

Analysis of Factors Affecting Profitability Digital Bank in Indonesia

Ahmad Suroto^{1*}, Dewi Rahmayanti²

University of Bengkulu

Corresponding Author: Ahmad Suroto ahmad,suroto1c@gmail.com

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ABSTRACT

Rapid technological advances in recent years have encouraged banks to become digital banks, especially after the COVID-19 outbreak which accelerated the use of digital financial services. The purpose of this study is to look at how CAR, BOPO, LDR, and bank size affect the profitability of Indonesian digital banks. Profitability is measured using ROA as the dependent variable and CAR, BOPO, LDR, and bank size as the independent factors. This study applies a quantitative methodology, specifically panel data regression analysis. The research sample encompasses of 9 digital banks in Indonesia selected with a purposive sampling approach. The sample selection criteria include digital banks that are registered in Indonesia and have disseminated quarterly financial reports from Q1 2022 to Q4 2023 in the financial statements of the Financial Services Authority (OJK). The results show that CAR has a positive and substantial effect on ROA, but BOPO has a negative and significant impact on ROA. Furthermore, LDR and bank size show a favorable and sizable impact on ROA.

INTRODUCTION

The relatively rapid development of technology in recent times has brought society into the digital era. In Indonesia, the integration of technology into everyday life is increasingly widespread, especially in the financial and banking sectors. The COVID-19 epidemic has intensified this tendency, driving up consumer demand for speedier and more practical digital services. As a result, banks are required to transform into digital banks in order to maintain their business (Yulita, 2023).

By utilizing digital banking technology, commercial financial services are provided primarily through mobile applications, enabling easier access without geographical limitations (Wu et al., 2023). Digital banks offer a variety of innovative features, such as online account opening, transfers, investments, payments, deposits and account closings made via smartphone without visiting the nearest bank office (Litvishko et al., 2020). This allows people in remote areas to access financial products such as savings, credit and investments without visiting a branch office.

In its operations, digital banks need to pay attention to profitability to ensure business sustainability and long-term growth. Strong profitability is needed to finance technology investments, such as digital technology development, big data management, and artificial intelligence integration to improve operational efficiency. Return on assets (ROA) is a regularly used profitability evaluation criterion that measures asset management's efficiency in producing profitable results (Sianturi & Rahadian, 2020). High ROA demonstrates the bank's ability to manage assets efficiently to create profit, indicating the effectiveness of asset management and positive profitability. Conversely, a lower ROA indicates constraints in optimizing assets to achieve profit. However, the average ROA value of digital banks fluctuates and is below the average for conventional banks.

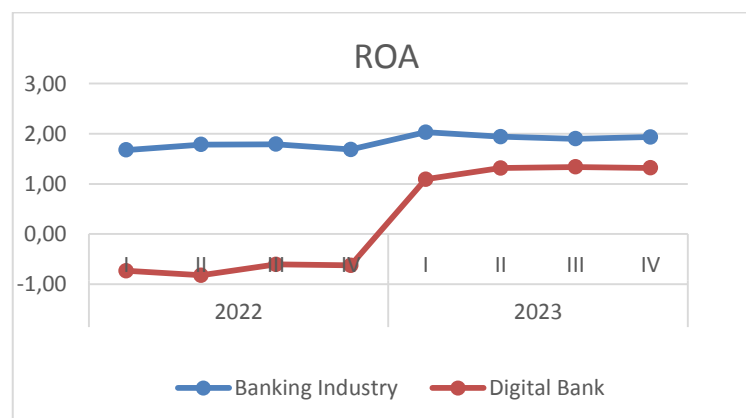


Figure 1. Average ROA of the banking industry and digital banks

Based on figure 1.1, The average Return on Assets (ROA) value of digital banks in Indonesia is still below conventional banks. Throughout 2022, digital banks recorded negative ROAs, reflecting the challenges in generating profitability. Although in 2023 digital bank ROA began to show improvement, the ROA rate is still below conventional banks which tend to stabilize above 1.50%. This data is in line with Budianto (2023), which states that the

performance of digital banks in 2022 was disappointing compared to large conventional banks. This illustrates that conventional banks have a more mature financial structure, while digital banks are still in the development stage to improve operational performance and profitability. In addition, it faces the challenge of high investment costs in technology infrastructure, such as digital application development, cybersecurity, and artificial intelligence (Putri & Pangestuti, 2024). As well as increasingly fierce competition with fintech companies and conventional banks requires digital banks to offer products at low costs, This can affect profit margins (Wibowo et al., 2023).

Several previous studies indicate that bank profitability is shaped by multiple elements, including the loan-to-deposit ratio (LDR), capital adequacy (CAR), and the bank's operational efficiency (BOPO) (Hanaffy, 2023). In addition, bank size can also affect bank profitability (Isayas, 2022). Nonetheless, empirical findings concerning the impact of these variables on return on assets (ROA) remain inconclusive and varied. For example, Hanaffy (2023) discovered that capital adequacy increases ROA whereas BOPO and LDR decreases ROA. In contrast, Batten (2019) discovered a negative link between capital adequacy and ROA. Meanwhile, Rahagi (2024) discovered that LDR had a favorable effect on ROA. According to Attatur et al. (2024), bank size has a favorable effect on ROA, but Rana (2023) believes it has a negative effect on ROA.

The shifting and variable return on assets among digital banks reveals a research gap that requires additional investigation. As a result, the goal of this research is to re-evaluate the influence of capital adequacy (CAR), operational efficiency (BOPO), loan-to-deposit ratio (LDR), and bank size on the profitability of digital banks in Indonesia. This study is interesting since it focuses on digital banks, which have received little attention in comparison to traditional and Islamic financial institutions. From a theoretical standpoint, this study is expected to contribute to the body of knowledge regarding the factors that influence profitability in Indonesia's digital banking market.

THEORETICAL REVIEW

Digital Bank

Digital banks are financial firms that operate wholly or virtually entirely through digital means and do not have physical branch offices. (12/POJK.03/2021). In other words, a digital bank is a branchless banking entity that allows customers to access services anytime and anywhere through electronic devices such as smart phones, computers, or tablets. The main advantage of digital banks lies in operational efficiency. This is supported by the use of Big data and artificial intelligence technologies to automate banking services, thereby reducing operational costs (Kumar, 2024). However, the success of digital banks is inseparable from challenges, such as the high cost of technology infrastructure, data security, cyber risks, and strict regulations related to data protection and privacy. Therefore, the long-term profitability of a digital bank depends largely on its ability to manage capital, improve operational efficiency, and mitigate risks.

Capital Adequacy

Capital adequacy refers to how much capital a bank has to support operations and overcome potential financial risks (Nuryanto et al., 2020). The Capital Adequacy Ratio (CAR) is the primary indicator used to assess capital adequacy. It represents the ratio of risk-based assets to bank capital. This ratio is an important measure for determining if the bank has enough cash on hand to absorb unexpected losses without disrupting normal operations.

Capital adequacy plays an important role in influencing a bank's profitability, as adequate capital allows the bank to absorb losses and fund operational expansion that can increase revenue. According to, Hanaffy (2023) which states that a bank's ability to generate income improves with more capital adequacy profits. Greater capital coverage can reduce capital costs and increase operational efficiency, thereby supporting increased profitability (Nuryanto et al., 2020). In addition, an increase in capital adequacy not only contributes to an increase in ROA but can also increase the public's positive view of the bank because the bank is considered capable of bearing risks (Setiawati et al., 2017). Drawing upon the findings of prior studies, The following is the hypothesis that is put forth:

H1: Capital adequacy has a positive influence on the profitability of digital Indonesian banks.

Operational Efficiency

Operational Efficiency is the capacity of the bank to maximize revenue by minimizing operating costs (Setiawan, 2024). In general, to measure operational efficiency using an indicator of the operating income to operating cost ratio (BOPO). This ratio illustrates how effectively the bank controls costs in its operational activities.

The higher the BOPO ratio, the less efficient the bank's operations are. This inefficiency results in a larger allocation of operating costs, which might diminish the bank's profit margin. Conversely, the lower the BOPO proportion, the more effective the bank is at managing its operations, allowing it to save expenses and improve profits (Hanaffy, 2023; Rahman et al., 2020). When digital banks automate business processes, they minimize their dependency on manual labor while also saving money on physical infrastructure costs such as branch offices. This enables digital banks to offer banking services at more competitive pricing, hence improving competitiveness and driving increasing profitability. Based on the findings from previous research, The following is the formulation of the hypothesis:

H2: The BOPO ratio has a negative influence on the profitability of digital banks in Indonesia.

Liquidity risk

Liquidity risk refers to a financial institution's ability to meet short-term financial obligations (Olofin et al., 2024), such as account holder withdrawals, without disrupting the institution's overall operational efficiency. Typically, liquidity risk is assessed using the Loan to Deposit Ratio (LDR). LDR is an indicator of the bank's ability to meet the needs of depositor withdrawals by

using disbursed loans as a source of liquidity. This ratio depicts the balance between the number of loans provided and deposits accumulated, with a greater LDR suggesting that the institution makes more loans relative to its deposits.

Rahagi et al. (2023) conducted research that provides detailed insight into the relationship between banking companies' profitability and liquidity risk, particularly in the context of digital banking. According to the findings, liquidity risk has a significant impact on digital bank profitability. An increase in LDR indicates an increase in loan allocation, which boosts the bank's interest revenue. An increase in interest income directly affects the bank's net profit, which determines its overall profitability level. H3: The Loan to Deposit Ratio (LDR) has a positive impact on the profitability of digital banks in Indonesia.

Bank size

Bank size refers to the total capacity of the financial institution, which can be measured through various indicators, such as total assets, equity, transaction volume, and number of registered customers (Prasanjaya & Ramantha, 2013). Research shows that bank Size significantly affects profitability, which is a multifaceted concept. In general, banks with large valuations have higher efficiency than banks with smaller valuations (Attatur et al., 2024; Batten & Vo, 2019; Jayaraman & Srinivasan, 2019; Karaduic & Dalovic, 2021). Larger digital banks have a number of competitive advantages, especially in terms of access to resources and cutting-edge technology. These banks are able to utilize artificial intelligence, operational automation, and big data analytics to improve their operational efficiency. The use of these advanced technologies not only contributes to cost reduction and productivity improvement but also drives innovation in the services and products offered. As such, large digital banks have the ability to compete more effectively in an increasingly fierce market and increase profitability.

H4: Bank size has a positive influence on the profitability of digital banks in Indonesia.

METHODOLOGY

This study uses a quantitative method to examine the relationship between independent and dependent variables in the context of digital banking. The dependent variables in this study are ROA, which serves as the main metric for assessing the profitability of digital banks. Meanwhile, the independent variables include several important factors, namely liquidity risk (LDR), BOPO, CAR, and the size of digital banks. This study uses a population of digital banks recorded in Indonesia. From this demographic, researchers selected a sample of nine digital banks: Bank Neo Commerce, Bank Raya Indonesia, Bank Allobank Indonesia, Bank Jago, Bank Digital BCA, Bank Amar, and Bank Hibank, Bank Krom Indonesia. Sample selection is performed utilizing a targeted sampling method. The requirements stipulate that digital banks possess comprehensive financial statements from Q1 of 2022 through Q4 of 2023, which are published by the Financial Services Authority (OJK). This data includes relevant

information related to ROA, LDR, BOPO, CAR, and bank size. The utilization of data from OJK is critical for boosting the quality and reliability of the information utilized in the study. So it can be ascertained that the findings of this study have high credibility and provide a significant contribution to understanding the dynamics of digital banks. The data analysis process will be carried out using Eviews software version 12. In this analysis, researchers will apply panel data regression to identify the effect of operational efficiency, capital adequacy, liquidity risk, and bank size on profitability as measured by ROA. The regression model using panel data can be represented by the subsequent mathematical equation:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \mu_{it} \dots\dots\dots(1)$$

Explanation:

Y_{it} : Profitability,
 β : Constanta,
X₁ : Ratio of capital adequacy,
X₂ : BOPO
X₃ : Loan to Deposit Ratio,
X₄ : Bank size
i : Digital banking company,
t : Period / time
 μ : Error term

RESULTS

Model Selection Test

The model chosen in Table 1 The Chow Test, the Lagrange Multiplier (LM) Test, and the Hausman Test were used in the analysis procedure. by selecting the best model for research using a significance value of 5%, or 0.05.

Table 1. Model selection test results

No	Model test	Criteria	Probability value	Test results
1	Chow Test	CEM (value prob. > 0,05) FEM (value prob. < 0,05)	0,00 < 0,05	<i>Fixed Effect Model (FEM)</i>
2	<i>Hausman Test</i>	REM (value prob. > 0,05) FEM (value prob. < 0,05)	0,71 > 0,05	<i>Fixed Effect Model (FEM)</i>
3	Lagrange Multiplier Test (LM)	CEM (value prob. > 0,05) REM (value prob. < 0,05)	0,00 < 0,05	<i>Fixed Effect Model (FEM)</i>

Source: Research data processed with evIEWS version 12

The Fixed Effect Model (FEM) model is the best approach to employ, according to the findings of the Chow, Hausman, and Lagrange multiplier tests. The traditional assumption test is no longer necessary because of the REM model (Gujarati & Porter 2009).

Panel Data Regression Test Results

Table 2. T test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-23.92555	12.46739	-1.919050	0.0592
CAR	0.013984	0.005251	2.663264	0.0097
BOPO	-0.074250	0.007514	-9.882143	0.0000
LDR	0.006190	0.001629	3.799524	0.0003
<u>Ukuran Bank</u>	1.799976	0.746771	2.410346	0.0187

Source: Research data processed with evIEWS version 12

Table 3. Determinant coefficient test

Root MSE	1.118090	R-squared	0.679622
Mean dependent <u>var</u>	0.167910	Adjusted R-squared	0.660495
S.D. dependent <u>var</u>	1.989219	S.E. of regression	1.159059
Sum squared <u>resid</u>	90.00898	F-statistic	35.53205
Durbin-Watson stat	1.576956	<u>Prob(F-statistic)</u>	0.000000

Source: Research data processed with evIEWS version 12

DISCUSSION

The impact of capital adequacy ratio (CAR) on profitability (ROA)

With a coefficient of 0.01 and a probability value (p-value) of 0.00, the Capital Adequacy Ratio (CAR) variable is below the 0.05 significance level. These results imply that, at least in part, CAR has a favorable and noteworthy impact on ROA. Thus, it is reasonable to consider the claim that CAR has a beneficial effect on digital banks' profitability to be true.

The higher the CAR, the better the bank's ability to manage potentially troublesome credit risk. Banks with a high degree of capital adequacy have the capacity to cover future losses, but they can also carry out their operational activities more efficiently and effectively, which improves overall financial

performance. Furthermore, substantial capital allows bank management to allocate cash for profitable investments, potentially increasing profitability. An increase in the capital adequacy ratio can boost public trust in the bank (Setiawati et al., 2017). Banks with significant capital are thought to be better able to handle financial risks, prompting more depositors to maintain their money in such organizations. This circumstance will boost the bank's lending capability and revenue potential. This finding is consistent with earlier study into the impact of CAR on bank profitability. Hanaffy (2023), Khalifaturofi'ah Oktavi s & Ulum Saiful A (2022), Parlindungan et al. (2024), Rahman et al. (2020), Rayamajhi & Bhandari (2024), and Saleh & Afifa (2020) all found a positive and substantial association between CAR and ROA. The impact of BOPO on ROA.

The effect of BOPO on profitability (ROA)

With a p-value of 0.00 and a coefficient of -0.07, the operational expenses to operating income ratio (BOPO) falls below the 0.05 threshold for statistical significance. This indicates that BOPO significantly diminishes Return on Assets (ROA). Therefore, the results provide strong evidence that BOPO negatively affects the profitability of digital banks.

Greater operational efficiency is demonstrated by a lower BOPO ratio, which plays a key role in boosting the profitability of digital banks. A reduced BOPO value signifies that these banks have effectively controlled their operating expenses, leading to cost savings that enhance overall returns. This heightened efficiency enables banks to invest more in improving their products and services, while also strengthening their position in the competitive market. These findings align with previous studies by Fajari & Sunarto (2017), Hanaffy (2023), Khatiwada et al. (2024), Parlindungan et al. (2024), and Rahman et al. (2020), all of which concluded that BOPO has a detrimental impact on ROA.

The effect of loan to deposit ratio (LDR) on profitability (ROA)

With a p-value of 0.00 and a coefficient of 0.00, the Loan to Deposit Ratio (LDR) falls beneath the 0.05 significance threshold. This implies that LDR has a statistically significant and positive effect on Return on Assets (ROA), at least to some extent. Accordingly, the hypothesis stating that LDR positively affects the profitability of digital banks is supported by the data.

A high LDR ratio reflects that digital banks are allocating a greater portion of their funds toward lending activities, thereby minimizing idle capital. As the volume of loans issued increases, so does the interest income generated, due to the larger credit exposure to borrowers. Provided that the Non-Performing Loan (NPL) ratio remains within acceptable limits, this growth in interest income leads to improved profitability, as evidenced by a higher ROA. This observation aligns with previous studies by Dewi & Ariyanto (2018), Karadayi (2023), Rahagi & Rahadi (2024), and Rahagi et al. (2023), all of which concluded that LDR positively influences ROA.

The effect of bank size on profitability (ROA)

The bank size variable has a probability value (p-value) of 0.01 and a coefficient of 1.79, which is rather high and falls below the significance level of

0.05. These data imply that bank size has a favorable and considerable impact on return on assets (ROA). As a result, it is widely agreed that bank size has a beneficial impact on the profitability of digital banks.

The larger the digital bank, the greater the potential for profits. Smaller digital banks, on the other hand, tend to be less profitable. A bank's size is determined not only by its operational capability, but also by the number of assets, customers, and services offered. Larger banks have more access to a variety of resources, including money, technology, and larger market networks.

Abundant resources enable digital banks to make larger investments, resulting in increased profitability. For example, a larger bank can enhance banking technology, upgrade infrastructure, and broaden its market reach. Improvements in these areas lead to higher revenue and operational efficiency, which have a positive impact on ROA. According to studies by Batten (2019), GrZeta et al. (2023), Jayaraman & Srinivasan (2019), Karaduic & Dalovic (2021), and Attatur et al. (2024), the results of this analysis support the assumption that ROA is positively impacted by the size of the organisation (bank).

CONCLUSIONS AND RECOMMENDATIONS

According to the findings of this research, it can be inferred that multiple financial aspects considerably affect the profitability of digital banks, evaluated by Return on Assets (ROA) is positively influenced by the Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), and bank size, which reflects financial stability, credit disbursement effectiveness, and operational efficiency in large-scale banks. Conversely, the BOPO ratio has a negative effect on ROA, indicating that low cost efficiency can reduce the bank's profitability.

The implication of these findings is that digital banks should strengthen capital strategies by maintaining CAR at an optimal level to ensure stability and sustainable business expansion. In addition, banks should focus more on operational efficiency to reduce the BOPO ratio, for example, by adopting financial technology to reduce operational costs. Proper LDR management also needs to be done by balancing liquidity and lending so that banks can maximize interest income without increasing the risk of bad debts. Furthermore, smaller banks should consider expansion and asset enhancement strategies to strengthen their competitiveness and improve their profitability. By implementing strategies based on the results of this study, digital banks can sustainably improve their financial performance and be more adaptive to the dynamics of the digital banking industry.

FURTHER STUDY

This study has several limitations that need to be considered. One limitation is the relatively short observation period, which only covers the first quarter of 2022 to the fourth quarter of 2023. This may limit the findings' applicability to long-term trends in the profitability of digital banks.

For future research, it is recommended that the observation period be extended to gain a more comprehensive insight into the dynamics of digital bank profitability. In addition, future research may consider adding other

variables that may affect ROA, such as inflation rate, interest rate policy, and the adoption of digital technology in bank operations. Expanding the sample coverage by including more digital banks from various categories and regions can also increase the validity of the research results and provide a broader understanding of the factors affecting the profitability of the digital banking industry.

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REFERENCES

- Al MOSHARRAFA, R. (2023). The Significant Contribution Of Bangladeshi Commercial Banks Liquidity Position, Bank Size, And Internal Capital Generating Ability To Increase Profitability. *Sivas Soft Bilisim Proje Danismanlik Egitim Sanayi ve Ticaret Limited Sirketi*, 10–31. <https://doi.org/10.52898/ijif.2023.7>
- Al-Sharkas, A. A., & Al-Sharkas, T. A. (2022). The Impact on Bank Profitability: Testing For Capital Adequacy Ratio, Cost-Income Ratio and Non-Performing Loans in Emerging Markets. *Journal of Governance and Regulation*, 11(1 special issue), 231–243. <https://doi.org/10.22495/jgrv11i1siart4>
- Attatur, M. K., Gymyastiar, A., & Lestari, H. S. (2024). Determinants of Profitability in Commercial Banks Listed on the Indonesian Stock Exchange. *Jurnal Ilmiah Manajemen Kesatuan*, 12(6), 2537–2548. <https://doi.org/10.37641/jimkes.v12i6.2980>
- Batten, J., & Vo, X. V. (2019). Determinants of Bank Profitability –Evidence from Vietnam. *Emerging Markets Finance and Trade*, 55(6), 1417–1428. <https://doi.org/10.1080/1540496X.2018.1524326>
- Budianto, A. (2023, March 19). Kinerja Bank Digital Kurang Memuaskan di 2022, Ini Saham Bank yang Bisa Dikoleksi. *Kontan.CO.Id*. <https://investasi.kontan.co.id/news/kinerja-bank-digital-kurang-memuaskan-di-2022-ini-saham-bank-yang-bisa-dikoleksi>
- Dewi, N. P. I. P., & Ariyanto, D. (2018). Pengaruh Tingkat Efisiensi, Risiko Kredit, dan Tingkat Penyaluran Kredit pada Profitabilitas. *E-Jurnal Akuntansi*, 24(2), 1164–1189. <https://doi.org/10.24843/eja.2018.v24.i02.p13>
- Fajari, S., & Sunarto. (2017). Pengaruh CAR, LDR, NPL, BOPO Terhadap Profitabilitas Bank (Studi Kasus Perusahaan Perbankan Yang Tercatat Di Bursa Efek Indonesia Periode Tahun 2011 Sampai 2015). *Prosiding Seminar Nasional Multi Disiplin Ilmu & Call for Papers UNISBANK*, 1(3), 853–862.
- Gržeta, I., Žiković, S., & Tomas Žiković, I. (2023). Size matters: analyzing bank profitability and efficiency under the Basel III framework. *Financial Innovation*, 9(1). <https://doi.org/10.1186/s40854-022-00412-y>

- Hanaffy, J. (2023). Analysis of Financial Performance on the Profitability of Digital Banks in Indonesia. *International Journal of Innovative Science and Research Technology*, 8(6), 1278–1284.
- Isayas, Y. N. (2022). Determinants of banks' profitability: Empirical evidence from banks in Ethiopia. *Cogent Economics and Finance*, 10(1), 1–15. <https://doi.org/10.1080/23322039.2022.2031433>
- Jayaraman, A. R., & Srinivasan, M. R. (2019). Determinants of Indian banks efficiency: a two-stage approach. *Corresponding author. Int. J. Operational Research*, 36(2), 270–291.
- Karadayi, N. (2023). The effect of Loan to Deposit Ratio(LDR), Non-Performing Loan(NPL), Other Operating Expenses, and Non-Interest Income on Profitability(ROA). *International Journal of Scientific and Research Publications (IJSRP)*, 13(1). <https://doi.org/10.29322/ijsrp.13.01.2023.p13348>
- Karaduic, V., & Dalovic, N. (2021). Profitability determinants of big european banks. *Journal of Central Banking Theory and Practice*, 10(2), 39–56. <https://doi.org/10.2478/jcbtp-2021-0013>
- Khalifaturofi'ah Oktavi s, & Ulum Saiful A. (2022). Determinants Of Indonesia Banking Profitability. *Jurnal Riset Bisnis Dan Manajemen*, 15(1), 1–6.
- Khatiwada, M., Bhatta, M., Manohar Shah, M., Bogati, N., Sapkota, P., & Pradhan, S. (2024). Impact of Operating Efficiency on Profitability of Nepalese Commercial Banks. In *Nepalese Journal of Economics*.
- Kumar, T. (2024). A Study on the Role of Digital Transformation in Enhancing Bank Performance. *International Journal of Scientific Research in Engineering and Management*, 8(9), 1–6. <https://doi.org/10.55041/ijsrer37288>
- Litvishko, O., Beketova, K., Akimova, B., Azhmukhamedova, A., & Islyam, G. (2020). Impact of the Digital Economy on the Banking Sector. *E3S Web of Conferences*, 159. <https://doi.org/10.1051/e3sconf/202015904033>
- Nuryanto, U. wildan, Salam, A. F., Sari, R. P., & Suleman, D. (2020). Pengaruh Rasio Kecukupan Modal, Likuiditas, Risiko Kredit dan Efisiensi Biaya Terhadap Profitabilitas Pada Bank Go Public. *Jurnal Akuntansi Dan Keuangan*, 7(1), 1–9. <http://ejournal.bsi.ac.id/ejurnal/index.php/moneter>
- Olofin, A. J., Muritala, T. A., Abubakar, H. L., & Ajilie, S. N. (2024). The Impact Of Likquidity Risk On Profitability Of Listed Deposit Money Bank In Nigeria. *International Journal of Professional Business Review*, 9(6), 1–24. <https://doi.org/10.26668/businessreview/2024.v9i6.4777>
- Otoritas Jasa Keuangan Republik Indonesia. (2021). Peraturan Otoritas Jasa Indonesia Keuangan Republik Nomor 12/POJK.03/2021 tentang Bank Umum.
- Parlindungan, S., Dewi, V. I., Widyarini, M., Soei, C. tan lian, & Candraningrat, I. R. (2024). Do Third-Party Funds and Bank Risks Affect the Profitability of Digital Banks? Indonesian Evidence. *Jurnal Riset Bisnis Dan Manajemen*, 17(2), 125–132. <https://doi.org/https://doi.org/10.23969/jrbm.v17i2.10475>
- Prasanjaya, A. A. Y., & Ramantha, I. W. (2013). Analisis Pengaruh Rasio CAR, BOPO, LDR, dan Ukuran Perusahaan Terhadap Profitabilitas Bank yang Terdaftar di BEI. *E-Jurnal Akuntansi Universitas Udayana*, 4(1), 230–245.
- Putri, A. S., & Pangestuti, I. R. D. (2024). Pengaruh Layanan Digital Perbankan Terhadap Profitabilitas Bank Umum di Indonesia Tahun 2017-2022. *DIPONEGORO JOURNAL OF MANAGEMENT*, 13(1), 1–14. <http://ejournal-s1.undip.ac.id/index.php/dbr>

- Rahagi, M. R., & Rahadi, R. A. (2024). Determining Factors of Digital Banking Profitability in Indonesia: Case Study of Bank Jago Tbk. *COSTING: Journal of Economic, Business and Accounting*, 7(6), 1753-1778.
- Rahagi, R., Laksana, R., & Najmudin, N. (2023). The Effect of Net Interest Margin as a Mediator and Selected Factors in Determining the Profitability of Digital Banks. *Jurnal Riset Manajemen*, 1(1), 10-27. <https://doi.org/10.54066/jurma.v1i1.96>
- Rahman, H. U., Yousaf, M. W., & Tabassum, N. (2020). Bank-specific and macroeconomic determinants of profitability: A revisit of pakistani banking sector under dynamic panel data approach. *International Journal of Financial Studies*, 8(3), 1-19. <https://doi.org/10.3390/ijfs8030042>
- Rayamajhi, P., & Bhandari, N. R. (2024). Effect of Capital Adequacy, Bank Size and Lending Interest Rate on Profitability of Commercial Banks in Nepal. *The Lumbini Journal of Business and Economics*, 12(1), 120-134.
- Saleh, I., & Afifa, M. A. (2020). The effect of credit risk, liquidity risk and bank capital on bank profitability: Evidence from an emerging market. *Cogent Economics and Finance*, 8(1), 1-13. <https://doi.org/10.1080/23322039.2020.1814509>
- Setiawan, A. (2024). Efisiensi Operasional Dan Dampak Pertumbuhan Ekonomi Terhadap Profitabilitas Bank. *Journal of Law, Administration, and Social Science*, 4(6), 1291-1299.
- Setiawati, E., Rois, D. I. N., & Nur'aini, I. (2017). Pengaruh Kecukupan Modal, Risiko Pembiayaan, Efisiensi Operasional, dan Likuiditas Terhadap Profitabilitas. (Studi Pada Bank Syariah dan Bank Konvensional di Indonesia). *Riset Akuntansi Dan Keuangan Indonesia*, 2(2), 109-120.
- Sianturi, C., & Rahadian, D. (2020). Analysis of The Effect of Capital Adequacy Ratio (CAR), Non Performing Loan (NPL), Net Interest Margin (NIM), Operating Expenses to Operating Income (BOPO), and Loan to Deposit Ratio (LDR) on Profitab. *International Journal of Scientific and Research Publications (IJSRP)*, 10(7), 758-768. <https://doi.org/10.29322/ijsrp.10.07.2020.p10384>
- Wibowo, D., Wanakusuma, I. W., & Simamora, S. C. (2023). Analisis Perbandingan Rasio Profitabilitas Bank Muamalat Sebelum dan Sesudah Penerapan Muamalat Mobile dan Muamalat Digital Islamic Network (DIN). *Technomedia Journal*, 8(1SP), 108-122. <https://doi.org/10.33050/tmj.v8i1sp.2071>
- Wu, X., Jin, T., Yang, K., & Qi, H. (2023). The impact of bank FinTech on commercial banks' risk-taking in China. *International Review of Financial Analysis*, 90, 102944-102955. <https://doi.org/https://doi.org/10.1016/j.irfa.2023.102944>
- Yulita, I. K. (2023). Determinants Of Financial Performance Of Digital Banks In The Indonesia Stock Exchange. *International Conference On Digital Advance Tourism, Management And Technology*, 1(1), 103-117. <https://doi.org/10.56910/ictmt.v1i1.54>