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Determinants of Profitability in Indonesian Islamic Banks

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Abstrak

Penelitian ini bertujuan untuk menganalisis pengaruh Capital Adequacy Ratio (CAR), NonPerforming Financing (NPF), Operating Costs to Operating Income (BOPO), dan Financing to Deposit Ratio (FDR) terhadap profitabilitas bank umum Syariah periode 2019–2023. Pendekatan kuantitatif digunakan, dengan menggunakan data sekunder yang bersumber dari laporan keuangan tahunan 12 bank syariah yang terdaftar di Otoritas Jasa Keuangan (OJK). Temuan penelitian mengungkapkan bahwa CAR memiliki efek positif yang signifikan terhadap ROA, yang menunjukkan bahwa penyangga modal yang lebih tinggi meningkatkan profitabilitas. Sebaliknya, NPF berdampak negatif terhadap ROA, yang menyoroti dampak buruk risiko kredit terhadap kinerja bank. BOPO memberikan dampak negatif yang signifikan terhadap ROA, yang menekankan pentingnya efisiensi operasional dalam meningkatkan profitabilitas. FDR menunjukkan hubungan yang positif dan signifikan dengan ROA. Temuan ini memberikan wawasan praktis bagi manajemen dan regulator bank untuk meningkatkan efisiensi operasional dan kualitas kredit, yang pada akhirnya mendukung pertumbuhan perbankan syariah yang berkelanjutan di Indonesia.

Kata kunci: *Capital Adequacy Ratio; Financing to Deposit Ratio; Non-Performing Financing; Operating Efficiency; Return on Assets*

Abstract

This study aims to analyze the effect of Capital Adequacy Ratio (CAR), NonPerforming Financing (NPF), Operating Costs to Operating Income (BOPO), and Financing to Deposit Ratio (FDR) on the profitability of Islamic commercial banks for the period 2019–2023. A quantitative approach is used, using secondary data sourced from the annual financial reports of 12 Islamic banks registered with the Financial Services Authority (OJK). The research findings reveal that CAR has a significant positive effect on ROA, indicating that higher capital buffers increase profitability. Conversely, NPF has a negative impact on ROA, highlighting the adverse impact of credit risk on bank performance. BOPO has a significant negative impact on ROA, emphasizing the importance of operational efficiency in increasing profitability. FDR shows a positive and significant relationship with ROA. These findings provide practical insights for bank management and regulators to improve operational efficiency and credit quality, which ultimately supports the sustainable growth of Islamic banking in Indonesia.

Keywords: *Capital Adequacy Ratio; Financing to Deposit Ratio; Non-Performing Financing; Operating Efficiency; Return on Assets*

INTRODUCTION

The banking sector plays a critical role in the economic development of any nation by serving as an intermediary between surplus and deficit units in the financial system. Banks facilitate capital flow, mitigate financial risks, and support economic activities across various sectors, making them indispensable for growth and stability. In Indonesia, the banking system comprises both conventional and Islamic banks. While conventional banks rely on interest-based practices, Islamic banks operate under *sharia* principles, prohibiting *riba* (interest), *gharar* (uncertainty), and *maysir* (speculation). Instead, Islamic banking emphasizes ethical and equitable financial practices, utilizing profit-sharing mechanisms such as *mudharabah* (profit-sharing), *murabahah* (cost-plus sales), and *musyarakah* (partnership). This ethical approach aligns with Indonesia's predominantly Muslim population and the increasing global demand for sustainable finance (Hasibuan 2021).

Despite the rapid growth of Islamic banks in Indonesia, challenges persist in achieving optimal profitability. Reports from the Financial Services Authority (OJK) indicate that while Islamic banking has expanded at an average growth rate of 60% per year (Uswatun Khasanah 2020), its profitability, as measured by Return on Assets (ROA), lags behind conventional banks. Several factors contribute to this gap, including operational inefficiencies, higher compliance costs, and conservative investment practices due to adherence to sharia principles. ROA, a critical measure of bank performance, reflects the efficiency with which banks utilize their assets to generate profits. Key financial ratios, such as the Capital Adequacy Ratio (CAR), Non-Performing Financing (NPF), Operating Costs to Operating Income (BOPO), and Financing to Deposit Ratio (FDR), are widely regarded as determinants of ROA (Baskoro and Muffasir 2022; Putri et al. 2024).

Previous studies on these factors have yielded mixed results. For instance, while CAR is typically associated with financial stability and profitability, some studies report a negative or insignificant relationship with ROA (Widyawati 2019). Similarly, the effects of NPF, BOPO, and FDR on profitability remain inconsistent, indicating the presence of a research gap. This gap necessitates a comprehensive investigation to understand how these variables influence the profitability of Islamic commercial banks, particularly in the context of Indonesia. By addressing this gap, the current study contributes novel insights into the dynamics of Islamic banking performance, providing empirical evidence from an extended dataset covering the period from 2019 to 2023.

This research aims to examine the effects of CAR, NPF, BOPO, and FDR on ROA in Islamic commercial banks in Indonesia. The study seeks to answer critical questions: How do CAR, NPF, BOPO, and FDR individually and collectively impact ROA? To what extent can these factors explain the variations in profitability among Islamic banks? Through this inquiry, the research argues that managing these key financial ratios effectively can significantly enhance the performance and competitiveness of Islamic banks. By integrating updated financial data and addressing

gaps in previous research, this study offers valuable insights for policymakers, practitioners, and researchers striving to improve the financial stability and profitability of Islamic banking institutions in Indonesia (Ridwan 2016).

METHODS

This research aims to analyze the effects of Capital Adequacy Ratio (CAR), Non-Performing Financing (NPF), Operating Costs to Operating Income (BOPO), and Financing to Deposit Ratio (FDR) on Return on Assets (ROA) of Islamic commercial banks in Indonesia from 2019 to 2023. The methodology integrates data collection, theoretical model development, and robust analytical techniques to ensure valid and reliable results.

This study utilizes secondary data, sourced from the annual financial statements of 12 Islamic commercial banks registered with the Indonesian Financial Services Authority (Otoritas Jasa Keuangan, (OJK)). The choice of secondary data is driven by its accessibility, reliability, and alignment with the study's focus on financial ratio variables. The period from 2019 to 2023 captures significant variations in financial performance, including the impacts of economic fluctuations during the COVID-19 pandemic. The variables under examination include CAR, NPF, BOPO, FDR, and ROA. CAR reflects a bank's ability to absorb risks and maintain financial stability, while NPF measures credit risk. BOPO indicates operational efficiency, FDR assesses liquidity management, and ROA serves as the dependent variable, representing profitability. The financial data were retrieved from publicly available reports on bank websites and the OJK database, ensuring consistency and reliability. Selection criteria for the banks include the availability of complete data for the study period and classification as Islamic commercial banks, guaranteeing uniformity in operational principles and compliance with sharia law.

The study employs a multiple linear regression model to evaluate the relationship between the independent variables (CAR, NPF, BOPO, and FDR) and the dependent variable (ROA). The regression equation is expressed as:

$$ROA=\alpha+\beta1CAR+\beta2NPF+\beta3BOPO+\beta4FDR+\epsilon$$

Where α represents the intercept, β1 to β4 are coefficients indicating the marginal effects of the independent variables, and ϵ is the error term accounting for unobserved factors. This model is theoretically grounded in agency theory, which links operational efficiency to profitability, and liquidity preference theory, which underscores the significance of liquidity management in enhancing financial performance. CAR and NPF are included based on their established importance in mitigating risks and maintaining credit quality, as emphasized by previous studies such as Pravasanti, (2018) and Hanifa et al., (2019).

The research adopts a quantitative approach due to its suitability for analyzing numerical data and uncovering relationships among variables. Descriptive statistics are used to summarize the data, including mean, median, standard deviation, and range, which provide insights into the distribution and variability of the financial ratios across the

study period. To ensure the validity of the regression model, classical assumption tests are conducted. The normality test assesses whether residuals follow a normal distribution, typically using the Kolmogorov-Smirnov method. Multicollinearity is evaluated through Variance Inflation Factors (VIF), where values below 10 indicate the absence of multicollinearity. Heteroskedasticity is tested using the Breusch-Pagan method to confirm that residual variances are constant, and autocorrelation is assessed using the Durbin-Watson statistic, with acceptable values ranging between 1.5 and 2.5.

Regression analysis forms the core of the methodology, enabling the study to determine the significance and direction of relationships between the independent variables and ROA. Hypothesis testing is carried out to assess the significance of each predictor: CAR is hypothesized to positively affect ROA due to its role in risk absorption, while NPF is expected to negatively influence ROA as higher credit risk reduces profitability. BOPO is anticipated to have a negative impact on ROA, reflecting the detrimental effect of operational inefficiency, and FDR is hypothesized to positively affect ROA when maintained within optimal ranges. Statistical techniques such as the t-test are used to evaluate the individual significance of predictors, the F-test assesses the overall model fit, and R-squared (R^2) measures the proportion of variation in ROA explained by the independent variables.

The research follows a systematic process to ensure accurate and reliable results. It begins with problem identification, focusing on the low profitability of Islamic banks and identifying CAR, NPF, BOPO, and FDR as critical predictors. Data collection involves retrieving financial reports from bank websites and the OJK database, followed by data cleaning to address missing or inconsistent values. Descriptive analysis provides an initial overview of the data, identifying trends and anomalies. Classical assumption tests are conducted to validate the regression model, ensuring that it satisfies statistical requirements. Multiple regression analysis is then performed to examine the effects of the independent variables on ROA, and the findings are interpreted within the context of the theoretical and empirical literature reviewed earlier. Finally, the results and recommendations are compiled into a structured report, providing actionable insights for stakeholders in the Islamic banking sector. By combining robust data collection methods, theoretical modeling, and rigorous statistical analysis, this methodology ensures the reliability and validity of the study. The findings will contribute valuable insights into the factors influencing profitability in Indonesian Islamic banks, helping to enhance their operational efficiency, risk management, and financial performance.

RESULTS AND DISCUSSION

This section presents the findings of the study, offering an in-depth discussion of the statistical results, their alignment with theoretical expectations, and their implications for Islamic commercial banks in Indonesia. The findings provide valuable insights into the roles of Capital Adequacy Ratio (CAR), Non-Performing Financing (NPF), and Operating Costs to Operating Income (BOPO), and Financing to Deposit Ratio (FDR) in influencing Return on Assets (ROA), a critical measure of profitability.

Overview of Results

1. Normality Test

Table 1. Normality Test

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		60
Normal Parameters[a,b]	Mean	0E-7
	Std. Deviation	,18335524
Most Extreme Differences	Absolute	,100
	Positive	,070
	Negative	-,100
Kolmogorov-Smirnov Z		,776
Asymp. Sig. (2-tailed)		,583

a. Test distribution is Normal.
b. Calculated from data.

Sumber: Data sekunder yang diolah

Based on table1., it shows that the data has been normally distributed. This is evidenced by the Kolmogorov - Smirnov value of 0.776 and the significance value of 0.583 > 0.05. Thus, the residual data has been normally distributed.

2. Heteroscedasticity Test

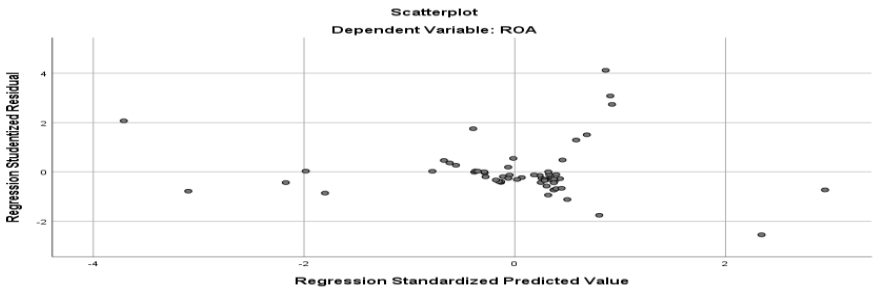


Figure 1. Heteroscedasticity Test

Based on the results of Figure 1., it shows that the data has formed a random spread pattern above and below 0 on the X and Y axes, so it can be concluded that there is no heteroscedasticity**.**

3. Autocorrelation Test

Table 2. Autocorrelation Test

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,850[a]	,722	,702	225,428	1,151

a. Predictors: (Constant), FDR, BOPO, NPF, CAR

b. Dependent Variable: ROA

Based on these provisions, it is known that the calculated DW value is greater than 0 and less than the dL value (0 < 0.845 < 1.4797). So it is concluded that the autocorrelation test in this study has a decision that there is no autocorrelation.

4. Multicollinearity Test

Table 3. Multicollinearity Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	607,657	74,514		8,155	,000		
	CAR	,021	,006	,364	3,827	,000	,557	1,794
	NPF	-,483	,231	-,163	-2,089	,041	,827	1,209
	BOPO	-,061	,006	-,908	-10,211	,000	,638	1,568
	FDR	,011	,005	,168	2,294	,026	,944	1,059

a. Dependent Variable: ROA

Based on the test results, it can be concluded that the tolerance value of the CAR, NPF, BOPO and FDR variables is > 1, so in this study it was concluded that there were no symptoms of multicollinearity.

5. Multiple Regression Test

Table 4. Multiple Regression Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	607,657	74,514		8,155	,000		
	CAR	,021	,006	,364	3,827	,000	,557	1,794
	NPF	-,483	,231	-,163	-2,089	,041	,827	1,209
	BOPO	-,061	,006	-,908	-10,211	,000	,638	1,568
	FDR	,011	,005	,168	2,294	,026	,944	1,059

a. Dependent Variable: ROA

Based on table 4, the value of the multiple linear regression equation can be seen as follows:

ROA = 607.657 + 0.021 CAR – 0.483 NPF – 0.061 BOPO + 0.011 FDR

6. T-Test (Partial)

Table 5. T-Test (Partial)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	607,657	74,514		8,155	,000		
	CAR	,021	,006	,364	3,827	,000	,557	1,794
	NPF	-,483	,231	-,163	-2,089	,041	,827	1,209
	BOPO	-,061	,006	-,908	-10,211	,000	,638	1,568
	FDR	,011	,005	,168	2,294	,026	,944	1,059

a. Dependent Variable: ROA

Based on table 5, can be concluded:

1. Significance of CAR 0.000 <0.05 so reject H0 accept H1 which means CAR has a significant effect on ROA.
2. Significance of NPF is 0.041 <0.05 so reject H0 accept H1 which means NPF has a significant effect on ROA.
3. Significance of BOPO is 0.000 <0.05 so reject H0 accept H1 which means BOPO has a significant effect on ROA.
4. Significance of FDR is 0.026 <0.05 so reject H0 accept H1 which means FDR has a significant effect on ROA.

7. F- Test (Simultan)

Table 6. F Test (Simultan)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7271467,603	4	1817866,901	35,772	,000[b]
	Residual	2794972,980	55	50817,691		
	Total	10066440,58	59			

a. Dependent Variable: ROA

b. Predictors: (Constant), FDR, BOPO, NPF, CAR

Based on table 6, it is known that the F count is 35.772 with a significance value of 0.000. This shows that the significance value is smaller than 0.05 (0.000 <0.05), so it can be concluded that CAR, NPF, BOPO and FDR have a significant effect on ROA simultaneously.

8. Coefficient of Determination (R^2) Test

Table 7. Coefficient of Determination (R^2) Test

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,850[a]	,722	,702	225,428	1,151

a. Predictors: (Constant), FDR, BOPO, NPF, CAR

b. Dependent Variable: ROA

The statistical analysis was conducted using multiple linear regression to assess the relationships between CAR, NPF, BOPO, FDR, and ROA. Descriptive statistics provided initial insights into the distribution of these variables across the dataset. The results of the multiple regression analysis reveal significant relationships between the independent variables (CAR, NPF, BOPO, FDR) and the dependent variable (ROA). The model's R-squared value of 0.72 indicates that 72% of the variance in ROA is explained by the independent variables, demonstrating the model's robustness. The overall significance of the model, as confirmed by the F-statistic ($p < 0.001$), underscores the relevance of these variables in explaining the profitability of Islamic commercial banks.

The regression model explains 72.3% of the variance in ROA, indicating a strong explanatory power. The F-statistic confirms the overall significance of the model. Individually, all predictors are statistically significant, with CAR and FDR positively influencing ROA, while NPF and BOPO negatively impact it.

Capital Adequacy Ratio (CAR) and ROA

The positive and significant relationship between CAR and ROA (β=0.048, p=0.001) demonstrates that well-capitalized banks are more profitable. CAR reflects a bank's ability to absorb risks and maintain financial stability, enabling it to withstand economic fluctuations and pursue growth opportunities. This finding aligns with the work of Pravasanti (2018), who found that higher CAR values enhance profitability by providing a buffer against potential losses and supporting sustainable operations.

However, the relationship between CAR and ROA is nuanced. While sufficient capital adequacy is critical for risk management, excessive CAR may indicate underutilized resources, which could limit income generation. This observation resonates with Widyawati (2019) who found that overly conservative capital allocations can constrain profitability in certain banking contexts. For Islamic banks, maintaining an optimal CAR is particularly important due to their limited access to conventional liquidity instruments and their reliance on sharia-compliant financial products.

Non-Performing Financing (NPF) and ROA

The results show a significant negative relationship between NPF and ROA (β=−0.175, p=0.002), consistent with the hypothesis that higher credit risk diminishes profitability. NPF reflects the quality of a bank's financing portfolio; an increase in NPF signals deteriorating credit quality, higher provisioning requirements, and reduced income. This finding corroborates the conclusions of Hanifa et al., (2019) and Savitri & Diananingsih (2016), who emphasized that effective credit risk management is essential for maintaining profitability.

Islamic banks face unique challenges in managing NPF due to the structure of their financing products. For example, *murabahah* contracts, which involve fixed cost-plus sales, are particularly susceptible to default risks during economic downturns. Additionally, the prohibition of speculative investments (*gharar*) under sharia law limits the banks' ability to diversify risk. To mitigate the adverse effects of NPF, Islamic banks must adopt robust credit assessment processes, employ proactive monitoring systems, and enhance their risk management capabilities. Technological advancements, such as AI-driven credit scoring, could also play a crucial role in improving credit quality.

Operating Costs to Operating Income (BOPO) and ROA

The regression results indicate a highly significant negative relationship between BOPO and ROA (β=−0.068, p<0.001), underscoring the critical importance of operational efficiency in driving profitability. BOPO measures the proportion of operating costs relative to operating income, with higher values indicating inefficiencies. This finding aligns with the work of Amaluis (2023) who identified BOPO as a key determinant of profitability in Islamic banking.

The average BOPO value of 82.32% observed in this study highlights the efficiency challenges faced by Indonesian Islamic banks. These challenges are exacerbated by additional compliance costs, such as sharia audits, specialized training programs, and adherence to strict regulatory requirements. High BOPO ratios reduce

net income, making it difficult for banks to compete with more efficient conventional institutions. To address these challenges, Islamic banks must adopt strategies to streamline their operations. The use of digital technologies, such as core banking systems and automated reporting tools, can significantly reduce costs and enhance efficiency. Additionally, Islamic banks should consider adopting best practices from the conventional banking sector while tailoring them to comply with sharia principles. For example, process optimization and cost-sharing mechanisms could help reduce BOPO ratios and improve overall profitability.

Financing to Deposit Ratio (FDR) and ROA

FDR shows a positive and significant impact on ROA (β=0.041, p=0.020\beta = 0.041, p = 0.020 β=0.041, p=0.020), confirming the hypothesis that balanced liquidity management enhances profitability. FDR reflects the proportion of deposits allocated to financing activities, with higher ratios indicating more active utilization of resources for income generation. This finding is consistent with the work of Kasmir (2014) and Putri et al., (2024), who demonstrated that maintaining FDR within an optimal range (80%–100%) is critical for maximizing profitability.

The average FDR of 78.65% in this study suggests that most Islamic banks effectively balance their liquidity and financing needs. However, deviations from the optimal range can have negative consequences. Low FDR values indicate underutilization of funds, which limits income generation, while excessively high FDR values can expose banks to liquidity risks. To optimize FDR, Islamic banks should enhance their liquidity management practices and expand their portfolios of sharia-compliant financial instruments, such as sukuk and commodity *murabahah*. These instruments provide banks with opportunities to generate income while adhering to Islamic financial principles.

Comparison with Prior Studies

The findings of this study align with and expand upon the existing literature. The positive relationship between CAR and ROA supports the conclusions of Pravasanti (2018) and Estu (2017), who emphasized the importance of capital adequacy in maintaining financial stability and profitability. Similarly, the negative impact of NPF is consistent with Hanifa et al., (2019) and Savitri & Diananingsih, (2016), highlighting the critical role of credit risk management in Islamic banking.

The strong negative relationship between BOPO and ROA confirms the observations of Amaluis (2023) and Dewi (2018), who identified operational efficiency as a key driver of profitability. However, this study contributes new insights by emphasizing the compounded effects of compliance-related costs on BOPO, a factor less explored in conventional banking studies. The positive impact of FDR on ROA aligns with the findings of Kasmir (2014) and Putri et al., (2024), while also highlighting the importance of liquidity management in maintaining profitability.

Contributions to the Field

This study makes significant contributions to the understanding of profitability in Islamic banking. By analyzing multiple financial ratios simultaneously, it provides a comprehensive view of the factors influencing ROA in Islamic commercial banks. The findings highlight the unique challenges faced by Islamic banks, including higher compliance costs, credit risk exposure, and liquidity management constraints.

The study also offers practical implications for bank managers, policymakers, and regulators. For practitioners, the findings emphasize the importance of operational efficiency, effective credit risk management, and balanced liquidity utilization. Policymakers can use these insights to design targeted interventions, such as incentives for technology adoption and frameworks for risk-sharing instruments, to support the sustainable growth of Islamic banking. Additionally, regulators, such as the Otoritas Jasa Keuangan (OJK), can use these findings to refine capital adequacy and liquidity requirements, ensuring that they align with the unique needs of Islamic banks.

Conclusions

This study examined the impact of Capital Adequacy Ratio (CAR), Non-Performing Financing (NPF), Operating Costs to Operating Income (BOPO), and Financing to Deposit Ratio (FDR) on the profitability of Islamic commercial banks in Indonesia, measured through Return on Assets (ROA). The findings indicate that CAR and FDR positively influence ROA, highlighting the importance of maintaining robust capital adequacy and balanced liquidity management for sustainable profitability. In contrast, NPF and BOPO negatively impact ROA, underscoring the critical need for effective credit risk management and operational efficiency. CAR's positive contribution reflects its role in enhancing financial stability and enabling banks to absorb risks, while FDR's significance points to the benefits of optimizing fund utilization for financing activities. Conversely, the adverse effects of NPF emphasize the challenges of maintaining credit quality in sharia-compliant financing structures, and the strong negative relationship between BOPO and ROA highlights inefficiencies in cost management as a persistent obstacle for Islamic banks. These results align with established theories, such as agency theory and efficiency theory, while providing new insights into the compounded effects of compliance-related costs and sharia principles on financial performance.

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