THE EFFECT OF DER, CAR, AND ROA ON LIQUIDITY WITH FIRM SIZE AS A MODERATING VARIABLE IN ISLAMIC COMMERCIAL BANKS (BUS) DURING THE 2020–2024 PERIOD

Deni Prastiono[1]
Universitas Islam Negeri Siber Syekh Nurjati Cirebon, Indonesia
deniprastiono@mail.uinssc.ac.id

Santi Rahmawati[2]
Universitas Islam Negeri Siber Syekh Nurjati Cirebon, Indonesia
rahmawatisanti264@gmail.com

Saigatun Haniyah[3]
Universitas Islam Negeri Siber Syekh Nurjati Cirebon, Indonesia
saigatunhaniyah@mail.uinssc.ac.id

Syaeful Bakhri[4]
Universitas Islam Negeri Siber Syekh Nurjati Cirebon, Indonesia
syaefulbakhri@syekhnurjati.ac.id

Abdul Aziz[5]
Universitas Islam Negeri Siber Syekh Nurjati Cirebon, Indonesia
abdul.aziz@uinssc.ac.id

Abstract

Liquidity is a critical factor in ensuring the operational stability of Islamic banking institutions. This study aims to examine the effects of the Debt to Equity Ratio (DER), Capital Adequacy Ratio (CAR), and Return on Assets (ROA) on bank liquidity, measured by the Financing to Deposit Ratio (FDR). In addition, this research investigates the moderating role of firm size in Islamic Commercial Banks in Indonesia during the 2020–2024 period. This study adopts a quantitative approach using secondary data derived from the published annual financial statements of Islamic Commercial Banks. The data were analyzed using moderated regression analysis to assess both direct and interaction effects among variables. The findings reveal that DER has a negative and significant effect on liquidity, indicating that higher leverage tends to reduce the bank's ability to maintain adequate liquidity levels. Conversely, CAR shows a positive and significant effect on liquidity, highlighting the importance of sufficient capital in supporting liquidity stability. Meanwhile, ROA does not have a significant influence on liquidity. Furthermore, the moderation analysis indicates that firm size strengthens the relationship between CAR and liquidity, suggesting that larger banks are better able to utilize their capital to maintain liquidity. However, firm size does not moderate the relationship between DER and ROA on liquidity. These results underline the vital role of capital adequacy in sustaining the liquidity performance of Islamic banks.

Keywords: DER, CAR, ROA, FDR, Firm Size, Liquidity

INTRODUCTION

In the Indonesian Islamic banking sector over the 2020–2024 period, liquidity management plays a vital role in determining financial stability. Sufficient liquidity enables banks to fulfill short-term obligations while supporting operational continuity and the resilience of the financial system (Berlian et al., 2025). During this period, the industry experienced consistent asset growth, reaching Rp980.29 billion in 2024, or an increase of 9.88% year-on-year, with the average Financing to Deposit Ratio (FDR) maintained at approximately 84.77%. This suggests that despite significant asset expansion, Islamic banks were able to keep their FDR within the regulatory threshold of 90%, reflecting a balanced approach between financing activities and fund mobilization as well as prudent liquidity risk management (Adebiyi, 2021).

Moreover, the performance of Islamic banking from 2020 to 2024 was shaped by macroeconomic conditions (Kurnia & Bakhri, 2025), including Indonesia's GDP growth, which averaged around 5% annually (Bank Indonesia, 2025), and fluctuations in the BI Rate ranging from 3% to 4%. These macroeconomic dynamics influenced banks' financial strategies, particularly in managing key ratios such as CAR and DER, which represent capital strength and leverage levels (Goso, 2022).

From a theoretical perspective, CAR, DER, and ROA are widely recognized as essential indicators of banking performance. CAR reflects a bank's capacity to absorb potential losses (Cakhyaneu & Apriyani, 2022), DER measures the extent of leverage employed, and ROA indicates profitability and efficiency in utilizing assets (Fathiyyah & Muflih, 2023). Their relationship with liquidity (FDR) is complex, and effective management of these indicators is expected to enhance liquidity performance (Fathiyyah & Muflih, 2023).

In addition, firm size commonly proxied by total assets functions as a moderating variable that may influence the strength of the relationship between financial ratios and liquidity. Larger banks generally possess greater resources and capacity to manage liquidity risks compared to smaller institutions. Therefore, this study seeks to address a research gap by examining the effects of CAR, DER, and ROA on FDR while incorporating firm size as a moderating variable during the pandemic and post-pandemic periods. Practically, the findings are expected to offer valuable insights for Islamic bank management in formulating more effective liquidity and risk management strategies. Furthermore, regulators may utilize these results to design appropriate financial policies and strengthen the stability of the national Islamic financial system.

REVIEW OF LITERATURE

Signal Theory

Signaling theory, introduced by Ross, S.A. (1977), explains that company managers who possess more comprehensive information about the firm's condition are motivated to convey this information to potential investors in order to enhance the company's value. Such signals provide insights into management's expectations regarding future performance and reflect the strategic actions taken to achieve organizational objectives. The disclosure of company information plays a crucial role in influencing investors' decisions, as it reduces information asymmetry between management and external parties (Gumanti, 2009).

Liquidity

Liquidity refers to a bank's capability to fulfill its financial obligations, including repaying liabilities, meeting customer withdrawals, and accommodating credit demands from borrowers (Agustin & Sumiyarsih, 2025). One of the key indicators used to measure bank liquidity is the Financing to Deposit Ratio (FDR), which compares the amount of financing disbursed to the funds collected from the public along with the bank's equity. According to Kasmir (2019), FDR serves as an important metric in assessing the balance between financing activities and available funds. Based on regulatory standards, the acceptable FDR range is between 80% and 110%, indicating an optimal level of liquidity management.

$$FDR = \frac{\text{Total Financing}}{\text{Total Third Party Funds}} \text{ X } 100\%$$

Table 1.
Criteria for Determining Liquidity Risk Ratings

Ranking	Information	Criteria
1	Very Healthy	FDR < 75%
2	Healthy	75% < FDR ≤ 85%
3	Quite Healthy	85% < FDR ≤ 100%
4	Unhealthy	100% < FDR ≤ 120%
5	Not Healthy	FDR > 120%

Source: *Bank Indonesia (BI)*

Capital Adequacy Ratio (CAR)

The Capital Adequacy Ratio (CAR) is an indicator used to assess a bank's ability to maintain sufficient capital in covering its risk-weighted assets, including financing activities (Prastiwi et al., 2021). The calculation of CAR can be expressed using the following formula:

$$CAR = \frac{\text{Capital}}{\text{Risk-Weighted Assets}} \times 100\%$$

Table 2.
Criteria for Determining CAR Rankings

Ranking	Information	Criteria
1	Very Healthy	CAR > 12%
2	Healthy	9% ≤ CAR < 12%
3	Quite Healthy	8% ≤ CAR < 9%
4	Unhealthy	6% ≤ CAR < 8%
5	Not Healthy	CAR < 6%

Source: *Bank Indonesia (BI)*

Banking theory explains that the Capital Adequacy Ratio (CAR) represents a bank's ability to maintain sufficient capital to absorb potential losses and sustain financial stability (Agustin & Sumiyarsih, 2025). Empirical evidence from Wulansari (2023) indicates that higher CAR levels tend to enhance the confidence of depositors and the market, which can indirectly contribute to an increase in the Financing to Deposit Ratio (FDR). However, findings by Stephanie and Ruslim (2021) reveal that CAR does not always have a significant impact on liquidity in Islamic banks in Indonesia during certain periods.

Debt to Equity Ratio (DER)

The Debt to Equity Ratio (DER) measures the proportion of total liabilities compared to shareholders' equity (Silom et al., 2023). The formula for calculating DER is presented as follows:

$$\text{DER} = \frac{(\text{Debt})}{(\text{Equity})}$$

Table 3.
Criteria for Determining DER Rankings

Ranking	Information	Criteria
1	Healthy	< 90%
2	Quite Healthy	= 90%
3	Not Healthy	> 90%

Source: *Kasmir (2019)*

DER represents a bank's capital structure as well as the extent of leverage it employs. From a financial theory perspective, a higher level of leverage can elevate liquidity risk due to the increased burden of debt obligations (Faisal et al., 2021). Empirical findings by Madi and Arifin (2019) indicate that DER has a negative effect on the Financing to Deposit Ratio (FDR) in Islamic banks in Indonesia, suggesting that a rise in DER may weaken a bank's capacity to fulfill its short-term liabilities.

Return on Assets (ROA)

Return on Assets (ROA) is a profitability indicator used to assess a company's effectiveness in generating earnings from its total assets (Septiarini et al., 2021). The formula for calculating ROA is as follows:

$$\text{ROA} = \frac{\text{Net profit}}{\text{Total Assets}}$$

Table 4.
Health Classification Based on Return on Assets (ROA)

Ranking	Information	Criteria
1	Very Healthy	ROA > 1.5%
2	Healthy	1.25% < ROA ≤ 1.5%
3	Quite Healthy	0.5% < ROA ≤ 1.25%
4	Unhealthy	0% < ROA ≤ 0.5%

Ranking	Information	Criteria
5	Not Healthy	ROA ≤ 0%

Source: *Bank Indonesia (BI)*

ROA, as a measure of bank profitability, is considered to enhance liquidity by generating sufficient operating income (Agustin & Sumiyarsih, 2025). Empirical evidence from Nihayah and Aryani (2022) shows that ROA has a positive and significant influence on the Financing to Deposit Ratio (FDR), suggesting that banks with higher profitability levels tend to maintain stronger liquidity positions.

Firm Size of Banks

According to Brigham and Houston (2001), firm size reflects the scale of a company, which can be categorized based on indicators such as revenue, total assets, and total equity. It represents the magnitude of a company's operations as reflected in its ability to manage and utilize resources to produce goods or services. In financial research, firm size is commonly proxied by the natural logarithm of total assets, as it provides a standardized measure of a company's scale (Maharani et al., 2024).

Size = Ln (Total Assets)

Based on the theory of economies of scale, larger banks possess greater resources and capabilities to manage risks and maintain liquidity more effectively (Wulansari, 2023). Empirical findings by Pratiwi and Yudiana (2023) indicate that firm size strengthens the relationship between ROA and FDR, whereas it does not significantly moderate the influence of CAR and DER on FDR.

Previous studies have reported inconsistent findings regarding the impact of CAR and DER on FDR. Agustin and Sumiyarsih (2025) found that CAR does not significantly affect liquidity, while Nihayah and Aryani (2022) reported a significant influence. These conflicting results highlight the necessity for further investigation using different analytical approaches or time frames. In addition, there is still a limited number of longitudinal panel studies that comprehensively examine the moderating role of firm size in Islamic banking, particularly during the 2020–2024 period. This research gap forms the main foundation for the development of the hypotheses in this study.

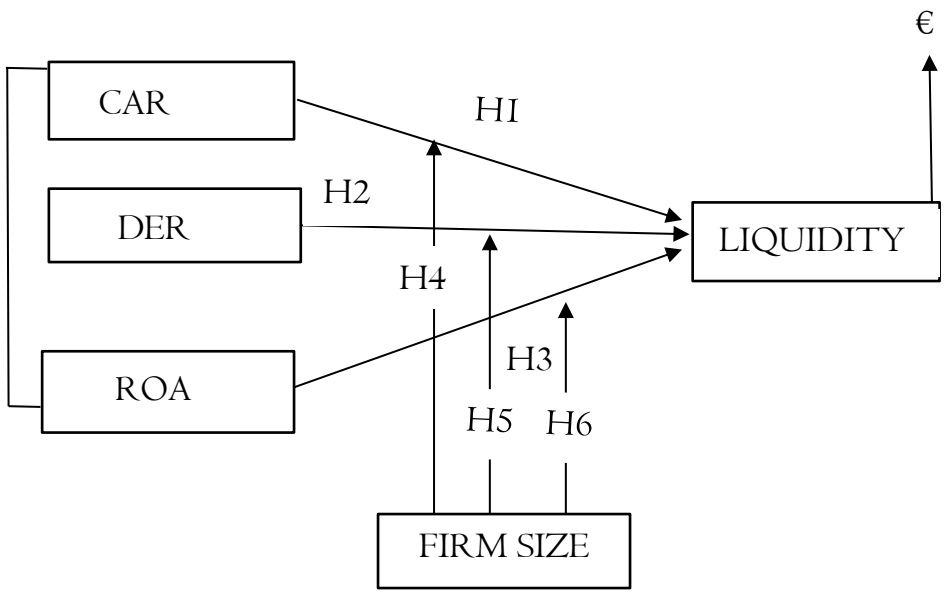

Figure 1.
Research Hypothesis Model

RESEARCH METHOD

This study employed a library research design with a quantitative approach, aiming to examine the relationships among variables and measure the strength of those relationships. According to Sugiyono (2020), quantitative research is grounded in the philosophy of positivism and is used to analyze specific populations or samples. Data collection is conducted using research instruments, while data analysis relies on statistical techniques to test predetermined hypotheses.

The population of this research consisted of 13 Islamic Commercial Banks in Indonesia. The study utilized secondary data obtained from the annual financial statements of these banks covering the 2020–2024 period. A census sampling technique was applied, meaning that all members of the population were included as research samples. For data analysis, this study used Moderated Regression Analysis (MRA) to examine the influence of independent variables on liquidity and to assess the moderating role of firm size. The data were processed using Econometric Views (EViews) software with a significance level set at 5%.

RESULTS AND DISCUSSION

Table 5.
Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Liquidity	65	0.00	196.73	81.96	27.64
DER	65	6.71	1,377.65	251.31	327.50
CAR	65	15.21	390.50	44.16	63.60

Variable	N	Minimum	Maximum	Mean	Standard Deviation
ROA	65	-10.85	11.43	0.97	3.71
Firm Size	65	10.84	28.84	16.70	3.46

Based on Table 5, this study includes a total of 65 observations. The liquidity variable shows a minimum value of 0.00 and a maximum of 196.73, with a mean of 81.96 and a standard deviation of 27.64, indicating variability in banks' ability to fulfill short-term obligations during the observation period. The Debt to Equity Ratio (DER) ranges from a minimum of 6.71 to a maximum of 1,377.65, with an average value of 251.31 and a standard deviation of 327.50. This suggests considerable differences in leverage levels and funding structures among Islamic commercial banks. For the Capital Adequacy Ratio (CAR), the minimum value is 15.21 and the maximum is 390.50, with a mean of 44.16 and a standard deviation of 63.60, reflecting variations in capital adequacy across banks during the study period.

The Return on Assets (ROA) variable has a minimum value of -10.85 and a maximum of 11.43, with an average of 0.97 and a standard deviation of 3.71, indicating fluctuations in bank profitability in generating returns from their assets. Meanwhile, the Firm Size variable ranges from 10.84 to 28.84, with an average of 16.70 and a standard deviation of 3.46, illustrating differences in the scale of bank size as measured by total assets throughout the study period.

Table 6.
Moderated Regression Analysis (MRA) Test Results

Variable	Coefficient	t-Statistic	Probability
Constant	189.33	6.93	0.00
DER	-0.09	-2.15	0.03
CAR	3.98	3.72	0.00
ROA	21.42	1.42	0.15
Firm Size	-6.44	-3.61	0.00
DER × Firm Size	0.00	1.62	0.10
CAR × Firm Size	0.26	3.51	0.00
ROA × Firm Size	-1.40	-1.52	0.13

$$Y = 189.33 - 0.09X_1 + 3.98X_2 + 21.42X_3 - 6.44Z + 0.00(X_1 \times Z) + 0.26(X_2 \times Z) - 1.40(X_3 \times Z) + e$$

Regression Coefficient Interpretation

The constant value of 189.33 represents the level of liquidity when all independent variables Debt to Equity Ratio (DER), Capital Adequacy Ratio (CAR), Return on Assets (ROA), and firm size are held constant at zero, indicating a baseline liquidity level of 189.33. The coefficient of DER is -0.09, implying that an increase of one unit in DER will lead to a decrease in liquidity by 0.09. In contrast, CAR has a coefficient of 3.98, which means that a one-unit increase in CAR will raise liquidity by 3.98. Similarly, ROA shows a positive

coefficient of 21.42, indicating that higher profitability contributes to an increase in liquidity by 21.42. Meanwhile, firm size has a coefficient of -6.44, suggesting that larger firm size tends to reduce liquidity by 6.44.

Interaction Effects

The interaction term between DER and firm size has a coefficient of 0.00, indicating an almost negligible impact on liquidity. The interaction between CAR and firm size (0.26) demonstrates that their combined effect enhances liquidity by 0.26. Conversely, the interaction between ROA and firm size (-1.40) suggests a negative effect, where liquidity decreases by 1.40.

Effect of DER on Liquidity

The results indicate that DER has a negative and statistically significant effect on liquidity, as evidenced by a t-value of -2.15 (exceeding the critical value of 1.999) and a probability of $0.03 < 0.05$, thereby supporting H1. This finding is consistent with leverage and financial risk theory, which states that higher debt levels increase financial obligations and place pressure on liquidity (Adebiyi, 2021; Sumarni et al., 2023).

Effect of CAR on Liquidity

CAR is found to have a positive and significant effect on liquidity, with a t-value of 3.72 and a probability of $0.00 < 0.05$, supporting H2. This result aligns with Islamic banking theory, which highlights that strong capital adequacy enhances financial stability and builds stakeholder confidence (Evrilyan & Septiarini, 2020; Gunawan & Manda, 2021).

Effect of ROA on Liquidity

ROA does not show a significant influence on liquidity, as indicated by a t-value of 1.42 and a probability of $0.15 > 0.05$, leading to the rejection of H3. This suggests that profitability alone is insufficient to improve liquidity without effective cash flow management.

Moderating Role of Firm Size on DER and Liquidity

Firm size does not significantly moderate the relationship between DER and liquidity, as reflected by a t-value of 1.62 and a probability of $0.10 > 0.05$, resulting in the rejection of H4. Larger firms generally have better access to funding and more stable cash flows, which can reduce the negative impact of leverage.

Moderating Role of Firm Size on CAR and Liquidity

Firm size significantly strengthens the relationship between CAR and liquidity, as shown by a t-value of 3.51 and a probability of $0.00 < 0.05$, supporting H5. This indicates that larger firms are more capable of utilizing their capital effectively to maintain liquidity (Sulistyandari et al., 2023).

Moderating Role of Firm Size on ROA and Liquidity

Firm size does not moderate the relationship between ROA and liquidity, as indicated by a t-value of -1.52 and a probability of $0.13 > 0.05$, leading to the rejection of H6. This finding supports Rahmawati and Ikram (2025), who argue that the moderating effect of firm size depends on specific company characteristics.

CONCLUSION

This study seeks to examine the influence of the Debt to Equity Ratio (DER), Capital Adequacy Ratio (CAR), and Return on Assets (ROA) on liquidity, measured by the Financing to Deposit Ratio (FDR), while incorporating firm size as a moderating variable in

Islamic Commercial Banks in Indonesia during the 2020–2024 period. The findings reveal that DER has a negative and significant impact on liquidity, suggesting that higher leverage levels intensify liquidity pressure. In contrast, CAR demonstrates a positive and significant effect, indicating that stronger capital adequacy enhances a bank's ability to sustain liquidity stability. Meanwhile, ROA does not exhibit a significant relationship with liquidity in Islamic banking.

The moderation analysis shows that firm size does not significantly influence the relationship between DER and liquidity, nor between ROA and liquidity. However, firm size significantly strengthens the relationship between CAR and liquidity. This implies that banks with larger asset bases are more capable of leveraging their capital adequacy to maintain stable liquidity levels. Consequently, effective capital structure management becomes a key consideration for Islamic banking institutions in balancing financial risk and stability.

From an academic perspective, this study contributes to the literature on Islamic banking finance by highlighting that capital adequacy has a more dominant role in determining liquidity compared to profitability indicators. Additionally, it enriches empirical research on the moderating role of firm size in the relationship between financial ratios and liquidity within the context of Islamic banking in Indonesia. Future studies are encouraged to extend the observation period, incorporate additional variables such as financing quality, operational efficiency, and macroeconomic factors, and broaden the research scope to include other Islamic financial institutions for more comprehensive insights.

REFERENCES

Adebiyi, O. (2021). Effect of Capital Structure, Liquidity on Performance: Evidence from Deposit Money Banks in Nigeria. *Research Journal of Finance and Accounting.*

Agustin, F., & Sumiyarsih, S. (2025). Pengaruh Profitabilitas, Likuiditas, Ukuran Perusahaan Terhadap Kebijakan Hutang pada Perusahaan Property dan Real Estate yang Terdaftar di Bursa Efek Indonesia Tahun 2020–2023. *Journal of Accounting Law Communication and Technology.*

Bank Indonesia. (2025). *Laporan Tahunan Bank Indonesia 2025.* https://www.bi.go.id

Berlian, B., Marbun, E. T. N., Lestari, F. P., Datubara, K., Magdalena, Dika, M. S., Napa, Lestari, P., Yulandari, R., Aulia, S., & Saputri, T. (2025). Pengaruh Likuiditas, Solvabilitas, Profitabilitas Terhadap Opini Audit: Studi Empiris Pada Laporan Keuangan Tahun 2019–2023 Perusahaan Perbankan Yang Terdaftar di BEI. *Economic Reviews Journal.*

Cakhyaneu, A., & Apriyani, R. (2022). Determinan Capital Buffers Bank Umum Syariah di Indonesia. *Jurnal Ekonomi Syariah Teori dan Terapan.*

Evrilyan, H., & Septiarini, D. (2020). Determinasi Tingkat Solvabilitas Pada Perusahaan Asuransi Jiwa Syariah Periode 2014–2018. *Jurnal Ekonomi Syariah Teori dan Terapan.*

Faisal, A., Hasanah, A., & Adam, A. M. (2021). Pengaruh Fundamental Perusahaan dan Reaksi Pasar Modal Sebelum dan Saat Pandemi Covid-19 Terhadap Return Saham (Studi Kasus Jakarta Islamic Index Periode 2016–2020). *Jurnal Ekonomi Syariah Teori dan Terapan.*

Fathiyyah, S. N., & Muflih, M. (2023). Determinants of Islamic Banking Profitability: A Comparative Analysis of Indonesia and Malaysia. *Jurnal Ekonomi Syariah Teori dan Terapan.*

Goso, G. (2022). The Influence of Capital Structure, Liquidity, and Company Size on Sulselbar Bank's Profitability. *Enrichment: Journal of Management.*

Gumanti, T. A. (n.d.). *Teori Sinyal dalam Manajemen Keuangan.*

Gunawan, R. A., & Manda, G. S. (2021). Pengaruh Non Performing Financing (NPF), Capital Adequacy Ratio (CAR) dan Inflasi terhadap Likuiditas. *Eqien-Jurnal Ekonomi dan Bisnis*, 8(1), 203–210.

Kasmir. (2019). *Analisis Laporan Keuangan* (1st ed.). Rajawali Pers.

Kurnia, N., & Bakhri, S. (2025). Analisis Komparasi Kinerja Bank Umum Syariah di Indonesia Menggunakan Maqashid Sharia Index. *Velocity: Journal of Sharia Finance and Banking*, 5(1), 74–87.

Madi, R. A., & Arifin, D. S. (2019). Pengaruh Likuiditas, Leverage, Ukuran Perusahaan dan Pertumbuhan Penjualan terhadap Profitabilitas.

Maharani, D. P., Roza, F., Wijayanti, F. G., & Nopiah, R. (2024). Islamic Bank Performance and Macroeconomic Variables During Economic Turbulence. *Economics, Business, Accounting & Society Review.*

Nihayah, I., & Aryani, Y. (2022). Implementation of Risk Management and Capital Structure on Financial Performance: A Study of Islamic Banking in Indonesia. *Journal of Business and Management Studies.*

Prastiwi, I. E., Tho'in, M., & Kusumawati, O. A. (2021). Faktor Internal yang Mempengaruhi Likuiditas Bank Syariah: Analisis Rasio Capital Adequacy Ratio (CAR), Dana Pihak Ketiga (DPK), Non Performing Financing (NPF). *Jurnal Ilmiah Ekonomi Islam*, 7(2), 1107–1116.

Pratiwi, E. M., & Yudiana, F. E. (2023). Peran Islamic Corporate Social Responsibility dalam Memediasi Pengaruh Ukuran Perusahaan, Leverage, Likuiditas, dan Kecukupan Modal terhadap Kinerja Keuangan. *Journal of Accounting and Digital Finance.*

Rahmawati, M. P., & Ikram, S. (2025). The Influence of Profitability and Liquidity on Firm Value with Firm Size as a Moderating Variable. *Vol. 05, No. 06.* https://doi.org/10.59141/jrssem.v5i6.1293

Septiarini, D. F., Hisan, U. F. C., Matsahri, M., & Filianti, D. (2021). Capital Buffer, Risk, Profitability, Size, and Macroeconomics: Empirical Study on Islamic Banks. *Al-Iqtishad: Jurnal Ilmu Ekonomi Syariah.*

Silom, D., Saerang, I. S., & Rumokoy, L. (2023). Pengaruh Global Economic Policy Uncertainty, Likuiditas, Leverage, dan Firm Size terhadap Kinerja Perusahaan Sub Sektor Pariwisata, Hotel dan Restoran yang Terdaftar di Bursa Efek Indonesia. *Jurnal Riset Ekonomi, Manajemen, Bisnis dan Akuntansi.*

Stephanie, F., & Ruslim, H. (2021). Pengaruh Rasio Keuangan terhadap Kinerja Keuangan Perusahaan Asuransi. *Jurnal Kontemporer Akuntansi.*

Sugiyono. (2020). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D.*

Sulistyandari, Kusumah, A., Fikri, K., & Bakaruddin. (2023). Can Firm Size as a Moderating Variable Enhance Profitability in Islamic Banks in Indonesia? *Jurnal Manajemen Teknologi*, 22(3), 300–319. https://doi.org/10.12695/jmt.2023.22.3.6

Sumarni, R., Gustina, I., & Nurfitriani, N. (2023). Pengaruh Likuiditas dan Struktur Modal terhadap Profitabilitas pada Perusahaan Perbankan yang Terdaftar di Bursa Efek Indonesia Periode 2019–2021. *Jurnal Akuntansi dan Keuangan*, 12(1), 42–48.

Wulansari, K. (2023). Pengaruh Rasio Profitabilitas, Solvabilitas dan Likuiditas dengan Ukuran Perusahaan sebagai Variabel Moderasi terhadap Harga Saham (Studi pada Bank Pembangunan Daerah). *Cakrawala Repositori IMWI.*