Cash Flow and Net Working Capital as Determinants of Cash Holdings: A Case Study of Mining Companies Listed on the Indonesia Stock Exchange

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Abstract

Purpose – The purpose of this research is to investigate how cash holdings in mining businesses listed on the Indonesia Stock Exchange (IDX) is influenced by cash flow and net working capital.

Design/Methodology/Approach – A quantitative approach was adopted using explanatory research methods. The data consist of financial statements from mining sector companies covering the period 2020–2024. Hypothesis testing and data analysis were conducted using EViews 12 software.

Findings – Research results show that cash flow and net working capital have a significant influence on cash holding. Therefore, an increase in both of these variables can increase the company's cash holding.

Research limitations/Implications – Company management should place greater emphasis on managing cash flow and net working capital effectively to

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enhance financial stability and mitigate liquidity risks. The findings of this research are expected to serve as a valuable reference for financial decision-making among practitioners and academics within the mining industry.

Keywords: Cash Flow, Cash Holding, Liquidity, Mining Companies, Net Working Capital

Introduction

Cash management is a crucial factor in ensuring the continuity of operations and financial stability of a company, especially in the mining sector which faces high risks due to commodity price fluctuations and global economic uncertainty. Companies need to have adequate cash reserves to meet urgent needs and reduce dependence on external financing. Thus, cash holding is a key strategy in maintaining the company's liquidity and resilience amidst changing economic conditions (Cornelia, 2020)

According to data from the Central Statistics Agency data, the growth in commodity production such as coal and bauxite reached around 11% per year, this exceeds Indonesia's national economic growth which is around 5% per year. According to the 2021 Performance Report of the Directorate General of Minerals and Coal, the realization of PNBP revenues in the mineral and coal sub-sector reached IDR 75,444 trillion or 118.4%. The mining industry's contribution to economic growth fell to 18.34% in 2022, less than 19.25% in 2021 and 19.88% in 2020 (Putra et al., 2024). This decline may indicate financial problems or expenses that are greater than income, which has an impact on cash holdings and potential

instability in the financial assets of the business.

Holding cash is a crucial tactic to guarantee that there is enough money to handle unforeseen operational demands and changes in income (Siddiqua et al., 2019). Cash flow and net working capital are two of the many internal elements that affect cash holdings.

Cash flow shows the company's internal capacity to finance its operations by reflecting cash flow from business operations. Meanwhile, net working capital reflects the efficiency of current asset management and short-term liabilities, which affects the immediate cash needs that the company must hold. Working capital efficiency directly impacts a mining company's liquidity position, suggesting that cash flow allocation may need to be more stringent in a volatile sector (Irawan et al., 2022).

According to Myers and Majluf's (1984) the Pecking Order Theory, businesses first finance their activities using internal funds, such as cash flow before looking for outside funding; as a result, businesses with strong cash flows typically have larger cash holdings. Agency theory (Meckling & Jensen, 1976) which explains that management can hold excess cash which incurs agency costs,

but efficient net working capital management can reduce the need for large cash holdings.

There are inconsistencies in findings in previous literature regarding the influence of net working capital and cash flow on a company's cash holding levels. In addition, most studies focus on the manufacturing sector, various industries, and real estate, with very few discussing the mining sector as the main object. In fact, this sector is a major contributor to Indonesia's GDP and is very vulnerable to macroeconomic fluctuations, especially during the Covid-19 pandemic (Putra et al., 2024). This study offers novelty in two key dimensions, namely the focus on the mining sector and the time span of 2020–2024 which reflects the crucial post-pandemic period. This study differs from previous research by focusing specifically on the mining industry and limiting the analysis to two main variables: net working capital and cash flow during the 2020–2024 post-pandemic recovery period, thus offering a more focused and timely contribution. Maintaining financial flexibility is one of the reasons why companies maintain high cash reserves, especially after the pandemic (Riyadi et al., 2022).

Empirical findings from Agnesstyaningsih et al. (2023), Yanti et al. (2022), and Rahman (2021), indicate that cash flow positively influences on cash holding. Meanwhile, Siregar et al. (2022), Henny et al., (2023), and Hengsaputri & Bangun (2020) indicate a negative impact of net working capital on cash holdings. These differences in results indicate the importance of retesting with different sector contexts and time periods.

The goal of this study is to present fresh observed data in the dynamic post-pandemic economic condition by empirically examining how cash flow and net working capital influence cash holdings in mining businesses in Indonesia during the 2020-2024 timeframe.

Literature Review & Hypothesis

Pecking Order Theory
The financial theory called Pecking Order Theory explains how businesses choose funding sources for operations and investments. Donaldson was the first to introduce this hypothesis in 1961, and Myers and Majluf later developed it in 1984. Companies have a hierarchy of funding sources, with internal finance coming first, then debt, and then equity, consistent with the pecking order theory. This theory explains how companies choose to use internal funding sources (retained earnings and cash holdings).

Agency Theory
The agency theory concept, as proposed by Jensen and Meckling in 1976, studies the interplay and potential conflicts between principals and agents. Two parties, the owner (principal) and the agent (agent) , are explained by the concept of agency theory in economics and management. To create transparency and harmony between management and company owners, management must be transparent to company

owners and fair to stakeholders (Meckling and Jensen, 1976).

Cash Holding

In PSAK No. 2 (Statement of Financial Accounting Standards), cash equivalents include financial instruments that are both short-term and easily convertible to cash with little risk of price changes assets that carry minimal risk of value fluctuation and easily convertible into a fixed sum of cash. Cash holding refers to the readily available funds a company maintains to support operations, make investments, and cover unforeseen expenditures (Rahman, 2021).

Cash Flow

Cash flow represents the net amount of cash and cash equivalents being transferred into and out of a company. There are three categories of cash flow classification based on the type of activity. The first is operating activities, which are special cash flow reports from the company's operational activities, which are usually factored into the net income computation. The second is investing activities, which are cash flows originating from the acquisition and disposal of fixed assets and investments in the debt or equity instruments of other companies. And the last is financing activities (Van Horne & Wachowicz, 2021). Suranta et al. (2021) found that bankruptcy can be predicted by analyzing cash flow patterns from operating, investing, and financing activities, highlighting the importance of cash flow as an indicator of a company's financial health.

Net Working Capital

Defined as current assets minus current liabilities, net working capital measures short-term financial health, includes assets such as cash and cash equivalents, inventory, and accounts receivable can be determined. According to Siregar et al. (2022), If the value is too low, even negative, A low value suggests that the company is facing liquidity issues, while an excessively high value may indicate inefficient asset management.

The Impact of Cash Flow on Cash Holding

Based on the pecking order theory, cash flow functions as a capital policy structure where companies choose safer funding first and use riskier funding if the amount of funding is insufficient (Hayati, 2020).

Companies that have a lot of cash flow are more stable and flexible in terms of liquidity and finance. An increase in a company's cash flow enables it to retain more of its earnings (Suwandi, 2020). Empirical studies by Agnesstyaningsih et al. (2023) and Setiyanti & SR (2019), found that cash flow exerts a positive influence on cash holdings. Accordingly, the following hypothesis is proposed.
H1: Cash flow has a positive and significant effect on cash holding.

The Impact of Net Working Capital on Cash Holding

Based on agency theory, the correlation between a company's net working capital and its cash balance can be understood by management's efforts to optimally manage current assets to minimize the interests of

managers and shareholders. It reflects a firm's capacity to fulfill short-term debts by utilizing available current assets. Net working capital can be utilized as an alternative to cash holdings for businesses due to its ease of conversion into cash (Suci & Susilowati, 2021).

Research results obtained by Yanti et al. (2022) and Eksandy & Abbas (2020) stated that cash holdings are positively affected by net working capital. Businesses with large net working capital decide to reduce cash stored because the company has current assets that can be used at any time. However, in some cases, companies can increase cash holding to avoid financial risk. Based on previous research, the hypothesis is proposed as follows working capital relates to corporate cash holdings:

H2: Net working capital has positive and significant effect on cash holding.

Research Method

A quantitative method is utilized in this study, using an explanatory methodology to assess the influence of cash flow and net working capital on cash holdings in mining firms registered on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. The analysis uses secondary data obtained from annual financial statements, obtained from the official IDX website and each company's own website. Panel data regression is employed, utilizing three model approaches: the Common Effect Model, the Fixed Effect Model, and the Random Effect Model using EViews 12 software.

Table 1
Variable Operationalization

Variable	Indicator
Cash Holding (Y)	Cash + Cash Equivalent / Total Asset
Cash Flow (X1)	Operational Cash Flow / Total Asset
Net Working Capital (X2)	Current Asset – Current Liabilities / Total Asset

Population and Sample

The study population comprises 50 mining companies listed on the Indonesia Stock Exchange (IDX) between 2020 and 2024. A purposive sampling technique, categorized under non-probability sampling methods, was employed to select the sample.

Table 2
Research Criteria

Criteria	Total
Operating as listed entities active on IDX from 2020-2024	50
Have complete and publicly available financial statements for each year from 2020 to 2024.	(18)
Remained active and were not delisted from the IDX throughout the research period.	(11)
Sample population involved in the research and meet the criteria	21
Total observation data for the year 2020-2024 (21×5)	**105**

Results and Discussion

Table 3
Descriptive Statistics

Variable	Mean	Median	Max.	Min.	Std. Dev	N
Y	0.390	0.409	0.736	0.037	0.158	105
X1	0.174	0.140	0.660	-0.140	0.163	105
X2	0.162	0.160	0.700	-0.630	0.199	105

Table Source: Processed Data EViews 12

Presented in table 3, this study analyzed 21 companies, resulting in a total of 105 observations. The variable Y has a mean value of 0.390, indicating the average proportion of cash and cash equivalents to total assets. The median value of 0.409 represents the midpoint of the data distribution. The maximum value of 0.736 represents the highest level of cash holding among the firms, while the minimum of 0.037 indicates the lowest level. The std. deviation of 0.158 shows a moderate variation from the mean. The variable X1 has a mean of 0.174, indicating the average operational cash flow to total assets. With a median of 0.140, a maximum of 0.660, and a minimum of -0.140, this variable shows considerable variation across companies. The std. deviation of 0.163 further confirms this variability. The X2 variable has a mean of 0.162, a median of 0.160, a maximum of 0.700, a minimum of -0.630, and std. deviation of 0.199, indicating diverse current asset and liability management strategies among companies.

Determination of Panel Data Regression

The following are a test used to select the panel data regression model to be employed in this research:

Table 4
Conclusion of Panel Data

No	Method	Test	Results
1	Chow Test	CEM VS FEM	FEM
2	Hausman Test	FEM VS REM	FEM

Table Source: Processed Data EViews 12

Presented in table 4, the p-value associated with the cross-section chi-square test is under 0.05, indicating that the Fixed Effect Model (FEM) is identified as the most suitable regression approach. Following this, the analysis proceeded with the Hausman test. The results, also presented in the table, reveal that the p-value of the random cross-section is 0.0048, which is lower than the significance threshold of 0.05. This confirms that the Fixed Effect Model (FEM) remains the optimal model for this research. Consequently, since both the Chow test and the Hausman test point to FEM, conducting a

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Lagrange Multiplier (LM) test is considered redundant for this analysis.

Table 5
Classical Assumption Test Results

No	Method	Result	Conclusion
1	Normality Test	Jarque-Bera value that is greater than the significance value, namely 3.030434>0.05.	Normally distributed
2	Autocorrelation Test	Durbin-Watson (DW) shows a value of 1.863641	There is no autocorrelation
3	Heteroscedasticity Test	Prob value < significance level of 0,05	There is no heteroscedasticity
4	Multicollinearity Test	The value between variables shows a smaller value compared to the significance value, which is <0.8.	Regression model free from multicollinearity problems

Table Source: Processed Data EViews 12

Table 6
Estimation Test Assumption
The Results

Variable	Coefficient
Cash Holding (Y)	0.309922
Cash Flow (X1)	0.199048
Net Working Capital (X2)	0.283220

Table Source: Processed Data EViews 12

Presented in table 6, the analysis indicates that the constant value is 0.309923, cash flow (X1) is 0.199048, and net working capital (X2) is 0.283220. So that the panel data regression equation can be obtained as follows:

$Y = 0.309922 + 0.199048 + 0.283220 + e$

From the results of a detailed explanation of the regression model is provided below:

1. The fixed value of 0.309922 implies that without the cash flow X1 and X2 variables, the Y variable is projected to grow by 30.9%.

2. The cash flow regression coefficient (X1) is 0.199048, meaning that when there is a 1% increase in cash flow (X1) is projected to grow cash holding (Y) by 19.9%.

3. The net working capital regression coefficient (X2) is 0.283220, meaning that when there is a 1% increase in net working capital, cash holding (Y) is projected to grow by 28.3%.

Table 7
t- Test Result

Variable	t-Statistic	Prob
Y	17.29103	0,0000
X1	2.887254	0,0050
X2	3.263281	0.0016

Table Source: Processed Data EViews 12

Presented in table 7, the p-value of the variable (X1) is 0.00 smaller than the significance of 0.05 and the t-statistic of cash flow (X1) is 2.88. While the net working capital variable (X2) with a probability value of 0.00 is smaller than the significance value of 0.05 and the t-statistic of X2 is 3.2632

Table 8
Test Result Coefficient of Determination

Cross-Section Fixed (Dummy Variable)	
R-squared	0.81
Adjusted R-squared	0,77

Table Source: Processed Data EViews 12

Displayed in table 8, displays the R^2 test results, which indicate a R-Squared value of 0.81. This indicates that the independent variables X1 and X2, can account for 81.9% reflecting the changes within the dependent variable Y, with other variables not covered in this study accounting for the remaining 18.1%.

The Effect of Cash Flow on Cash Holding
Cash flow is the inflow and outflow of cash from a company that reflects the company's operational potential to yield cash to fund operational activities, investments, and financing. Good cash flow provides high financial flexibility for the company, especially to maintain liquidity without having to rely on external financing.

The study's findings indicate that for the 2020–2024 timeframe, cash flow significantly influences cash holdings in mining corporations listed on the Indonesia Stock Exchange (IDX). This finding is supported by the results of the Fixed Effect Model (FEM) regression, where the significance value in terms of the cash flow variable is 0.0050, which is less than 0,05. Therefore, the first hypothesis has been accepted. This implies that higher operating cash flow generated by a company increases its tendency to hold cash, as the availability of internal funds reduces the need for external financing and enhances liquidity. Positive cash flow allows companies to increase cash holding without relying on external sources, reducing the risk of financial costs and market uncertainty.

These results are in line with the pecking order theory, firms tend to give internal funding priority over external sources, for example retained earnings, rather than looking for outside financing. With adequate cash flow, companies can avoid the risk of interest costs or unstable capital market pressures. Therefore, companies with high operational cash flow often maintain substantial cash reserves as a form of anticipation of financial risk and to maintain operational flexibility. Conversely, a decrease in cash flow can cause companies to face financial difficulties, especially in the face of crises or economic fluctuations, as experienced by several mining companies during the pandemic Covid-19

The outcomes in this study support previous studies by Agnesstyaningsih et al. (2023), which demonstrate that businesses with good cash flow typically maintain a significant amount of cash. Research by Suwandi (2020), which claims that businesses with positive cash flow may sustain financial stability over time, also supports these findings. This study's findings are in contrast to those of Cornelia (2020), who found no relationship between cash flow and cash holdings.

The Effect of Net Working Capital on Cash Holding

Net working capital is defined as the amount by which current assets exceed current liabilities, and it serves as a metric of its short-term liquidity capacity. The power of the business to satisfy current liabilities with its assets demonstrates its net working capital. Good liquidity is indicated by a positive net working capital value, whilst the potential for financial issues is indicated by a negative net working capital value. Net working capital is an important component in financial management that influences cash holding decisions that are kept by the company for operational needs or as a liquidity reserve.

Result of study reveals that net working capital significantly affects cash holding, as indicated by a p-value of 0.0016, which falls below the 0.05 level of significance. This result supports the acceptance of the second hypothesis that a high level of net working capital suggests the firm that possesses ample current assets, providing large flexibility in managing its cash resources. As stated by Cornelia (2020), it is possible to rapidly convert net working capital into cash when needed, allowing companies to meet liquidity needs without maintaining large cash reserves. Consequently, firms with high net working capital often hold reduced cash. On the other hand, if net working capital is too low, the company may struggle to cover short-term obligations such as wages, debt payments, and operational expenses, increasing financial risk. High net working capital does not mean that the company can reduce cash holdings, but rather strengthens the liquidity position by adding cash.

In accordance with agency theory, these findings imply that managers have the ability to choose net working capital to avoid uncertainty and minimize the risk of

conflicts of interest with shareholders. In this theory, company management acts as an agent who must be responsible for the interests of the owner. Efficient management will tend to balance the amount of net working capital and cash holdings so as not to cause waste or inefficiency in the use of company funds (Putra et al., 2024).

This investigation concurs with the study carried out by Putri & Selfiyan (2023), indicating that net working capital positively influences cash holdings, indicating the importance of liquidity flexibility. In addition, Yanti et al. (2022), who showed a significant positive of the conversion of net working capital into cash, and the overall net working capital itself can act as liquidity reserve in industrial sector companies that face high risks. However, in contrast to the findings of Liadi & Suryanawa (2018), Net working capital shows no significant impact on the amount of cash held due to the substitution between working capital and liquidity.

Conclusion and Recommendation

Conclusion

According to the findings of the study and data analysis, this suggests that cash flow and net working capital both have a meaningful impact on cash holding among mining corporations traded on the IDX during the 2020–2024 period. These results align with the principles of the pecking order theory and agency theory, which suggest that companies with strong internal cash flow and sufficient working capital are more likely to

retain higher levels of cash in order to minimize reliance on external funding and maintain financial flexibility. With an adjusted R^2 of 81.9%, this research model is able to explain variations in cash holding substantially. This study has limitations in the scope of sectors and periods that are limited to mining companies and the years 2020–2024, so it cannot be generalized to other sectors or different periods.

Recommendation

It is expected that further research is suggested to expand the research object to other industrial sectors so that the results obtained are more representative. Research can also add other independent variables such as the size of the company, leverage, opportunities for growth, and capital investment that are relevant in explaining cash holding variations. It is also suggested to use a longer period or utilize a dynamic model approach to capture the long-term influence between financial variables.

References

Agnesstyaningsih, H., Pratiwi, D. N., & Pardanawati, S. L. (2023). Pengaruh Cash Flow Dan Net Working Capital Terhadap Cash Holding Dengan Firm Size Sebagai Variabel Moderating. *Jurnal Ilmiah Keuangan Akuntansi Bisnis*, *2*(2), 283–295. https://doi.org/10.53088/jikab.v2i2.52

Bahauddin I. R, Riyadi S, R. N. (2022). Effect Of Organizational Commitment, Safetyoccupational Health, On Work Discipline and Employee Performance at PT. Elnusa Petrofinintegrated Terminal Makassar. *Indonesian Journal of Multidisciplinary Sciences*, *1*(6), 669–683. https://doi.org/10.55324/ijoms.v1i6.11

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Cornelia, E. E. (2020). *Pengaruh Ukuran Perusahaan, Net Working Capital, Cash Flow, Cash Conversion Cycle Dan Growth Opportunity Terhadap Cash Holding (Studi Empiris Pada Perusahaan Manufaktur Yang Terdaftar Di Bursa Efek Indonesia Periode 2016-2018)* [Skripsi, Program Studi Akuntansi, Fakultas Ekonomi dan Bisnis, Universitas Muhammadiyah Makassar].

Eksandy, A., & Abbas, D. S. (2020). Relevansi Nilai Earning Per Share, Price Book Value, Cash Flow, Current Ratio Dan Harga Saham: Return on Asset Sebagai Pemoderasi. *Jurnal Akuntansi Maranatha 12*(2), 187–202. https://doi.org/10.28932/jam.v12i2.2152

Hayati, N. (2020). Corporate Governance Sebagai Variabel Moderating Dengan Net Working Capital, Capital Expenditure, Cash Conversion Cycle, Cash Flow, Dan Growth Opportunity Yang Dapat Mempengaruhi Cash Holding. *Online Business Management Analysis Journal (BMAJ)* 3(2). 45-60. https://doi.org/10.24176/bmaj.v3i2.5184

Hengsaputri, J. A., & Bangun, N. (2020). Pengaruh Growth Opportunity, Net Working Capital Dan Capital Expenditure Terhadap Cash Holding. *Jurnal Paradigma Akuntansi*, *2*(3), 1343-1352 https://doi.org/10.24912/jpa.v2i3.9562

Henny W, Viriany, & Ignatius F. D. M. (2023). Corporate Governance in Cash Management, Net Working Capital, And Cash Holding. *Jurnal Akuntansi*, *27*(1), 118–135. https://doi.org/10.24912/ja.v27i1.1246

Irawan, A., Setiawan, S., & Andini, R. D. (2022). Pengaruh Profitabilitas, Leverage, Dan Kebijakan Dividen Terhadap Nilai Perusahaan Pada Perusahaan Lq45. *Jpeka: Jurnal Pendidikan Ekonomi, Manajemen Dan Keuangan*, *6*(1), 1–14. https://doi.org/10.26740/jpeka.v6n1.p1-14

Liadi, C. C., & Suryanawa, I. K. (2018). Pengaruh Ukuran Perusahaan, Net Working Capital, Cash Flow, Dan Cash Conversion Cycle Pada Cash Holding. *E-Jurnal Akuntansi*, *24*(2), 1474–1502. https://doi.org/10.24843/eja.2018.v24.i02.p24

Putra, W. O. A., Arief, M. Y., & Syahputra, H. (2024). Pengaruh Firm Size, Growth Opportunity Dan Net Working Capital Terhadap Firm Value Pada Perusahaan Pertambangan Yang Terdaftar Di Bei Dengan Cash Holding Sebagai Variabel Intervening. *Jurnal Mahasiswa Entrepreneurship (Jme)*, *3*(8), 1614–1628. https://doi.org/10.36841/jme.v3i8.5153

Putri, S., & Selfiyan, S. (2023). Pengaruh Leverage, Liquidity, Growth Opportunities, Dan Net Working Capital Terhadap Cash Holding (Studi Empiris Perusahaan Sektor Barang Dan Konsumsi Yang Terdaftar Di Bursa Efek Indonesia Tahun 2018-2021). *Prosiding: Ekonomi Dan Bisnis*, *3*(2). https://jurnal.ubd.ac.id/index.php/pros/article/view/2484

Rahman, R. H. (2021). Pengaruh Profitabilitas, Cash Flow, Likuiditas Dan Net Working Capital Terhadap Cash Holding Dengan Ukuran Perusahaan Sebagai Variabel Moderating Pada Perusahaan Real Estate Dan Properti di Indonesia. *Jurnal Ekonomi Kiat*, *32*(1). 30-39. https://doi.org/10.25299/kiat.2021.vol32(1).7405

Setiyanti, S. W., & Sr, D. P. (2019). Pengaruh Profitabilitas, Ukuran Perusahaan, Struktur Aktiva Dan Pertumbuhan Penjualan Terhadap Struktur Modal Pada Perusahaan Manufaktur Yang Terdaftar Di Bursa Efek Indonesia Periode 2012-2016. *Jurnal Stie Semarang*, *11*(02), 15–30. https://doi.org/10.33747/stiesmg.v11i02.364

Siddiqua, G. A., Ur Rehman, A., & Hussain, S. (2019). Asymmetric Targeting of Corporate Cash Holdings and Financial Constraints in Pakistani Firms. *Journal Of Asian Business and Economic Studies*, *26*(1), 76–97. https://doi.org/10.1108/jabes-07-2018-0056

Siregar, I. G., Pambudi, J. E., & Septiana, H. V. (2022). Pengaruh Net Working Capital, Cash Conversion Cycle, Leverage Dan Cash Flow Terhadap Cash Holding (Pada Perusahaan Industri Dasar Dan Kimia Yang Terdaftar Di Bursa Efek Indonesia Periode 2016-2020). *Asset: Jurnal Manajemen Dan Bisnis*, *5*(1). https://doi.org/10.24269/asset.v5i1.4756

Suci, M. S. M., & Susilowati, Y. (2021). Analisis Pengaruh Profitability, Cash Flow, Leverage, Dan Net Working Capital Terhadap Cash Holding (Pada Perusahaan Manufaktur Yang Terdaftar Di Bei Tahun 2017-2019). *Media Bina Ilmiah*, *15*(12), 5821–5832. https://doi.org/10.33758/mbi.v15i12.1174

Suranta, E., Midiastuty, P. P., Indriani, R., & Robiansyah, A. (2021). Pengujian Pola Siklus Arus Kas Dalam Memprediksi Kebangkrutan. *Jurnal Akuntansi Maranatha, 13*(2), 362–377. https://doi.org/10.28932/jam.v13i2.3890

Suwandi. (2020). Pengaruh Cash Flow, Net Working Capital, Dan Firm Size Terhadap Cash Holding Dengan Growth Opportunity Sebagai Variable Moderating (Study Pada Perusahaan Pertambangan Yang Terdaftar Di Bei Periode 2014-2018) [Skripsi, Universitas Islam Negeri Alauddin Makassar]. Repositori UIN Alauddin Makassar. http://repositori.uin-alauddin.ac.id/id/eprint/17926

Van Horne, J. C., & Wachowicz, J. M. (2021). *Prinsip-Prinsip Manajemen Keuangan*. Jakarta: Salemba Empat.

Yanti, S. D., Azis, M. T., & Hadiwibowo, I. (2022). Pengaruh Cash Flow, Net Working Capital, Firm Size, dan Leverage Terhadap Cash Holding. *Jurnal Maneksi (Management Ekonomi Dan Akuntansi)*, *11*(2), 505–512. https://doi.org/10.55324/ijoms.v1i6.114