The Influence of the Corporate Life Cycle and Sales Growth on Cash Holding with Geographic Diversification as a Moderating Variable

(An Empirical Study of Industrial Sector Companies Listed on the Indonesia Stock Exchange)

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This study investigates the influence of the firm life cycle and sales growth on corporate cash holdings, with geographic diversification examined as a moderating variable. Cash holding policy is a strategic financial decision that reflects firms' responses to operational uncertainty, investment opportunities, and financial constraints, particularly in the context of dynamic industrial sector conditions. This research employs a quantitative approach using panel data from industrial sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. The empirical analysis is conducted using Moderated Regression Analysis (MRA) to examine both the direct effects of firm life cycle and sales growth on cash holdings and the potential moderating role of geographic diversification. The results indicate that firm life cycle and sales growth have a significant influence on corporate cash holdings, suggesting that firms' stages of development and growth dynamics shape their liquidity management strategies. However, geographic diversification does not significantly moderate the relationship between firm life cycle and sales growth on cash holdings. These findings imply that corporate cash holding policies in Indonesian industrial firms are primarily driven by internal firm characteristics rather than by the extent of geographic diversification. The study contributes to the literature on corporate liquidity management by providing empirical evidence from an emerging market context and offers practical implications for managers in formulating cash management strategies aligned with firms' life cycle stages and growth conditions.

Keywords: Cash Holding, Corporate Life Cycle, Sales Growth, Geographic Diversification, MRA,

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1. Introduction

The development of the global and domestic business environment in recent years has exhibited increasingly complex dynamics and has been characterized by a high level of uncertainty. The period from 2019 to 2024 was marked by a series of major economic shocks, including a global economic slowdown, the COVID-19 pandemic, disruptions in international supply chains, and aggressive monetary policy tightening in response to surging inflation. These conditions have significantly affected corporate financial planning, particularly with respect to liquidity management and decisions regarding the level of cash holdings maintained by firms [1][2].

Cash holdings serve not only as a protective buffer that enables firms to withstand external shocks and financial constraints, but also as a strategic resource that supports investment activities, business expansion, and acquisition decisions when profitable opportunities arise. Consequently, corporate cash holding policies are not static; rather, they evolve in response to both internal firm characteristics and external environmental conditions. Understanding the determinants of corporate cash holdings is therefore

essential for explaining financial decision-making behavior, especially during periods of heightened economic uncertainty [3].

One important internal factor influencing cash holding policies is the corporate life cycle. According to Dickinson[4], corporate life cycle stages can be identified through patterns of cash flows derived from operating, investing, and financing activities. These cash flow patterns reflect firms' operational capabilities and resource allocation strategies, which vary across different stages of development. Firms at early stages of the life cycle often face higher uncertainty and financing constraints, whereas mature firms tend to operate under more stable conditions with established access to external capital markets.

Empirical studies provide evidence that corporate life cycle stages significantly affect cash holding behavior. Habib and Hasan[5] and Hasan et al[6] document that firms in the introduction and growth stages tend to maintain higher levels of cash holdings compared to firms in the maturity stage. Similar findings have been observed in the Indonesian context, where corporate life cycle stages influence cash holding decisions among non-financial firms listed on the Indonesia Stock Exchange [7]. More recently, Rahman et al[8] emphasize that firms undergoing transitions between life cycle stages experience greater volatility in cash holdings, driven by strategic uncertainty and the need to adjust capital structures in response to changing business conditions.

In addition to life cycle considerations, sales growth represents a key indicator of corporate performance and future prospects, with direct implications for liquidity management. Sales growth generates higher cash inflows; however, it simultaneously increases the demand for working capital to support expanded operational activities. Pazos et.al[9] Argue that this dual effect creates complex dynamics in corporate cash management, as firms must balance the benefits of increased revenues against the liquidity pressures associated with expansion. As a result, the relationship between sales growth and cash holdings remains theoretically ambiguous and warrants further empirical examination.

Furthermore, in the context of globalization and cross-regional expansion, geographic diversification has emerged as an important strategic factor that may influence corporate cash holding policies. Geographic diversification refers to the dispersion of a firm's operational activities across multiple regions or countries with the objective of reducing dependence on a single market and enhancing revenue stability[10]. From a risk management perspective, geographically diversified firms may require larger cash reserves to manage operational complexity, exchange rate risk, and institutional differences across regions.

However, existing empirical evidence regarding the impact of geographic diversification on cash holdings remains inconclusive. Some studies suggest that geographic diversification increases cash holdings due to higher operational and financial risks associated with managing activities across multiple regions [10]. In contrast, other studies find that geographically diversified firms hold less cash because diversification stabilizes cash flows and enables the efficient allocation of resources through internal capital markets[11]. These conflicting findings indicate that the role of geographic diversification is context-dependent and may interact with firm-specific characteristics.

Despite the extensive literature on corporate cash holdings, several important research gaps remain. First, prior studies tend to examine the determinants of cash holdings in isolation, without integrating corporate life cycle dynamics and sales growth within a unified analytical framework. While both factors have been individually linked to cash holding decisions, empirical evidence on their combined effects remains limited, particularly in emerging market settings. Second, the moderating role of geographic diversification in the relationship between firm characteristics and cash holdings has received relatively little empirical attention, and existing findings remain mixed. Third, research focusing on industrial sector firms in emerging

economies such as Indonesia is still scarce, even though these firms operate in environments characterized by higher uncertainty, evolving institutional frameworks, and constrained access to external financing.

Accordingly, this study aims to fill these gaps by examining the influence of corporate life cycle and sales growth on cash holdings, while explicitly incorporating geographic diversification as a moderating variable. By focusing on industrial sector firms listed on the Indonesia Stock Exchange during the period 2020–2024, this study contributes empirical evidence from an emerging market context and enhances the understanding of corporate liquidity management under conditions of economic uncertainty and structural transformation.

2. Literature Review and Problem Statement

Corporate Cash Holdings

Corporate cash holdings refer to the proportion of cash and cash equivalents maintained by firms relative to their total assets. Cash holdings play a critical role in ensuring corporate liquidity, enabling firms to meet short-term obligations, absorb external shocks, and seize strategic investment opportunities without relying excessively on external financing[12]. From a corporate finance perspective, cash holding decisions reflect a trade-off between the benefits of liquidity and the opportunity costs associated with holding non-earning assets.

Several theoretical frameworks explain corporate cash holding behavior. The trade-off theory suggests that firms balance the marginal benefits of holding cash, such as reduced financial distress costs and greater investment flexibility, against the marginal costs, including lower returns and potential agency problems[13]. Meanwhile, the pecking order theory posits that firms prefer internal financing over external sources, leading firms with higher internal funds to retain more cash to finance future investments[14]. Additionally, agency theory argues that managers may hold excess cash to pursue private benefits, particularly in firms with weak governance structures[15].

Empirical studies provide mixed evidence regarding the determinants of cash holdings. Bates et al.[16] document a significant increase in corporate cash holdings over time, attributing this trend to rising cash flow volatility and changes in corporate policies. These findings highlight that cash holding behavior is context-dependent and influenced by both firm-specific characteristics and macroeconomic conditions.

Corporate Life Cycle and Cash Holdings

The corporate life cycle framework posits that firms evolve through distinct stages, such as introduction, growth, maturity, and decline, each characterized by different operational structures, financing needs, and risk profiles[4]. At early stages, firms often face higher uncertainty, limited access to external capital, and greater reliance on internal funds, which may lead to higher cash holdings as a precautionary measure.

Empirical evidence supports the relevance of the corporate life cycle in explaining cash holding behavior. Habib and Hasan[5] find that firms in the introduction and growth stages hold significantly more cash compared to mature firms, reflecting higher growth opportunities and financing constraints. Hasan et al. [6] further confirm that life cycle stages systematically influence cash holding policies across different institutional settings.

In the Indonesian context, Wulandari and Nugroho[17] show that corporate life cycle stages significantly affect cash holding decisions among non-financial firms listed on the Indonesia Stock Exchange. Their findings suggest that firms in earlier life cycle stages tend to maintain higher cash reserves to mitigate uncertainty and support expansion activities. These studies underscore the importance of incorporating a dynamic life cycle perspective when analyzing corporate liquidity management.

Sales Growth and Cash Holdings

Sales growth is widely regarded as an indicator of firm performance and future growth potential. High sales growth often generates increased cash inflows; however, it simultaneously creates greater demand for working capital to finance inventory, receivables, and operational expansion [18]. Consequently, the relationship between sales growth and cash holdings is theoretically ambiguous.

From one perspective, firms experiencing rapid sales growth may hold more cash to support expanding operations and avoid liquidity constraints[13]. Conversely, high-growth firms may reinvest cash flows aggressively, resulting in lower levels of retained cash[16]. Empirical findings remain mixed, suggesting that the effect of sales growth on cash holdings depends on firm characteristics, financing constraints, and market conditions.
These inconsistencies indicate that sales growth should not be examined in isolation, but rather in conjunction with other firm-specific factors, such as life cycle stage and strategic orientation.

Geographic Diversification as a Moderating Variable

Geographic diversification refers to the dispersion of a firm's operational activities across multiple regions or countries with the aim of reducing dependence on a single market and enhancing revenue stability[19]. From a risk management perspective, geographic diversification may increase operational complexity and exposure to exchange rate, political, and institutional risks, thereby motivating firms to hold higher cash reserves.

Empirical studies, however, report conflicting results. Geographically diversified firms tend to hold more cash due to higher coordination and risk management costs [19]. In contrast, Sun et al[20] argue that geographic diversification can reduce cash holdings by stabilizing cash flows and enabling efficient internal capital markets that facilitate resource reallocation across regions.

These divergent findings suggest that geographic diversification may not directly determine cash holding levels, but instead function as a contextual factor that conditions the relationship between firm characteristics, such as corporate life cycle and sales growth, and cash holding decisions. Therefore, treating geographic diversification as a moderating variable provides a more nuanced understanding of corporate liquidity management.

Problem Statement

Despite extensive research on corporate cash holdings, several unresolved issues remain. First, existing studies predominantly analyze the determinants of cash holdings separately, without integrating corporate life cycle dynamics and sales growth within a single empirical framework. As a result, the combined influence of firm maturity and growth dynamics on cash holding behavior remains underexplored, particularly in emerging markets.

Second, empirical evidence regarding the role of geographic diversification in corporate cash holding decisions remains inconclusive. Prior studies report mixed findings on whether geographic diversification increases or decreases cash holdings, indicating that its role may be contingent upon firm-specific characteristics and institutional contexts.

Third, limited research has examined the moderating role of geographic diversification in the relationship between corporate life cycle, sales growth, and cash holdings, especially within industrial sector firms in emerging economies such as Indonesia. Given the heightened economic uncertainty and structural changes experienced during the 2020–2024 period, understanding how these factors interact is particularly relevant.

Accordingly, this study addresses these gaps by investigating the influence of corporate life cycle and sales growth on cash holdings, while examining geographic diversification as a moderating variable. By focusing on industrial sector firms listed on the Indonesia Stock Exchange, this research contributes to the corporate finance literature by providing empirical evidence from an emerging market context and offering insights into corporate liquidity management under conditions of economic uncertainty.

3. Method

Research Design

This study adopts an associative research design, which aims to examine and analyze the relationships among two or more variables, including both correlational and causal relationships[21]. An associative approach is appropriate for identifying the influence of firm-specific characteristics on corporate financial decisions.

Furthermore, this study employs a quantitative research approach, focusing on numerical data derived from financial statements and analyzed using statistical techniques to test predefined hypotheses. The quantitative approach allows for objective measurement and empirical testing of the relationships between corporate life cycle, sales growth, geographic diversification, and cash holdings.

The research is conducted on industrial sector companies listed on the Indonesia Stock Exchange (IDX). The IDX is selected as the research setting because it provides comprehensive, publicly accessible financial statements, annual reports, and sustainability reports relevant to the variables examined in this study. All data are obtained from the official IDX website (www.idx.co.id).

Population and Sample Selection

The population of this study consists of all industrial sector companies listed on the Indonesia Stock Exchange during the period 2020–2024, totaling 50 companies. This study utilizes secondary data obtained from audited annual financial reports.

The sampling technique applied is census sampling (saturated sampling), in which all firms meeting the predetermined criteria are included as research samples. After applying the sample selection criteria, 24 companies were identified as eligible for analysis over a five-year observation period, resulting in 120 firm-year observations.

Variable measurement refers to the process of quantifying concepts, events, or attributes in a manner that allows for statistical analysis. This study employs financial ratios and numerical indicators commonly used in corporate finance literature.

Table 1. Operational Definition of Variables

Variable	Description	Measurement	Scale
Cash Holdings (CH)	The proportion of cash and cash equivalents held by the firm relative to total assets	Cash and Cash Equivalents / Total Assets	Ratio
Corporate Life Cycle (CLC)	Firm life cycle measured through retained earnings relative to equity	Retained Earnings / Total Equity	Ratio
Sales Growth (SG)	Annual growth rate of firm sales	$(Sales_t - Sales_{t-1}) / Sales_{t-1}$	Ratio
Geographic Diversification (GD)	The extent of firm operations across multiple regions or countries	Number of geographic regions/countries where the firm operates	Nominal

Data Analysis Technique

Data analysis in this study is conducted using Moderated Regression Analysis (MRA) to examine both direct and moderating effects. MRA is appropriate for assessing whether geographic diversification strengthens or weakens the relationship between independent variables and the dependent variable.
The regression model is specified as follows:

$$CH = \alpha + \beta_1 CLC + \beta_2 SG + \beta_3 GD + \beta_4 (CLC \times GD) + \beta_5 (SG \times GD) + \varepsilon$$

Where:

CH = Cash Holdings
CLC = Corporate Life Cycle
SG = Sales Growth
GD = Geographic Diversification
ε = Error term

Classical Assumption Tests

To ensure the robustness and validity of the regression model, this study performs a series of classical assumption tests prior to hypothesis testing. These tests are essential to confirm that the estimated regression coefficients are unbiased and reliable. The normality test is conducted to examine whether the regression residuals are normally distributed, which is a fundamental requirement for valid statistical inference. A normally distributed residual indicates that the model appropriately captures the underlying data structure and supports the use of parametric statistical techniques.

Furthermore, a multicollinearity test is applied to assess the degree of correlation among independent variables. High multicollinearity may distort coefficient estimates and weaken the interpretability of regression results. By ensuring that the independent variables are not excessively correlated, this study enhances the precision and stability of the estimated parameters. In addition, a heteroscedasticity test is conducted to evaluate whether the variance of the residuals remains constant across observations. Homoscedastic residuals indicate that the model satisfies the assumption of constant variance, which is necessary for obtaining efficient and unbiased estimators.

The study also performs an autocorrelation test to detect potential serial correlation in the residuals, particularly given the use of panel data over a multi-year observation period. The absence of autocorrelation suggests that residuals are independent across time, thereby supporting the validity of the regression results. All classical assumption tests are carried out using EViews software, with a significance level set at five percent ($\alpha = 0.05$), in line with conventional standards in empirical accounting and finance research.

Research Procedure

The research procedure is implemented through a systematic and sequential process to ensure methodological rigor. The study begins with the identification of research problems and the formulation of hypotheses derived from relevant theories and prior empirical findings. Subsequently, secondary data are collected from audited annual financial reports of industrial sector firms listed on the Indonesia Stock Exchange. These data provide reliable and objective information required for measuring the variables under investigation.

Following data collection, all research variables are measured using established financial ratios and indicators commonly applied in corporate finance studies. The data are then subjected to descriptive statistical analysis to provide an overview of their distribution and characteristics, followed by inferential statistical analysis to test the proposed hypotheses. Finally, the results of the statistical analyses are

interpreted in accordance with the research objectives, leading to the formulation of conclusions and implications that contribute to the literature on corporate liquidity management.

4. Results and Discussion

Descriptive Statistics Analysis

Table 2. Descriptive Statistics

Statistic	CH	SHP	PP	FDG
Mean	1.596.926	0.243882	0.222957	2.891.667
Median	2.035.779	0.199732	0.164809	3.000.000
Maximum	5.148.307	0.939058	1.184.759	7.000.000
Minimum	0.005933	0.010637	0.003188	1.000.000
Std. Dev.	1.285.282	0.200235	0.221207	1.320.783
Skewness	0.282314	2.050.627	2.122.397	1.079.041
Kurtosis	2.412.281	7.565.630	8.164.965	4.772.884
Jarque-Bera	3.321.099	1.883.264	2.234.758	3.900.216
Probability	0.190035	0.000000	0.000000	0.000000
Observations	120	120	120	120

Table 2 presents the descriptive statistics of the research variables based on 120 firm-year observations from industrial sector companies listed on the Indonesia Stock Exchange during the 2020–2024 period. The statistics provide an overview of the minimum, maximum, mean, median, and standard deviation values for each variable.

Cash holdings (CH) exhibit a mean value of 1.596926 with a standard deviation of 1.285282, indicating moderate variation in corporate liquidity levels across firms. The corporate life cycle (SHP) variable shows a mean of 0.243882 and a standard deviation of 0.200235, reflecting observable yet relatively stable differences in firms' life cycle positions. Sales growth (PP) records an average value of 0.222957 with a standard deviation of 0.221207, suggesting that firms generally experienced positive but varying sales growth during the observation period. Geographic diversification (FDG) has a mean value of 2.891667 and a standard deviation of 1.320783, indicating moderate dispersion in the extent of firms' geographic operations. Overall, the descriptive statistics demonstrate sufficient variability across all variables, supporting the suitability of the data for further regression analysis and hypothesis testing.

Classical Assumption Test

1. Normality Test

   The normality of residuals is examined using the Jarque–Bera (JB) test. As shown in Figure 1,

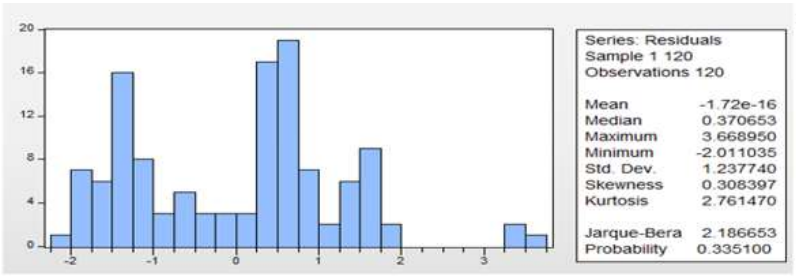

Figure 1. Normality Test

   The JB statistic is 2.186653 with a probability value of 0.335100. According to the decision rule, if the probability value exceeds the significance level of 0.05, the null hypothesis stating that the residuals are normally distributed cannot be rejected. Since the probability value of 0.335100 is

greater than 0.05, it can be concluded that the residuals in the regression model are normally distributed. Therefore, the normality assumption is satisfied, allowing further inferential analysis to be conducted.

2. Multicollinearity Test
   Multicollinearity is tested by examining the correlation matrix among independent variables. The results are presented in Table 3.

Table 3 Multicollinearity Test Results

Variable	SHP	PP	C
SHP	0.327315	0.014005	-0.082949
PP	0.014005	0.268192	-0.063211
C	-0.082949	-0.063211	0.047308

Source: EViews output, 2025

The correlation coefficients among the independent variables are all below 0.80, indicating that there is no strong correlation among explanatory variables. Therefore, the regression model does not suffer from multicollinearity problems.

3. Heteroscedasticity Test
   The heteroscedasticity test is conducted using the Glejser test, with the results summarized in Table 4.

Table 4. Heteroscedasticity Test (Glejser)

Statistic	Value	Probability
F-statistic	0.742053	0.4784
Obs*R-squared	1.503.093	0.4716
Scaled explained SS	1.115.099	0.5726

Source: EViews output, 2025

The probability value of the Chi-square statistic is 0.4716, which exceeds the significance level of 0.05. This result indicates that the residuals exhibit homoscedasticity, and thus the heteroscedasticity assumption is not violated.

4. Autocorrelation Test
   Autocorrelation is examined using the Durbin–Watson (DW) test. The regression output reports a DW value of 1.907991. To confirm the result, the DW statistic is compared with the lower bound (DL) and upper bound (DU) values, as shown in Table 5.

Table 5. Durbin–Watson Test Summary

N	k	DW	DL	DU	4 – DL	4 – DU
120	2	1.907.991	1.420	1.673	2.578	2.327

Source: EViews output, 2025

The DW value of 1.907991 lies between DU (1.673) and 4 – DU (2.327) and is close to 2, indicating the absence of autocorrelation in the regression model. Thus, the autocorrelation assumption is fulfilled.

Regression Analysis Results

1. Coefficient of Determination
   The coefficient of determination shows an Adjusted R-squared value of 0.691804, indicating that 69.18% of the variation in cash holdings is explained by corporate life cycle and sales growth. The remaining 30.82% is explained by other variables not included in the model. This result suggests a strong explanatory power of the independent variables in the baseline regression model.

2. Simultaneous Test (F-test)
   The F-test result indicates an F-statistic of 67.77958 with a probability value of 0.000000, which is lower than the significance level of 0.05. Since the calculated F-statistic exceeds the critical value (2.68), it can be concluded that corporate life cycle and sales growth simultaneously have a significant effect on cash holdings.
3. Partial Test (t-test)
   The results of the partial test are presented in Table 6.

Table 6. Partial Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Probability
C	1.634.935	0.217504	7.516.815	0.0000
SHP	-1.167.357	0.572110	-2.040.424	0.0436
PP	1.106.442	0.517873	2.136.514	0.0347

Source: EViews output, 2025

   The corporate life cycle variable (SHP) has a negative coefficient of -1.167357 with a probability value of 0.0436, indicating a statistically significant effect on cash holdings. Sales growth (PP) has a positive coefficient of 1.106442 with a probability value of 0.0347, indicating a statistically significant positive effect on cash holdings.
4. Moderated Regression Analysis (MRA)
   The moderated regression analysis incorporates geographic diversification as a moderating variable. The estimated regression equation is as follows:

$$CH = 1.653553 - 0.331208(SHP) + 0.353120(PP) + 0.000599(FDG) + 0.202748(PP \times FDG) - 0.286152(SHP \times FDG) + \varepsilon$$

Table 7. MRA Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Probability
C	1.653.553	0.551229	2.999.757	0.0033
SHP	-0.331208	1.431.683	-0.231342	0.8175
PP	0.353120	1.202.822	0.293576	0.7696
FDG	0.000599	0.185421	0.003232	0.9974
PP*FDG	0.202748	0.290908	0.696949	0.4873
SHP*FDG	-0.286152	0.459569	-0.622653	0.5348

Source: EViews Output, 2025

   The results indicate that geographic diversification does not have a significant direct effect on cash holdings, nor does it significantly moderate the relationship between corporate life cycle, sales growth, and cash holdings. Although the interaction coefficients show positive and negative directions, their probability values exceed 0.05, indicating the absence of statistically significant moderating effects.

Discussions

This study examines the effect of the corporate life cycle and sales growth on cash holdings, with geographic diversification as a moderating variable, using industrial sector firms listed on the Indonesia Stock Exchange during the 2020–2024 period. The findings provide important insights into corporate liquidity management in an emerging market context characterized by heightened economic uncertainty.

The results of the baseline regression model indicate that corporate life cycle has a significant negative effect on cash holdings. This finding suggests that firms at more advanced stages of the life cycle tend to hold lower levels of cash compared to firms in earlier stages. From a theoretical perspective, this result is consistent with the corporate life cycle theory proposed by Dickinson[4], which argues that firms in the

growth and introduction stages face higher uncertainty and financing constraints, motivating them to retain larger cash reserves. Conversely, mature firms generally have more stable cash flows and better access to external financing, reducing their need to maintain high levels of cash holdings.

This finding also aligns with prior empirical studies by Habib and Hasan[5] and Hasan et al. [6], who document that firms in earlier life cycle stages maintain higher cash balances as a precautionary strategy. In the Indonesian context, where capital market efficiency and access to external financing remain uneven across firms, life cycle considerations appear to play a significant role in shaping corporate liquidity decisions. However, the negative coefficient indicates that as firms transition toward maturity, reliance on internal cash reserves diminishes, reflecting improved operational stability and financing capacity.

Sales growth is found to have a positive and significant effect on cash holdings in the baseline model. This result implies that firms experiencing higher sales growth tend to increase their cash holdings. The finding supports the argument that rapid growth generates higher operational cash inflows but simultaneously increases working capital requirements, prompting firms to retain more cash to support expanding operations. This result is consistent with the trade-off theory, which suggests that firms balance liquidity benefits against holding costs, particularly when growth opportunities are high (Ferreira & Vilela, 2004).

The positive relationship between sales growth and cash holdings is also in line with the findings of Anjum et al [22], who argue that growing firms face greater liquidity needs to finance inventories, receivables, and operational expansion. In the context of the industrial sector, where production cycles and capital intensity are relatively high, retaining additional cash becomes a rational strategy to mitigate operational risks associated with growth.

However, when geographic diversification and interaction terms are introduced through the Moderated Regression Analysis (MRA), the effects of corporate life cycle and sales growth on cash holdings become statistically insignificant. This shift in significance suggests that the direct effects observed in the baseline model are not robust when additional structural and strategic variables are considered. The loss of significance may indicate that the influence of life cycle stage and sales growth on cash holdings is contingent upon other firm-specific factors not fully captured by geographic diversification.

The results further reveal that geographic diversification does not have a significant direct effect on cash holdings. This finding suggests that operating across multiple regions or countries does not automatically lead firms to retain higher or lower levels of cash. One possible explanation is that geographically diversified firms may have developed more efficient internal financial management systems, enabling them to allocate liquidity across units without the need to hold excessive centralized cash reserves. This interpretation is consistent with Shaista[23], who argue that geographic diversification can enhance internal capital market efficiency and reduce precautionary cash holdings.

Moreover, the interaction terms between geographic diversification and both corporate life cycle and sales growth are found to be statistically insignificant. These results indicate that geographic diversification does not moderate the relationship between corporate life cycle, sales growth, and cash holdings. Although the coefficients of the interaction terms show positive and negative directions, the lack of statistical significance implies that geographic diversification does not systematically strengthen or weaken the impact of these variables on corporate liquidity decisions.

These findings highlight the context-dependent nature of geographic diversification. In the Indonesian industrial sector, geographic expansion may not significantly alter firms' liquidity behavior, possibly due to similarities in institutional environments, financing conditions, or risk profiles across operating regions.

Additionally, firms may rely more heavily on external financing mechanisms or internal cash flow management rather than maintaining large precautionary cash balances.

Overall, the results suggest that while corporate life cycle and sales growth influence cash holdings under a simpler model specification, their effects become less pronounced when strategic complexity is introduced. This indicates that corporate cash holding decisions are multifaceted and cannot be explained solely by growth dynamics or life cycle considerations. Instead, firms' liquidity policies are likely shaped by a broader set of internal and external factors, including profitability, leverage, access to capital markets, and managerial discretion.

From a managerial perspective, these findings imply that firms should not rely solely on sales growth or life cycle stage when determining cash holding policies. Instead, managers must adopt a comprehensive liquidity management strategy that accounts for operational needs, financing flexibility, and the firm's broader strategic context. For policymakers and regulators, the results underscore the importance of strengthening financial market access and institutional support, particularly for firms in earlier life cycle stages that remain more vulnerable to liquidity constraints.

5. Conclusion

This study examines the effect of sales growth and corporate life cycle on cash holdings, with geographic diversification as a moderating variable, using data from industrial sector companies listed on the Indonesia Stock Exchange. The empirical findings indicate that neither sales growth nor corporate life cycle has a statistically significant effect on corporate cash holdings, even after accounting for the moderating role of geographic diversification. These results suggest that corporate liquidity decisions are not directly driven by growth dynamics or life cycle stages. The findings imply that cash holding policies are more strongly influenced by internal financial factors, such as profitability, leverage, cash flow stability, and working capital requirements. This evidence extends existing theoretical perspectives by demonstrating that sales growth and corporate life cycle stages do not automatically generate liquidity pressure or determine firms' cash retention behavior. As a result, firms cannot rely solely on sales growth performance or life cycle positioning when formulating cash management strategies.

From a managerial perspective, the results emphasize the importance of prudent cash management practices, particularly in environments characterized by market uncertainty and cost structure volatility. Managers should not assume that higher sales growth will reduce liquidity needs; instead, comprehensive liquidity planning remains essential to ensure operational continuity and financial resilience. From a policy perspective, the findings highlight the need to strengthen corporate access to financing, especially for small and medium-sized enterprises and firms in the early stages of the corporate life cycle. Since sales growth does not necessarily translate into higher cash availability, supportive financial policies and improved access to external funding can play a critical role in enhancing firms' financial flexibility and sustainability.

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