



The Effect Of Company Size, Sales Growth, And Leverage On Cash Holdings In Technology Companies Listed On The Indonesia Stock Exchange In 2020 – 2024

Agnes Sinaga^{1*}, La Ane²

^{1,2,3}Prodi Akuntansi, Fakultas Ekonomi, Universitas Negeri Medan, Indonesia

*Corresponding author: agnessinaga1803@gmail.com

<https://orcid.org/0000-0002-7867-270X>

Abstract

The problem in this study is the fluctuation of cash holding levels in technology sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. Changes in the technology industry, characterized by the Tech Winter phenomenon, tighter global funding conditions, and increasing economic uncertainty, have encouraged companies to manage cash optimally in order to maintain liquidity and business continuity. Cash holding policy is an important aspect because it serves as a reserve fund to meet operational needs and anticipate financial risks. However, the level of cash holding owned by a company can be influenced by several factors, such as firm size, sales growth, and leverage. The purpose of this study is to analyze and determine the effect of firm size, sales growth, and leverage on cash holding in technology companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. This study was conducted on technology sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. The population of this study consisted of 47 companies. The sampling technique used was purposive sampling, resulting in 14 companies that met the research criteria with a total of 70 observations. The data used were secondary data obtained from the companies' annual financial reports. The data analysis method employed panel data regression, including descriptive statistical analysis, model selection through the Chow Test and Hausman Test, and hypothesis testing using the t-test, F-test, and coefficient of determination (R^2). Data processing was carried out using EViews 12 software. The results show that firm size has no effect on cash holding. Sales growth has a positive and significant effect on cash holding. Leverage has a negative and significant effect on cash holding. Simultaneously, firm size, sales growth, and leverage have a significant effect on cash holding in technology companies listed on the Indonesia Stock Exchange during the

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2020–2024 period. The Adjusted R-Square value of 0.287580 indicates that firm size, sales growth, and leverage explain 28.76% of the variation in cash holding, while the remaining 71.24% is explained by other variables outside the research model. The conclusion of this study is that firm size has no effect on cash holding; therefore, H1 is rejected. Sales growth has a positive and significant effect on cash holding; therefore, H2 is accepted. Leverage has a negative and significant effect on cash holding; therefore, H3 is accepted. Firm size, sales growth, and leverage simultaneously have a significant effect on cash holding; therefore, H4 is accepted.

Keywords: Cash Holding, Firm Size, Sales Growth, Leverage, Technology Companies

INTRODUCTION

The Indonesian economy has shown increasingly dynamic development in recent years, driven by growing business activity and increasing competition between companies. This situation requires companies to maintain business continuity through effective financial management, particularly in ensuring their ability to meet operational needs and anticipate various forms of uncertainty that may arise at any time. One important financial policy to consider is a company's cash holding policy, both to support operational activities and as a reserve when the company needs funds quickly (Nurlis et al., 2023).

The Indonesian technology sector has experienced a drastic financial paradigm shift over the past five years (2020–2024). The period from 2020 to mid-2022 was marked by an aggressive expansion strategy based on *growth at all costs*, supported by high global liquidity and massive investor interest. However, post-2022, the technology industry landscape has transformed into a much more volatile and challenging one. This dynamic has forced technology entities listed on the Indonesia Stock Exchange (IDX) to reorient their strategies, from a focus on market share to strengthening financial resilience. In this context, cash holding policies have emerged as a crucial strategic instrument for maintaining business continuity (going concern) (Septiani, 2023).

The fundamental phenomenon that prompted this research is the emergence of the "Tech Winter" phase. According to a report by *Tempo.co* (Febriyanto, 2018) this phenomenon was triggered by escalating global interest rates, resulting in ballooning capital costs and significantly tightening investor funding flows. This limited external liquidity situation requires technology issuers to optimize internal funding sources, with *cash holdings* serving as a liquidity cushion to ensure operational stability without relying on external capital injections, which are currently difficult to access (Khoeriyah, 2020).

Theoretically, a *cash holding policy* acts as a *buffer* against future cash flow volatility. According to Brigham and Houston (Alfinur & Hidayat, 2021) companies maintain cash balances based on transactional, precautionary, and speculative motives. In the domestic technology sector, fluctuations in cash policy are evident in *market leaders* such as PT GoTo Gojek Tokopedia Tbk (GOTO) and PT Bukalapak.com Tbk (BUKA). GOTO consistently applies fiscal discipline and optimizes operational costs to maintain a solid cash position of IDR 21 trillion by the end of 2024 to mitigate the risk of uncertainty (GoTo Company, 2024). Consistently, BUKA is undertaking strategic restructuring and divesting non-profitable business lines to strengthen its cash liquidity position amid moderating revenue growth (Arianti, 2022).

Cash holding is a company's policy for determining the amount of cash and cash equivalents to maintain to support operational activities and ensure business continuity. Cash, as the most liquid asset, plays a crucial role in ensuring the smooth operation of a company, especially when facing unstable financial conditions or when sudden funding needs arise. Therefore, companies need to manage cash optimally, as too much cash can potentially incur opportunity costs, while too little cash can increase the risk of financial distress (Romel and Ekadjaja, 2023).

By definition, *cash holding* can be understood as cash held by a company to support operational activities. Devina et al. (Chen, Li, et al., 2024) define *cash holding* as cash retained by a company to carry out operational activities. Furthermore, Limanta and Malelak (2017) in Romel and Ekadjaja (Sudjiman & Sudjiman, 2020) explain that *cash holding* is cash or cash equivalents held by a company to finance operational activities such as wage payments, raw material purchases, fixed asset purchases, debt payments, and other transactions required by the company. This definition shows that *cash holding* not only reflects cash on hand but also reflects the company's financial policies to maintain smooth operational activities.

Cash holding plays a strategic role for companies because it serves as a reserve fund to support smooth transactions and anticipate financial uncertainty. Limanta and Malelak (2017) in Romel and Ekadjaja (2023) state that there are three main motives for companies holding cash: *transaction motive* (for routine transactions), *precautionary motive* (to guard against unexpected events), and *speculative motive* (to capitalize on certain opportunities such as changes in interest rates or exchange rates). Thus, *cash holding* can be an indicator to assess a company's readiness to meet operational needs and its level of financial flexibility in facing business risks and opportunities.

In this study, *cash holdings* are measured using the ratio of cash and cash equivalents to total assets. Andika (Patel et al., 2024) explains that *cash holdings* are part of a company's liquid assets, which can be in the form of cash or cash held in specific accounts. This ratio is

used because it shows the proportion of a company's assets held in cash, thus directly reflecting the company's available liquidity level.

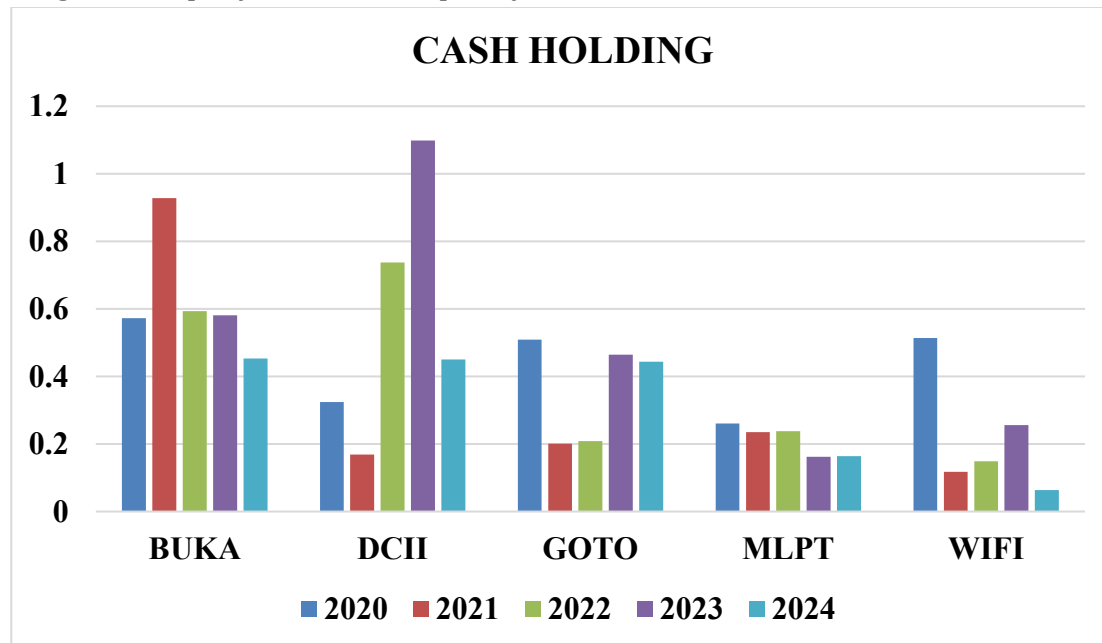


Figure 1 Average Cash Holding Value of Technology Companies 2020-2024

The figure above shows a sharp fluctuation in the *cash holding ratio* of Indonesian technology companies during the observation period. In the initial phase (2020-2021), average cash levels tended to be higher, reflecting abundant post-IPO liquidity and external funding. However, entering the 2023-2024 period, there are indications of a decline or tightening in cash balances (Y. Wang et al., 2018).

This phenomenon confirms the real impact of *Tech Winter*, where companies began dipping into their cash reserves to cover operating costs due to the difficulty of obtaining new funding. This inconsistent pattern across years suggests that cash retention policies are not static, but rather highly responsive to macroeconomic pressures and internal company conditions (Annisa et al., 2021).

The first determinant suspected of influencing this policy is firm size. Large-scale technology companies generally have complex operational structures and high working capital requirements, but also have greater flexibility in accessing capital markets. However, the IDX phenomenon shows that large asset scale does not automatically guarantee cash stability if it is not accompanied by managerial efficiency (Hassan et al., 2023). This has given rise to academic debate about whether asset size is positively correlated with a company's

tendency to retain cash or whether it actually encourages cash efficiency through economies of scale.

Firm size is an indicator that describes the size of a company, which is often associated with the company's capacity to carry out business activities and manage its resources. In financial research, firm size is widely used because large-scale companies generally have more complex operational activities and more diverse financing needs. Large companies tend to have more stable business activities and easier access to funding than small companies, making firm size an important aspect in analyzing corporate financial policies (H. Wang et al., 2023).

Company size reflects a company's ability to manage assets, expand operational activities, and demonstrate its financial strength in facing business risks. Sukma Dwi (2022) states that company size reflects the size of a company, as measured by its total assets. Therefore, the greater the total assets, the larger the company's scale. In research practice, company size is generally measured using total assets, which are then transformed into a natural logarithm to make the data more stable and easier to analyze. An increase in company size indicates growth in business scale and increased asset capacity, potentially strengthening the company's ability to meet operational needs, increase financial flexibility, and expand future investment opportunities (Al-Mamun et al., 2020).

In a *Tech Winter*, sales growth is seen as an indicator of success. Technology issuers now face a dilemma: pursuing market penetration, which risks draining cash resources, or moderating growth to maintain liquidity. BUKA's strategy, which prioritizes operational efficiency over aggressive growth, clearly represents a shift in priorities in *cash holding policies* (Lee et al., 2024).

Another factor thought to influence *cash holdings* is *leverage*. *Leverage* is a crucial aspect of a company's operations because it relates to its funding policy and ability to meet its financial obligations. *Leverage* indicates the extent to which a company utilizes debt as a source of funding to support operational activities and business development. In financial management, the use of debt can help a company increase operational capacity, but on the other hand, it can also increase risk because the company must bear the obligation to pay interest and principal on the debt. *Leverage* is used to determine the extent to which a company's assets are financed by debt, making it an important indicator for assessing a company's capital structure (Kumar et al., 2023).

Leverage reflects a company's level of dependence on external funding and its ability to bear financial risks resulting from debt use. The higher the debt used, the greater the financial risk a company must bear due to the fixed payment obligations it must meet (Prasetya & Oktavianna, 2021). In research, *leverage* is generally measured by comparing

total debt to total assets or total equity, thus determining the proportion of the company's funding that comes from debt. Increasing *leverage* indicates a larger proportion of debt, leading to a higher liability burden, which can influence the company's cash *holding policy* as a precautionary measure to maintain its ability to pay both short-term and long-term obligations.

The escalation of interest rates in the 2022–2024 period will make debt structures a significant financial burden. Based on *Pecking Order Theory*, companies with high levels of *leverage* face pressure from interest-paying obligations, which can deplete cash reserves. Conversely, from a precautionary perspective, high debt can actually encourage managers to increase (Agarwal et al., 2019).

Although the literature on *cash holding* has grown considerably, there is a significant *research gap*. Sukma Dwi (2022) demonstrated a significant effect of company size on cash holdings, while Hermawan et al. found contradictory evidence. Similar inconsistencies were also found for sales growth and *leverage*. Furthermore, the majority of previous research focused on manufacturing companies, while comprehensive studies on the technology sector covering the transition period of the funding c(Nurlaili & Wulandari, 2024)risis (2020–2024) are still very limited.

The differences in previous research findings regarding the effect of company size, sales growth, and *leverage* on *cash holdings* may be due to several factors. First, differences in industrial sector characteristics influence corporate cash management patterns. Manufacturing companies generally have large fixed assets and relatively stable cash flows, while technology companies tend to have intangible assets, high growth rates, and greater cash flow uncertainty, resulting in different *cash holding requirements*. Second, differences in the research periods are also important, particularly the 2020–2024 period, which is the post-pandemic period and accompanied by a global funding *winter phenomenon* that increases liquidity risk and encourages companies to hold more cash as a *precautionary measure*. Third, differences in analytical methods, variable proxies, and data structures used in the research (e.g., different regression models, observation periods, and company size as a proxy) can produce different coefficient estimates. Therefore, the inconsistencies in these findings indicate that the relationship between company size, sales growth, *leverage*, and *cash holdings* remains contextual and relevant for further research in the technology sector on the Indonesia Stock Exchange for the 2020–2024 period.

This research is an original development of Sufiyati et al.'s (2022) study, distinguished by its research object being the technology sector and its current period (2020–2024). This timeframe is highly relevant because it captures the industry's dynamics

from the euphoria of the pandemic to the contractionary phase of *Tech Winter* (Dewi & Sujana, 2019).

The discrepancies in previous research examining the relationship between independent and dependent variables, as well as the limited research addressing technology sector companies, prompted this study. This study aims to analyze the influence of company size, sales growth, and *leverage* on *cash holdings* in technology companies listed on the Indonesia Stock Exchange (IDX) for the 2020–2024 period. Therefore, this study is entitled **"The Effect of Company Size, Sales Growth, and Leverage on Cash Holdings in Technology Companies Listed on the Indonesia Stock Exchange for 2020–2024."**

METHOD

This research was conducted on technology sector companies listed on the Indonesia Stock Exchange (IDX). The data used was secondary data sourced from the companies' annual financial reports published on the Indonesia Stock Exchange's official website, www.idx.co.id. The research period was May–June 2026 (Sagala et al., 2023).

Population is a generalization area consisting of objects or subjects that have certain characteristics, which are determined by researchers to be studied and then drawn conclusions (Arifa et al., 2024). Population can also be interpreted as all elements that are the focus of research according to the objectives to be achieved (Wahyulina et al., 2023). The population in this study is all technology sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. The sample is part of the number and characteristics possessed by the population (Sugiyono, 2013). The use of samples aims to ensure that research can still be carried out effectively while still being able to represent the population according to research needs (Dewila, 2025).

The sampling technique used in this study was purposive sampling, which is a sampling technique based on specific considerations and criteria tailored to the research objectives (Julianty et al., 2023). Therefore, companies that did not meet the criteria, such as those that did not present complete financial reports for the 2020–2024 period, were not included in the study sample. The sample criteria in this study are as follows:

1. Technology sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period.
2. Technology sector companies that published annual financial reports consecutively during the 2020–2024 research period.
3. A technology sector company that presents financial reports in Rupiah (Rp).

Technology sector companies that present complete and consistent sales data in their annual financial reports during the 2020-2024 research period, thus enabling the calculation of sales *growth*.

Data collection techniques are methods used by researchers to obtain the data needed in the study (Sugiyono, 2013). This study uses secondary data, namely data obtained not directly from primary sources, but through existing documents or reports ((Uang et al., 2006). The data collection technique in this study was carried out using the documentation method, namely through the process of collecting, recording, and reviewing data sourced from the company's annual financial reports. The research data was obtained from technology sector companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period, which were accessed through the official IDX website (www.idx.co.id) and the company's official website if necessary. In addition, this study also used a literature study, namely data collection through literature relevant to the research topic.

Data analysis techniques are data processing techniques carried out to answer the problem formulation and test the research hypothesis. This study applies quantitative research methods. According to Creswell (2014), quantitative research is an approach based on the positivist paradigm and is used to test objective theories through the analysis of relationships between variables. Research variables are measured using specific instruments, resulting in numerical data that is then analyzed using statistical techniques. The quantitative approach aims to test hypotheses and explain the cause and effect relationships between variables objectively and systematically. Data analysis in this study was conducted using a quantitative approach using statistical software such as Eviews 12 to test the effect of independent variables on the dependent variable (Malliari & Sirkeci, 2017). Panel data is a combination of cross-sectional and time series data. Cross-sectional data is data obtained from a number of units of analysis over a specific time period, while time series data is data collected from the same unit of analysis over several time periods. Combining these two types of data allows researchers to observe the characteristics and behavior of individuals or economic entities simultaneously, both based on differences between units and changes over time (Bawono et al., 2020).

RESULTS

Population in study This is all over company sector technology companies listed on the IDX in 2020–2024, totaling 47 companies. Financial data company sector technology obtained from report finance annual report and reports financial statements published by

the company through the official website company and via the Indonesian Stock Exchange (BEI) website, namely www.idx.co.id.

Twenty-eight companies in the energy sector were listed consecutively and did not have complete annual report data for the years 2020-2024. Four companies in the sector did not present complete and consistent sales data *in* their annual financial reports during the 2020-2024 study period, thus preventing the calculation of sales growth. *Therefore, the sample size for this study was 14 companies, spanning a 5-year study period, resulting in a total sample size of 70 data points* (Ye et al., 2019).

Descriptive Statistical Test Results

The information required for this study is secondary data obtained from the official IDX website (www.idx.co.id) and each company's website, comprising annual reports from 2020 to 2022. The variables in this study include company size, sales growth, *leverage*, and *cash holdings*.

Descriptive Statistical Test

Table 1. Descriptive Statistical Test

	Y	X1	X2	X3
Mean	0.115657	29.35929	-0.013900	0.453847
Median	0.117811	28.68085	0.043041	0.241847
Maximum	0.315146	35.74199	1.451155	4.081983
Minimum	0.000112	23.45965	-0.998969	0.050965
Std. Dev.	0.078478	3.274162	0.461729	0.658365
Skewness	0.195178	0.528122	0.453368	4.229420
Kurtosis	2.694124	2.353167	4.828808	22.52353
Jarque-Bera	0.717317	4.474300	12.15291	1320.434
Probability	0.698613	0.106762	0.002296	0.000000
Sum	8.095961	2055.150	-0.972966	31.76926
Sum Sq. Dev.	0.424960	739.6895	14.71036	29.90768
Observations	70	70	70	70

Based on the results statistics descriptively in Table 4.4, the cash holding variable (Y) has the average value (mean) is 0.115657. This is show that the average company technology in sample own level cash holdings amounted to 11.57 % of total assets held. The maximum value of 0.315146 and the minimum value of 0.000112 indicates existence difference inter-bank cash holding rate company. Standard deviation by 0.078478 more small compared to average value of 0.115657. Condition This indicates that level relative distribution of cash

holding data low, so the data is skewed concentrated around the average value and variation between company technology No too big (Fatimah et al., 2025).

variable (X3) has the average value is 0.453847. This value show that the average level use of corporate debt technology reached 45.38% against source funding used company. Maximum value of 4.081983 and the minimum value of 0.050965 indicates existence difference leverage level between company. Standard deviation by 0.658365 more big compared to the average value. This is indicates that company leverage level technology varies greatly. There are companies that have level relative use of debt low, but There are also companies that are very dependent on funding through debt, so that produce sufficient data distribution

Next, the results panel data processing using device EViews 12 software produces a regression model that will used in research. Results of model selection and testing regression the presented in the sub-chapter next.

Panel Data Regression Model

Pooled Least Squares (PLS) / Common Effect Model (CEM)

Initial step in study This done with process data using approach *Common Effect Model (CEM)*, that is with combine all *time series* and *cross section* data in a way simple. Next, model estimation is performed use method *Ordinary Least Square (OLS)*. The results data processing with use Common Effect Model approach is presented as following :

Based on the EViews regression output table, the Pooled Least Squares (PLS) regression model can be formulated as following :

$$Y_{it} = 0.201678 - 0.002286X1_{it} + 0.096912X2_{it} - 0.038669X3_{it} + \epsilon_{it}$$

Regression model beginning in study This estimated use Pooled Least Squares (PLS) or Common Effect Model (CEM) method with objective For give description beginning about connection between variables independent and variable dependent before done testing panel data model selection. This model combine all observation data consisting of on *cross-section* and *time series* data without consider existence difference characteristics between company and between period observation. In this model, the size company (X1), growth sales (X2), and leverage (X3) act as variables independent, while cash holding (Y) is variables dependent. Constant value of 0.201678 shows that if size company, growth sales, and leverage is considered constant or worth zero, then estimated cash holding value of 0.201678. The coefficient regression size company (X1) of -0.002286 indicates that every improvement size company as big as One unit will reduce cash holding by 0.002286 units with assumptions other variables remain constant. While that, coefficient growth sales (X2)

of 0.096912 shows that every improvement growth sale as big as One unit will increase cash holding by 0.096912 units. The leverage coefficient (X3) of -0.038669 indicates that every increase in leverage by One unit will reduce cash holding by 0.038669 units, with assumptions variables other constant (Azure et al., 2024). Coefficient regression obtained in this model describe direction the relationship between each variable independent against cash holding. However Thus, there is or whether or not significant influence from variables independent to variables dependent Not yet can determined based solely on value coefficient regression.

Random Effect Model (REM)

The third step in this research was carried out by processing the data using *the Random Effects Model (REM)* approach to compare the estimation results with previous models, namely *the Common Effects Model (CEM)* and *the Fixed Effects Model (FEM)*. This approach considers the differences in characteristics between research objects that are random in nature (Atmaja et al., 2023). The results of data processing using *the Random Effects Model* are presented as follows:

Table 2. Results of the REM Regression Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.234699	0.096615	2.429206	0.0179
X1	-0.003615	0.003199	-1.129916	0.2626
X2	0.052261	0.013005	4.018536	0.0002
X3	-0.026855	0.011627	-2.309690	0.0240
Effects Specification			S.D.	Rho
Cross-section random			0.050037	0.6423
Idiosyncratic random			0.037339	0.3577
Weighted Statistics				
R-squared	0.191043	Mean dependent var	0.036612	
Adjusted R-squared	0.154272	S.D. dependent var	0.042222	
S.E. of regression	0.038829	Sum squared resid	0.099506	
F-statistic	5.195511	Durbin-Watson stat	0.967862	
Prob(F-statistic)	0.002777			

Based on the EViews regression output table, the Random Effect Model (REM) regression model can be formulated as following :

$$Y_{it} = 0.234699 - 0.003615X_{1it} + 0.052261X_{2it} - 0.026855X_{3it} + \epsilon_{it}$$

The panel data regression model using the Random Effect Model (REM) is used For accommodate existence difference characteristics possessed by each company that becomes object research. The Random Effect Model (REM) approach takes into account existence difference characteristics between companies that are random (*random*). This model assume that difference individual in each company reflected in error components, so that capable produce more estimates efficient if variation between company No correlated with variables independent used in research. In this model, the size company (X1), growth sales (X2), and leverage (X3) act as variables independent, while cash holding (Y) is variables dependent. Constant value of 0.234699 shows that if size company, growth sales, and leverage is considered constant or worth zero, then estimated cash holding value of 0.234699 (Sylvia Veronica Siregar, Delfita Siagian, 2018).

Panel Data Model Selection Test Results

Chow Test

The first step in determining the panel data model analysis technique is to use *fixed effect estimation*. The Chow test is used to determine whether the model should use *fixed effects* or *common effects*.

H0 : common effect

H1 : fixed effect

If the chi-square probability result is less than 0.05, then H0 is rejected, so the model uses fixed effects. The results of the estimation using the fixed effects specification are as follows:

Table 3. Results of the Rabudant Fixed Effect-Likelihood Ratio Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	11.900726	(13,53)	0.0000
Cross-section Chi-square	95.609380	13	0.0000

Based on the results in table 4.4 above, the Chi-square probability is 0.0000, so H0 is rejected and H1 is accepted. It can be concluded from the results of the Chow test that *the fixed effect model* is better when compared to *the common effect model*, so that the Hausman test can be carried out next.

Panel Data Model Selection

Based on the results of the Chow test, it was obtained that the Fixed Effect Model (FEM) is a more accurate model in accordance compared to the Common Effect Model (CEM). Next, it was carried out Hausman test for determine the most appropriate model between the Fixed Effect Model (FEM) and the Random Effect Model (REM). Test results show mark probability of 0.0389, which is more small from level significance of 0.05. Therefore that, the selected model is the Fixed Effect Model (FEM) (Li et al., 2022).

Classical Assumption Test Results

The classical assumption test is a statistical requirement that must be met in regression analysis using the *Ordinary Least Squares (OLS) approach*. To produce a good and accurate regression model, it is necessary to test several classical assumptions underlying the regression model. In this study, the classical assumption tests performed included multicollinearity and heteroscedasticity tests (Mohamad Ariff et al., 2024).

Multicollinearity Test

The multicollinearity test aims to determine whether there is a strong relationship or correlation between the independent variables in a regression model. A good regression model should not show any correlation between the independent variables. To detect multicollinearity, the *Variance Inflation Factor (VIF)* value can be measured. If the VIF value is less than 9, it can be concluded that the regression model does not experience multicollinearity.

Heteroscedasticity Test

Table 4. Heteroscedasticity Test Results

F-statistic	0.849319	Prob. F(9,60)	0.5745
Obs*R-squared	7.910116	Prob. Chi-Square(9)	0.5432
Scaled explained SS	9.599054	Prob. Chi-Square(9)	0.3839

The heteroscedasticity test was conducted to determine whether there were differences in residual variance from one observation to another in the regression model. In this study, the heteroscedasticity test was conducted using the *White method* by looking at the probability value of Obs*R-squared. If the Prob. Chi-Square value is greater than 0.05, the regression

model is declared not to experience heteroscedasticity. Based on the results of the heteroscedasticity test using the White method, the Prob. Chi-Square value was obtained at $0.5432 > 0.05$. This indicates that the regression model in this study does not experience symptoms of heteroscedasticity.

Panel Data Regression Analysis

Based on the results of the estimation tests conducted, it was found that the most appropriate model to use was *the fixed effect model*. The results of the panel data regression estimation using the *fixed effect model* are as follows:

Table 5. Panel Data Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.201678	0.081579	2.472187	0.0160
X1	-0.002286	0.002671	-0.856104	0.3950
X2	0.096912	0.017998	5.384597	0.0000
X3	-0.038669	0.013783	-2.805566	0.0066
R-squared	0.318555	Mean dependent var		0.115657
Adjusted R-squared	0.287580	S.D. dependent var		0.078478
S.E. of regression	0.066240	Akaike info criterion		-2.535631
Sum squared resid	0.289587	Schwarz criterion		-2.407146
Log likelihood	92.74709	Hannan-Quinn criter.		-2.484595
F-statistic	10.28432	Durbin-Watson stat		0.559393
Prob(F-statistic)	0.000012			

Based on the results estimate panel data regression with using the *Fixed effect model* (FEM), then obtained equality panel data regression as following :

$$Y_{it} = 0.201678 - 0.002286X1_{it} + 0.096912X2_{it} - 0.038669X3_{it} + \epsilon_{it}$$

Regression model in research This estimated use Fixed Effect Model (FEM) method. This model used Because consider existence difference characteristics of each company that becomes object research. The FEM approach assumes that every company own characteristics special that can influence variables dependent, so that difference the accommodated to in the model through effect individual (*individual effect*). In this model there is variables independent size company (X1), growth sales (X2), and leverage (X3), and cash holding (Y) as variables dependent. Coefficient size company, growth sales, and leverage or variables explanation in the regression model the can influence cash holding level (Atif et al., 2022).

Constant value of 0.201678 shows that if size company, growth sales, and leverage is worth constant, then estimated cash holding value of 0.201678. The coefficient size company of -0.002286 indicates that every increase One unit size company will lower cash holding of 0.002286 with assumptions other variables are considered constant. Coefficient growth sale of 0.096912 shows that every increase One unit growth sale will increase cash holding by 0.096912 with assumptions variables other still. Meanwhile that, the leverage coefficient of -0.038669 indicates that every increase One leverage units will reduce cash holding by 0.038669 with assumptions variables other constant (Zhang & Zhou, 2022).

Hypothesis Test Results

Significance Test Partial (t-test)

The t-test was performed For know the influence of each variable independent in a way partial to variables dependent with level significance by 5% ($\alpha = 0.05$). In this study, hypothesis testing was conducted to determine the effect of independent variables, namely company size, sales growth, and leverage on the dependent variable, namely cash holding. Hypothesis testing was conducted using a partial significance test (t-test). The hypothesis is declared accepted if the regression results show a significance value (Prob.) < 0.05 or the value of $|t\text{-count}| > t\text{-table}$. Conversely, the hypothesis is declared rejected if the regression results show a significance value (Prob.) > 0.05 or the value of $|t\text{-count}| < t\text{-table}$ (Das et al., 2024). The t-table value is calculated using the degrees of freedom (df) in the panel data regression model with the formula $df = (N \times T) - N - k$, where N is the number of companies (cross-section), T is the number of research periods (time series), and k is the number of independent variables. Based on this research, it is known that $N = 14$ companies, $T = 5$ years, and $k = 3$, so the value obtained is $df = (14 \times 5) - 14 - 3 = 53$. Based on the t-distribution table at a significance level of 5% ($\alpha = 0.05$) with two-sided testing, the t-table value is 2.006 (Liu et al., 2023).

Table 6. t-Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.201678	0.081579	2.472187	0.0160
X1	-0.002286	0.002671	-0.856104	0.3950
X2	0.096912	0.017998	5.384597	0.0000
X3	-0.038669	0.013783	-2.805566	0.0066

Based on the results testing in the table above, can known that :

- Constant value of 0.201678 means that if variables Company Size, Growth Sales, and Leverage are worth zero, then Cash Holding value is 0.201678 units.
- Significance value variables Company size is $0.3950 > 0.05$ and the value of $|t\text{-count}| < t\text{-table}$, namely is $0.856104 < 2.006$, then Hypothesis 1 (H_1) is rejected, namely Company Size does not influential against Cash Holding.
- Significance value variables Growth Sale of $0.0000 < 0.05$ and the $t\text{-count}$ value $> t\text{-table}$, namely is $5.384597 > 2.006$, then Hypothesis 2 (H_2) is accepted, namely Growth Sale influential against Cash Holding.

d. Significance value Leverage variable is $0.0066 < 0.05$ and the value of $|t\text{-count}| > t\text{-table}$, namely is $2.805566 > 2.006$, then Hypothesis 3 (H_3) is accepted, namely that leverage has an effect against Cash Holding. Based on value coefficient regression of -0.038669, the effect of leverage on Cash Holding is negative. This is show that the more tall the company's leverage level, then the more low Cash Holding Level company (Nadia & Hanafi, 2023).

Significance Test Simultaneous (F Test)

In research In this case, the F test was conducted at the level significance by 5 percent ($\alpha = 0.05$).

Table 7. F Test Results

R-squared	0.318555	Mean dependent var	0.115657
Adjusted R-squared	0.287580	S.D. dependent var	0.078478
S.E. of regression	0.066240	Akaike info criterion	-2.535631
Sum squared resid	0.289587	Schwarz criterion	-2.407146
Log likelihood	92.74709	Hannan-Quinn criter.	-2.484595
F-statistic	10.28432	Durbin-Watson stat	0.559393
Prob(F-statistic)	0.000012		

Based on the results testing in the table above, obtained F-statistic value of 10.28432 with mark probability of $0.000012 < 0.05$. This is show that variables X1, X2, and X3 individually simultaneous or together influential to variable Y. With Thus, the regression model in study This worthy used For explain connection between variables independent and variable dependent. With Thus, H4 states that that Firm size, sales growth, and leverage *simultaneously* influence *cash holdings*. accepted.

Discussion

The Effect of Company Size on Cash Holding

Size company is description big small something companies that can seen of total assets owned company. The more big size companies, increasingly big source too power and assets owned For support activity operational and investment companies. Companies that are large in size big generally own more access easy to source funding external, such as bank loans and funding from investors, compared with large -sized companies small (Chang & Yang, 2022).

Based on the results of the t -test, the variable size company own mark t -statistic of -0.856104 with direction coefficient negative and value probability of 0.3950, which means more big of 0.05. This is show that hypothesis which states size company influential against cash holding rejected. With thus, it can concluded that size company No influential towards cash holdings in the company technology listed on the Indonesia Stock Exchange for the 2020–2024 period (Ali et al., 2024).

Research result This show that big small size company No become determining factors cash holding level owned company technology. Companies that have total assets big Not yet Of course keep cash in high numbers, so do the companies with more assets small Not yet Of course own low cash holding levels. Conditions This show that policy cash storage is not solely influenced by the size asset company, but rather influenced by various other related factors with company needs and strategies (Sun et al., 2022).

At the company technology, assets owned generally more Lots allocated For support activity development products, innovation technology, research and development, and expansion business. Therefore that, the company tend utilise source power possessed For increase growth company than hold cash in large amount. In addition, the company technology that has size big is also relative more easy get access funding external if need additional funds, so that No must maintain high cash levels as reserves liquidity.

Insignificance influence size company against cash holding also indicates that policy cash storage in the company technology more determined by need operational, opportunities investment, conditions cash flow, and management strategy in manage liquidity company. With thus, the changes size company No give significant influence to decision company in determine the amount of cash to be detained.

Research result This in line with research conducted by Sufiyati, Susanto, Dewi, and Susanti (Ozdemir et al., 2023) which stated that size company No influential on cash holding. Findings the show that size company No is factor main considerations company in determine cash holding policy.

Influence Growth Sale against Cash Holding

Growth sale is improvement or decline amount sales achieved company from One period to period next. Growth sale often used as indicator For evaluate ability company in increase income and expand market share. Companies that experience growth high sales generally will get more cash inflow big from activity its operations, so that own more capabilities Good in guard level liquidity company.

Based on the results of the t -test, the variable growth sale own mark t -statistic amounting to 5.384597 with direction coefficient positive and value probability of 0.0000, which means more small of 0.05. This is show that hypothesis which states growth sale influential against cash holding received. With thus, it can concluded that growth sale influential positive and significant towards cash holdings in the company technology listed on the Indonesia Stock Exchange for the 2020–2024 period.

Research result This show that the more tall growth sales achieved company, then the more the level of cash holding is also high company. On the other hand, if growth sale decreases, then the cash holding owned companies also tend to decreased. Condition This show that improvement sale capable produce higher cash receipts big so that company own more capabilities tall For hold cash as reserves liquidity (X. Wang et al., 2024).

At the company technology, growth high sales reflect increasing request to product and services offered company. Improvement sale the will produce better operational cash flow big so that company own more flexibility tall in manage finances. Available cash can used For fulfil need operational, funding investment, anticipation uncertainty business, as well as utilise opportunity emerging growth in the future.

In addition, companies that experience growth good sales tend maintain higher cash levels tall For support expansion effort and maintenance smoothness activity operational company. High cash holdings can also become form anticipation company to need future funding without must depends completely on the source funding external (Chen, Cao, et al., 2024).

Research result This show that growth sale is one of the influencing factors cash holding policy in the company technology. Increasingly tall level growth sales achieved company, then the more great ability company in generate and save cash. Therefore that, growth sale own influence positive and significant against cash holding.

Research result This in line with research conducted by Nanda Putra Saragi (2025) and Kusuma Indawati Halim & Novianty (2023) which stated that growth sale influential to *cash holding*.

Influence *Leverage* against Cash Holding

Leverage is the ratio used For measure to what extent the company using debt in finance asset and activity operations. High leverage levels show that company own higher proportion of debt big compared to with own capital. In theory, leverage has connection with cash holding policy because companies that have high debt levels must fulfil various obligation payments, such as interest and principal on debt, so can influence amount of cash held company.

Based on the results of the t -test, the leverage variable has mark t -statistic of -2.805566 with direction coefficient negative and value probability of 0.0066, which means more small of 0.05. This is show that hypothesis that states that leverage has an effect against cash holding received. With thus, it can concluded that leverage has an effect negative and significant towards cash holdings in the company technology listed on the Indonesia Stock Exchange for the 2020–2024 period.

Research result This show that the more tall the company's leverage level, then the more low cash holding level owned company. On the contrary, the more low company leverage, then the more tall the level of cash holding held. The relationship negative This indicates that companies that have high debt levels tend using cash on hand For fulfil obligation debt payments and fees flowers, so that the amount of cash that can be saved become more low (Ezeani et al., 2023). In the company technology, the use of debt is often done For support activity operational, investment, and expansion business (Ahmad & Karpuz, 2024). However, the increasing use debt will also increase obligation company in the future. As a result, some of the cash held company will allocated For pay obligation the so that reduce the amount of cash that can be detained as cash holding (Khatib et al., 2022).

In addition, the company with high leverage levels generally own more access big to source funding external. Condition This cause company No need keep cash in amount big Because need funding can filled through debt. With existence convenience obtain funds from party creditors, companies tend maintain higher cash holding levels low compared to companies that have low leverage level. Research results This show that leverage is one of the influencing factors cash holding policy in the company technology. Increasingly tall level use of corporate debt, then the more low trend company For keep cash in amount big. Therefore that, leverage has influence negative and significant against cash holding.

Research result This in line with Research conducted by Nurul Adibah, Abbas, Zulaecha, & Hidayat (Gounopoulos & Zhang, 2024) which stated that *leverage* influential against cash holding.

CONCLUSION

Based on the results data analysis regarding influence size company, growth sales, and leverage against *cash holding* in the company technology listed on the Indonesian Stock Exchange in 2020–2024, then can withdrawn a number of conclusion as following :

1. Size company No influential to *cash holding* in the company technology listed on the Indonesia Stock Exchange in 2020–2024. This show that big small size company No become influencing factors level *cash* holdings owned company.
2. Growth sale influential positive and significant to *cash holding* in the company technology listed on the Indonesia Stock Exchange in 2020–2024. This show that the more tall growth sale company, then the more high level *cash* holdings owned company.
3. Leverage matters negative and significant to *cash holding* in the company technology listed on the Indonesia Stock Exchange in 2020–2024. This show that the more tall the company's leverage level, then the more low level *cash* holdings owned company.
4. Size company, growth sales, and leverage simultaneous influential significant to *cash holding* in the company technology listed on the Indonesia Stock Exchange in 2020–2024. This show that third variables the in a way together influence level *cash holding* company.

Suggestion

Based on the results research and conclusions that have been obtained, then the suggestions that can be given is as following :

1. For management company technology, it is recommended For manage level *cash holding* optimally with consider size company, growth sales, and leverage levels. Effective cash management can help company fulfil need operational, facing uncertainty business, as well as support opportunity investment in the future.
2. For companies that have high leverage level, recommended For more notice policy cash management to be able to fulfil obligation term short and term long without bother smoothness operational company. Management A balanced capital structure is also necessary done For guard stability finance company.
3. For investors, the results study This can made into as material consideration in taking decision investment, in particular in evaluate ability company technology in manage the cash they have. Investors are expected No only notice level profit company, but also conditions liquidity and policy applied *cash holding*.
4. For researchers next, it is hoped can develop study This with add other potential variables influence *cash holding*, such as profitability, liquidity, operating cash flow,

capital expenditure, corporate governance, as well as policy dividends. In addition, research furthermore can expand object study to other sectors or use period further research long to get more results comprehensive.

5. For regulators and governments, the results study This can become input in formulate supportive policies health finance company technology, especially in create climate stable business so that company can manage liquidity and cash reserves more effective For support growth sector technology in Indonesia

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