as firms with better financial performance are capable of generating larger internal cash flows. The reason is that firms with strong profitability are able to generate sufficient internal cash flows, which in turn increases their ability to retain cash. With adequate internal funds available, companies are able to preserve cash reserves while reducing their reliance on external

financing sources. In line with financing behavior, firms generally prioritize internally generated funds in their decision making process, therefore a portion of profits is retained as a precautionary buffer rather than being fully allocated to operational and investment activities (Myers & Majluf, 1984).

The findings of this study are consistent with previous research conducted by Bagh *et al.* (2021), Alnori *et al.* (2022), and Batuman *et al.* (2022), which indicate that highly profitable firms tend to retain higher levels of cash, especially during periods of economic uncertainty. Al Barak (2025) and Vuković *et al.* (2022) suggest that higher profitability enables firms to keep larger cash balances, which helps them preserve financial flexibility. The transportation and logistics industry is characterized as a capital-investment sector due to its substantial asset requirements for operational activities. As a result, relatively low profitability is still considered common within this industry. The large scale of assets required for operations makes the profit earned relatively small compared to the total assets owned by the company (Corporate Finance Institute, 2020; Rodrigue, 2024). In such conditions, companies usually keep cash as a safeguard for operational activities and higher profitability strengthens their ability to maintain larger cash reserves.

Profitability Mediates the Effect of Growth Opportunity on Cash Holding

The mediation analysis indicates that profitability mediates the relationship between growth opportunity and cash holding through a full mediation mechanism when profitability is measured using ROA. This finding is supported by the significant indirect effect of growth opportunity on cash holding through profitability, while the direct effect of growth opportunity on cash holding is insignificant. These results indicate that growth opportunity does not directly determine cash holding levels but influences cash holding through improvements in profitability. Therefore, growth opportunity will affect cash holding when it is successfully transformed into higher profitability and stronger internal cash flows.

Theoretically, this mechanism is consistent with the Pecking Order Theory proposed by Myers and Majluf (1984), which explains that firms prioritize internal financing generated from operational activities before relying on external financing. Firms with high growth opportunity tend to allocate resources toward business expansion, operational improvement, and market development. These activities may increase revenue generation and operational efficiency, which subsequently enhance profitability (Chandra & Dewi, 2021; Kopong & Nurzanah, 2016).

However, growth opportunity itself does not necessarily increase cash holding because expansion activities require significant financial resources. When growth strategies successfully improve profitability, firms generate stronger internal funds, which increase their ability to retain cash reserves. This condition reflects the financing preference explained in the Pecking Order Theory, where profitable firms are more capable of accumulating internal funds before seeking external financing (Myers & Majluf, 1984). Therefore, profitability acts as the mechanism that transforms growth opportunity into higher cash holding. This explanation is supported by previous studies showing that profitability strengthens firms' internal cash generation capacity and contributes to higher cash reserves (Alnori *et al.*, 2022; Bagh *et al.*, 2021; Batuman *et al.*, 2022).

In the transportation and logistics sector, this mediation effect is particularly relevant because companies face high operational costs, significant asset investment requirements, and external uncertainties. Therefore, growth opportunity does not

automatically lead to higher cash holding unless it generates improved profitability. This finding highlights the important role of profitability in explaining how growth opportunity influences corporate cash policies.

The Effect of Leverage on Cash Holding

A negative association between leverage and cash holding is observed, as companies with higher debt tend to hold less cash. When external financing through debt is available, firms do not need to keep excessive cash reserves to support their operation. Furthermore, the presence of debt, subjects companies to creditor oversight, which helps control the use of funds and prevents managers from holding excessive amounts of cash. This condition is also related to the fact that higher leverage may increase firms' exposure to debt related constraints because greater dependence on debt financing creates stronger obligations toward creditors (Abdurrahman & Ermawati, 2018). This finding aligns with Agency Theory, where debt is viewed as a control tool that limits managerial behavior in the management of corporate resources (Jensen & Meckling, 1976).

The study confirms the results of Trinh *et al.* (2022), indicate that higher debt levels reduce the availability of internal funds, resulting in lower retained cash. Das and Goel (2021) and Diaw (2021) also state that high leverage causes companies to hold less cash due to creditor oversight and the role of debt as a disciplinary mechanism that restricts managers from holding excessive cash. Alnori *et al.* (2022) explain that companies with high debt levels face greater costs in maintaining liquid assets, resulting in a decrease in retained cash. Additionally, Batuman *et al.* (2022) demonstrate that leverage can serve as a substitute for cash, so companies with high debt tend not to hold large amounts of cash and are subject to stricter oversight by financial institutions.

During the 2021–2025 study period, companies faced fluctuating operating costs and revenue pressures that influenced financial policies (Badan Pusat Statistik Provinsi Jambi, 2022; Kementerian Keuangan Republik Indonesia, 2022). Under these conditions, companies with higher leverage tend not to hold large amounts of cash because debt can serve as an alternative source of funding, thereby eliminating the need to maintain high cash reserves. Furthermore, the capital-intensive nature of the transportation and logistics industry results in significant funding needs, leading to a higher reliance on debt rather than holding large amounts of cash as reserves.

CONCLUSION

The findings show that growth opportunity does not have a direct significant effect on cash holding, but it has a positive and significant impact on profitability. Profitability measured by ROA positively affects cash holding and mediates the relationship between growth opportunity and cash holding through a full mediation mechanism. The robustness test using ROE indicates that the mediation effect may vary depending on the profitability proxy applied.

Furthermore, leverage shows a negative association with cash holding, consistent with Agency Theory, which emphasizes the role of debt as a monitoring mechanism that limits managerial discretion in cash management. From a practical perspective, strengthening profitability is more effective in increasing cash reserves than relying solely on business expansion. Maintaining an appropriate leverage level is also essential for financial stability, especially in capital intensive industries such as transportation and logistics.

This study also provides implications for future research. Future studies may extend this research by examining other mechanisms that explain cash holding decisions, such

as liquidity management, cash flow uncertainty, or corporate governance factors. Additionally, future studies may compare industries with different levels of capital intensity to evaluate whether the role of profitability and leverage remains consistent across various business contexts. These approaches may provide a broader understanding of corporate cash holding behavior.

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