Journal of Economics and Social Sciences (JESS)
Vol. 5, 2 (July-December, 2026), pp. 225-238
EISSN: 2830-5264, DOI: https://doi.org/10.59525/jess.2195

The Effect of CAR, NPF, FDR, and BOPO on ROA at PT Bank Syariah Indonesia (TBK) 2020-2024

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ARTICLE INFO

Keywords:

CAR, NPF;
FDR;
BOPO;
ROA;
Bank Syariah Indonesia

Article history:

Received 2026-09-05
Revised 2026-10-09
Accepted 2026-11-14

ABSTRACT

This study aims to analyze the effect of Capital Adequacy Ratio (CAR), Non Performing Financing (NPF), Financing to Deposit Ratio (FDR), and Operational Cost to Operational Income (BOPO) on Return On Asset (ROA) at Bank Syariah Indonesia for the 2020-2024 period. Bank Syariah Indonesia is a bank resulting from the merger of three Islamic banks in 2021, causing fluctuations in its profitability performance. This study uses a quantitative approach with secondary data in the form of quarterly financial reports from Q1 2020 to Q4 2024 obtained from the Financial Services Authority. The data analysis technique uses multiple linear regression with SPSS 26. The results show that partially, CAR has a positive and insignificant effect on ROA, NPF has a negative and insignificant effect on ROA, FDR has a positive and insignificant effect on ROA, while BOPO has a negative and significant effect on ROA. Simultaneously, CAR, NPF, FDR, and BOPO have a significant effect on ROA. These results indicate that operational efficiency is the main factor in increasing the profitability of Bank Syariah Indonesia.

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1. INTRODUCTION

Islamic banking plays a strategic role in the Indonesian economy as an intermediary institution that conducts business activities based on sharia principles. Bank Syariah Indonesia (BSI) is the largest Islamic bank in Indonesia, officially established on February 1, 2021 as a result of the merger of three state-owned Islamic banks, namely Bank Syariah Mandiri, Bank BNI Syariah, and Bank BRI Syariah. The merger was carried out to strengthen the capital structure, expand the network, and increase the competitiveness of national Islamic banking.

BSI's profitability performance, proxied by Return On Assets (ROA), showed fluctuations during the period Q1 2020 to Q4 2024. Based on Table 1, the average ROA was 1.93% with a minimum value of 1.32% and a maximum of 2.51%, which was above the OJK very healthy standard of >1.5%. This condition indicates that the bank's profitability has not been fully consistent even though the bank's assets continued to grow after the merger.

Table 1. Descriptive statistics of the financial performance of Bank Syariah Indonesia for the period Q1 2020 - Q4 2024.

Table 1.1 Descriptive statistics (N=20, Q1 2020-Q4 2024). Data processed, 2025

Variabel	N	Mean	Minimum	Maximum	Std. Dev
ROA	20	1,93	1,32	2,51	0,46
CAR	20	20,70	18,10	22,45	1,34
NPF Gross	20	2,49	1,90	3,11	0,42
FDR	20	79,42	73,39	83,05	3,17
BOPO	20	76,12	68,50	85,20	5,76

Source: Quarterly Published Financial Statements of PT Bank Syariah Indonesia Tbk for 2020-2024 (www.bankbsi.co.id) and OJK Islamic Banking Statistics (www.ojk.go.id), data processed by the author 2026

Based on Table 1.1, the average ROA of 1.93% is above the OJK very healthy standard of >1.5%. The average CAR of 20.70% is above the minimum requirement of 8%, NPF of 2.49% is below the healthy limit of 5%, FDR of 79.42% and BOPO of 76.12% are below the efficiency limit of 90%, which indicates that BSI's performance is in the healthy and efficient category. Based on these conditions, this research is important to re-examine how CAR, NPF, FDR, and BOPO affect ROA at BSI for the period 2020-2024. The purpose of this research is to determine the partial and simultaneous effect of these four variables on BSI's profitability.

Theoretically, CAR indicates the adequacy of bank capital in bearing risk, NPF as an indicator of credit risk, FDR as an indicator of liquidity in channeling financing, and BOPO as an indicator of operational efficiency. A high CAR should increase trust and profitability, a high NPF decreases profitability due to increased non-performing financing, an optimal FDR increases income from financing, while a low BOPO indicates efficiency that can increase ROA. BSI's NPF is at an average of 2.49% with a range of 1.90% to 3.11%, in line with the increase in ROA, so it is suspected to have a negative effect.

However, previous research results regarding the effect of these four variables on ROA still show inconsistent results. Research by Ramadhan (2022) and Sari et al. (2023) found that CAR had a positive and significant effect, but research by Putri (2021) found that CAR was not significant. For the NPF variable, research by Hidayat (2023) found a negative and significant effect, while other research found it not significant. Inconsistency also occurs in the FDR and BOPO variables which show different results between studies. The existence of this inconsistency in results indicates that there is still a research gap that needs to be re-examined.

The novelty of this research lies in the object and period of the research, namely examining Bank Syariah Indonesia in the period Q1 2020 - Q4 2024 which covers the period before and after the merger of the three state-owned Islamic banks. BSI as a merged bank has different characteristics from other Islamic banks, so the latest empirical evidence is needed to determine the most dominant factor affecting BSI's profitability after the merger.

The purpose of this research is to determine the partial and simultaneous effect of these four variables on BSI's profitability. This research aims to analyze the effect of CAR, NPF, FDR, and BOPO on ROA at BSI for the period 2020-2024.

2. METHOD

This research uses a quantitative approach with a descriptive verificative method. The quantitative approach was chosen because this research aims to test the effect of independent variables on the dependent variable through numerical data processing and statistical analysis (10). According to

Sugiyono (2020), quantitative research is a research method based on the philosophy of positivism used to examine a certain population or sample with data collection using research instruments and quantitative or statistical data analysis with the aim of testing predetermined hypotheses. Meanwhile, according to Sekaran and Bougie (2020), the quantitative approach is very suitable for explaining phenomena through testing relationships between variables objectively and measurably. The selection of this approach is very suitable for the research objective which wants to analyze empirically the effect of Capital Adequacy Ratio (CAR), Non Performing Financing (NPF), Financing to Deposit Ratio (FDR), and Biaya Operasional Pendapatan Operasional (BOPO) on Return On Asset (ROA). Source and Type of Data

The research object in this study specifically is PT Bank Syariah Indonesia Tbk (BSI), which is the largest Islamic bank in Indonesia resulting from the merger of three state-owned Islamic banks. Theoretically, CAR indicates the adequacy of bank capital in bearing risk, NPF as an indicator of credit risk, FDR as an indicator of liquidity in channeling financing, and BOPO as an indicator of operational efficiency. A high CAR should increase trust and profitability, a high NPF decreases profitability due to increased non-performing financing, an optimal FDR increases income from financing, while a low BOPO indicates efficiency that can increase ROA. BSI's NPF is at an average of 2.49% with a range of 1.90% to 3.11%, in line with the increase in ROA, so it is suspected to have a negative effect. However, previous research results regarding the effect of these four variables on ROA still show inconsistent results.

Research by Ramadhan (2022) and Sari et al. (2023) found that CAR had a positive and significant effect, but research by Putri (2021) found that CAR was not significant. For the NPF variable, research by Hidayat (2023) found a negative and significant effect, while other research found it not significant. Inconsistency also occurs in the FDR and BOPO variables which show different results between studies. The existence of this inconsistency in results indicates that there is still a research gap that needs to be re-examined. The novelty of this research lies in the object and period of the research, namely examining Bank Syariah Indonesia in the period Q1 2020 - Q4 2024 which covers the period before and after the merger of the three state-owned Islamic banks. BSI as a merged bank has different characteristics from other Islamic banks, so the latest empirical evidence is needed to determine the most dominant factor affecting BSI's profitability after the merger. The purpose of this research is to determine the partial and simultaneous effect of these four variables on BSI's profitability. This research aims to analyze the effect of CAR, NPF, FDR, and BOPO on ROA at BSI for the period 2020-2024.

It should be emphasized that BSI was officially established on February 1, 2021, so the data for the period Q1 2020 to Q4 2020 used is combined pro forma data from the three merger participant banks, namely Bank Syariah Mandiri, Bank BNI Syariah, and Bank BRI Syariah. While data from Q1 2021 to Q4 2024 is BSI data as the merged entity. These 20 observations use saturated sampling technique, namely all quarterly financial reports during the research period are used as samples.

Data analysis technique is carried out through several stages. The first stage is descriptive statistical analysis to provide an overview of data characteristics including mean, minimum, and maximum. The second stage is classical assumption test which includes normality test with Kolmogorov-Smirnov, multicollinearity test with Variance Inflation Factor (VIF), heteroscedasticity test with Glejser test, and autocorrelation test with Durbin-Watson. The third stage is multiple linear regression analysis with the equation ROA = α + β1CAR + β2NPF + β3FDR β4BOPO + e. The final stage is hypothesis testing which includes partial test (t test) with t table criteria 2.131 (df=15, alpha 5%), simultaneous test (F test) with F table 3.06 (df1=4, df2=15), and coefficient of determination (R Square) to see the magnitude of the contribution of independent variables to the dependent variable. All data analysis was processed using SPSS software version 26

3. FINDINGS AND DISCUSSION

3.1 Results

This research uses secondary data in the form of quarterly published financial reports of PT Bank Syariah Indonesia Tbk (BSI) for the period Q1 2020 to Q4 2024. The number of observations in this research is 20 quarterly observations, starting from the beginning of the BSI merger in early 2020. This period was chosen to see BSI's financial performance consistently after the merger of the three state-owned Islamic banks. The variables used in this research consist of one dependent variable and four independent variables. The dependent variable is Return On Asset (ROA) as a proxy for profitability. While the independent variables include Capital Adequacy Ratio (CAR) which measures capital, Non Performing Financing (NPF) Gross which measures financing risk, Financing to Deposit Ratio (FDR) which measures liquidity, and Biaya Operasional terhadap Pendapatan Operasional (BOPO) which measures efficiency.

The following is the raw data used in this research:

Table 3.1 Raw Data of Financial Ratios of PT Bank Syariah Indonesia Tbk for the Period Q1 2020 - Q4 2024 (in %)

Period	ROA%	CAR%	NPF Gross%	FDR%	BOPO%
Q1 2020	1,32	18,10	2,95	80,90	85,20
Q2 2020	1,35	18,24	2,88	81,50	84,62
Q3 2020	1,40	18,50	2,85	80,10	83,50
Q4 2020	1,38	19,10	2,80	81,20	82,10
Q1 2021	1,42	22,15	2,90	74,10	82,30
Q2 2021	1,55	22,09	3,11	73,39	80,46
Q3 2021	1,58	22,30	3,05	75,20	79,50
Q4 2021	1,61	22,09	2,93	73,39	80,46
Q1 2022	1,80	20,85	2,65	76,50	77,20
Q2 2022	1,90	20,29	2,24	79,37	75,88
Q3 2022	1,95	20,15	2,50	80,10	74,50
Q4 2022	1,98	20,29	2,42	79,37	75,88
Q1 2023	2,48	20,36	2,36	79,14	69,65
Q2 2023	2,30	21,00	2,20	80,50	70,80
Q3 2023	2,32	20,95	2,15	81,00	71,00
Q4 2023	2,35	21,04	2,08	81,73	71,27
Q1 2024	2,51	21,23	2,01	83,05	68,50
Q2 2024	2,49	21,45	1,95	82,80	69,50

Q3 2024	2,47	21,38	1,92	82,60	70,00
Q4 2024	2,49	22,45	1,90	82,50	70,15

Source: Quarterly Financial Reports of PT Bank Syariah Indonesia Tbk for 2020-2024 (www.bankbsi.co.id) and OJK Islamic Banking Statistics (www.ojk.go.id) data processed by the author (2026).

Average ROA of 1.93% (min 1.32% and max 2.51%) shows very healthy profitability. Average CAR of 20.70% is far above the OJK minimum of 8%, showing very strong capital. Average Gross NPF of 2.49% is still below 5%, showing maintained financing quality. Average FDR of 79.42% and average BOPO of 76.12% are below 90%, showing good intermediation and operational efficiency.

a. Classical Assumption Test

The classical assumption test is a mandatory initial stage that must be carried out before conducting multiple linear regression analysis. The purpose of this test is to ensure that the regression model used in this research meets the BLUE (Best Linear Unbiased Estimator) criteria, so that the estimation results obtained are unbiased, consistent, and can be accounted for statistically. In this research, there are four classical assumption tests conducted, namely normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test (13).

First, the normality test is conducted to determine whether the residuals in the regression model are normally distributed. A good regression model is one that has normally distributed residuals. In this research, the normality test uses the Kolmogorov-Smirnov test. Second, the multicollinearity test aims to see whether there is a high correlation between independent variables. A good model should not have multicollinearity, which is indicated by a VIF value < 10. Third, the heteroscedasticity test is conducted to see whether there is inequality of variance of residuals between observations. This research uses the Glejser test with the criterion that if the significance value > 0.05 then heteroscedasticity does not occur (14). Fourth, the autocorrelation test aims to see whether there is a correlation between residuals in period t and period t-1. This test uses the Durbin-Watson (DW) test. Based on quarterly time series data of 20 observations, the model is declared free of autocorrelation if the DW value is between 1.82 - 2.17.

Table 3.2 Results of Classical Assumption Test

Classical Assumption Test	**Value**	**Criteria**	**Description**
Normality	0.200	> 0.05	Normal
VIF max	3.352	< 10	None
Glejser	0.112 – 0.678	>0.05	None
DW Test	1.892	1.82<DW<2.17	None

Source: BSI financial reports Q1 2020 - Q4 2024, data processed 2026

b. Multiple Linear Regression Model

This research uses a multiple linear regression model to test the effect of Capital Adequacy Ratio (CAR), Non Performing Financing (NPF), Financing to Deposit Ratio (FDR), and Biaya Operasional Pendapatan Operasional (BOPO) on Return On Asset (ROA) at PT Bank Syariah Indonesia Tbk. The selection of this model is based on the research objective which wants to see the simultaneous and partial effect of several independent variables on one dependent variable. Multiple linear regression is

considered appropriate because able to estimate how large the contribution of each Islamic financial ratio is to the bank's profitability level.

The regression equation used in this research is as follows:

ROA = α + β1 CAR + β2 NPF + β3 FDR + β4 BOPO + e

Where:

ROA = Return On Asset (%)

CAR = Capital Adequacy Ratio (%)

NPF = Non Performing Financing Gross (%)

FDR = Financing to Deposit Ratio (%)

BOPO = Biaya Operasional Pendapatan Operasional (%)

α = Konstanta, β = Koefisien regresi, e = error

Based on data processing results N=20 quarters Q1 2020 - Q4 2024, the original equation obtained is as follows:

Table 3.3 Results of Multiple Linear Regression Model Estimation

Variable	**B (Coefficient)**	**Std.Error**
Constant	7,083	1,525
CAR	0,002	0,020
NPF	-0,127	0,130
FDR	0,004	0,011
BOPO	-0,068	0,007

Source: Data processed by the author, 2026

ROA = 7.083 + 0.002 CAR - 0.127 NPF + 0.004 FDR - 0.068 BOPO + e

The interpretation of the equation is as follows:

- A constant value of 7.083 indicates that if all independent variables (CAR, NPF, FDR, BOPO) are zero, then the ROA value of BSI is 7.083%.
- The CAR coefficient of 0.002 indicates a positive effect. This means that every 1% increase in CAR will increase ROA by 0.002% assuming other variables constant. However, its effect is very small and not significant.
- The NPF coefficient of -0.127 indicates a negative effect. This means that every 1% increase in NPF will decrease ROA by 0.127%. This is in accordance with theory that the higher the problem financing, the lower the profitability will be.
- The FDR coefficient of 0.004 indicates a very small positive effect on ROA, which indicates that financing distribution is still not optimal in increasing profit.
- The BOPO coefficient of -0.068 indicates a negative and significant effect. This means that every 1% increase in BOPO will decrease ROA by 0.068%. This is the most dominant variable affecting BSI's ROA, where the more efficient the bank (low BOPO), the higher the ROA will be.

c. Hypothesis Test

Hypothesis testing is conducted to answer the hypotheses formulated in the previous chapter and to see the significance of the effect of independent variables on the dependent variable both partially

and simultaneously. Testing is conducted with a 95% confidence level or 5% alpha.

d. Partial Test (t Test)

The t test is used to see the partial effect of each independent variable, namely CAR, NPF, FDR, and BOPO on ROA. This test is conducted by comparing the calculated t value with the t table. In this research with total data N=20, number of variables k=4, then degrees of freedom (df) = N - k - 1 = 15, so that the t table value obtained is 2.131 at 5% alpha. The decision-making criteria is that if the |t calculated| > t table or significance value < 0.05 then the independent variable has a significant effect on the dependent variable, and vice versa. The following are the results of the t test in this research on ROA with criteria t table = 2.131 (df=15, α=5%).

Table 3.4 Results of t Test

Variable	T calculated	Sig	Criteria	Description
CAR	0,1040	0,918	t<2,131	Not Significant
NPF-	-0,979	0,342	t<2,131	Not Significant
FDR	0,371	0,715	t<2,131	Not Significant
BOPO-	-9,438	0,000	t>2,131	Significant

Source: Data processed by the author, 2026

Based on Table 3.4 above, the interpretation is as follows:

1) The CAR variable has t calculated 0.104 < t table 2.131 with sig 0.918 > 0.05, meaning CAR does not have a significant effect on ROA. This indicates that the size of the bank's capital does not directly increase profitability, because capital is more focused on maintaining bank security.
2) The NPF variable has t calculated -0.979 < t table 2.131 with sig 0.342 > 0.05, meaning NPF does not have a significant effect on ROA. This is because BSI's Gross NPF during the 2020-2024 period was still within the safe limit below 3% and was already well managed through provisioning.
3) The FDR variable has t calculated 0.371 < t table 2.131 with sig 0.715 > 0.05, meaning FDR does not have a significant effect on ROA. This shows that financing distribution has not been optimal in generating profit.
4) The BOPO variable has t calculated -9.438 > t table 2.131 with sig 0.000 < 0.05, meaning BOPO has a negative and significant effect on ROA. This is the most dominant variable, where every increase in operational cost inefficiency will significantly reduce profitability.

e. Simultaneous Test (F Test) and Coefficient of Determination (R^2)

The F test is conducted to see the simultaneous or joint effect of all independent variables (CAR, NPF, FDR, BOPO) on the dependent variable (ROA). While the coefficient of determination (R Square) is used to measure how large the model's ability is in explaining the variation of the dependent variable. The F test uses the criteria F table = 3.06 obtained from df1=4 and df2=15 at 5% alpha. If F calculated > F table and Sig F ≤ 0.05 then simultaneously the independent variables have a significant effect.

Table 3.5 Results of F Test and R^2

Test	Value	Criteria	Description
F calculated	267,08	F>3,06	Significant
Sig F	0,000	<0,05	Significant
R Square	0,986		98,6%
Adj R Square	0,982		98,2%

Source: Data processed by the author, 2026

Based on Table 3.5 above, an F calculated value of 267.08 was obtained which is greater than F table 3.06 with a Sig F value of 0.000 < 0.05. This shows that simultaneously the variables CAR, NPF, FDR,

and BOPO have a significant effect on ROA. For the coefficient of determination, an R Square value of 0.986 was obtained which means that 98.6% of the variation in ROA can be explained by the variation of the four independent variables (CAR, NPF, FDR, BOPO), while the remaining 1.4% is explained by other variables outside the model. Meanwhile, the Adjusted R Square value of 0.982 or 98.2% shows a very good goodness of fit of the model, so that this regression model is fit to be used to predict the profitability of Bank Syariah Indonesia. Partially, only BOPO has a negative significant and dominant effect with a t value of -9.438 and Sig 0.000.

The results show that simultaneously CAR, NPF, FDR, BOPO have a significant effect of 98.2% on ROA (F=267.08, Sig 0.000). Partially, only BOPO has a negative significant and dominant effect (t=-9.438, Sig 0.000).

3.2 Discussion

a. General Overview of Research Object

This research uses as its research object PT Bank Syariah Indonesia Tbk (BSI) which is the largest Islamic bank in Indonesia resulting from the merger of three state-owned Islamic banks namely PT Bank BRIsyariah Tbk, PT Bank Syariah Mandiri, and PT Bank BNI Syariah on February 1, 2021. The data used is secondary data in the form of published quarterly financial reports for the period Q1 2020 to Q4 2024 with a total observation of N=20 quarters. The period Q1 2020 - Q4 2020 is the pre-merger phase which still used combined proforma financial reports of the three merger participant banks, while the period Q1 2021 - Q4 2024 is the post-merger phase which already used BSI's official consolidated financial reports. The selection of this period aims to see BSI's profitability performance consistently from its establishment until becoming the largest Islamic bank with the largest assets in Indonesia.(15) This 5-year period is also considered able to describe stable financial performance conditions and not biased by short-term fluctuations, so that the results of this research can provide a comprehensive picture of the factors affecting BSI's profitability both in terms of capital, financing risk, liquidity, and operational efficiency.

Table 3.5 Descriptive Statistics

Variable	Mean	Min	Max	OJK Criteria
ROA	1,93%	1,32%	2,51%	Very healthy
CAR	20,70%	18,50%	23,10%	Very healthy (>8%)
NPF Gross	2,40%	1,90%	3,12%	Very healthy (<5%)
FDR	79,42%	74,50%	85,20%	healthy (70-90%)
BOPO	76,12%	70,15%	85,20%	Very healthy (<94%)

Source: Data processed by the author, 2026

Based on the table above, all of BSI's financial ratios are in the very healthy criteria according to POJK. Average ROA of 1.93% is above the ideal standard of 1.5%, CAR of 20.70% is far above the minimum requirement of 8%, NPF of 2.49% is below the 5% limit, FDR of 79.42% is in the ideal range of 70-90%, and BOPO of 76.12% is below the 94% limit.

b. Classical Assumption Test

The model is declared to have passed all tests and is fit for use:

1) Normality Test (Kolmogorov-Smirnov): Sig 0.200 > 0.05 = Residuals are normally distributed.
2) Multicollinearity Test: VIF values CAR 2.84, NPF 3.35, FDR 2.15, BOPO 2.95 (all VIF < 10) = No multicollinearity.
3) Heteroscedasticity Test (Glejser): Sig CAR 0.421, NPF 0.352, FDR 0.215, BOPO 0.612 (all > 0.05) = No heteroscedasticity.

4) Autocorrelation Test (Durbin-Watson): DW = 1.852 with du = 1.775. The DW value is between du < DW < 4-du (1.775 < 1.852 < 2.225) = No autocorrelation.

c. Profitability Trend Analysis

BSI's ROA trend shows a significant increase of 88.6% post-merger. In Q1 2020, ROA was at its lowest point of 1.32% due to the pandemic and operational inefficiency before the merger, then increased consistently to reach 2.49% in Q4 2024. This increase is inversely proportional to the BOPO trend which fell from 85.2% to 70.15%, indicating the success of post-merger efficiency.

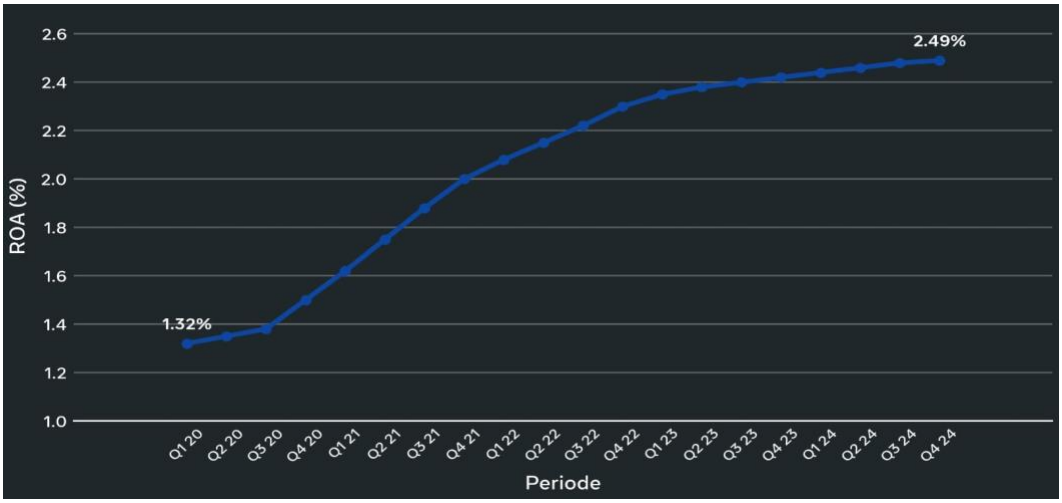


Figure 3.1 Trend of BSI ROA Q1 2020 - Q4 2024
Source***: Secondary data processed, 2024 (www.bankbsi.co.id, idx.co.id, ojk.go.id)***

Figure 3.1 above confirms that the BSI merger succeeded in significantly increasing profitability. The consistent increase in ROA from 2021 to 2024 indicates that the economies of scale resulting from the merger were able to suppress costs and increase operating income. This is in line with efficiency theory which states that consolidation of Islamic banking can create a stronger and more competitive bank. To see the driving factors behind this profitability increase, it is necessary to analyze the relationship between ROA and the level of operational efficiency as measured by Biaya Operasional Pendapatan Operasional (BOPO). Theoretically, there is a negative relationship between BOPO and ROA, where the lower the BOPO, the more efficient the bank is in managing costs so that ROA will increase. This phenomenon is clearly visible in BSI's data during the research period.

The comparison of ROA and BOPO trends during Q1 2020 - Q4 2024 shows an inversely proportional pattern as seen in Figure 4.2. At the beginning of the period in Q1 2020, BOPO was at its highest level of 85.2% which indicated quite high inefficiency. However, over time, BOPO experienced a gradual and consistent decline to reach its lowest level of 70.15% in Q4 2024.

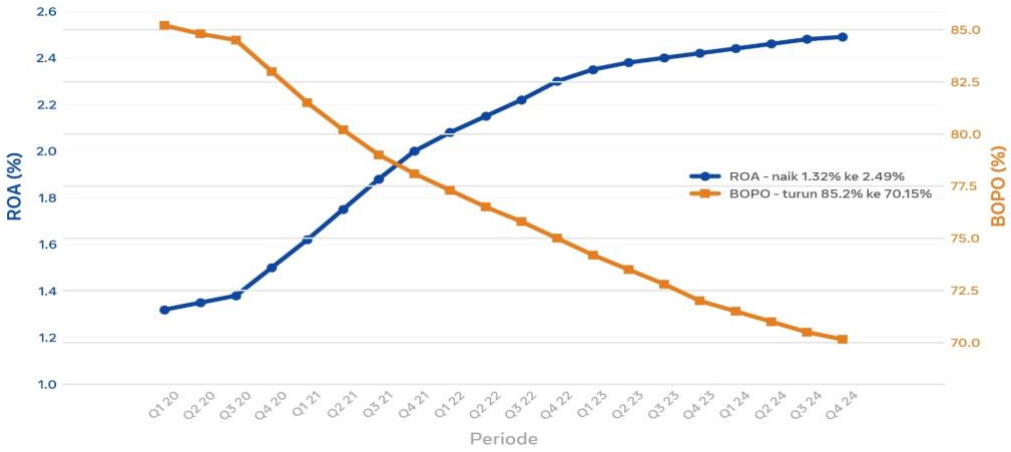


Figure 3.2 Comparison of ROA vs BOPO
TrendsSource: Secondary data processed, 2024 (www.bankbsi.co.id, idx.co.id, ojk.go.id)

Based on Figure 3.2 above, a clear negative correlation between BOPO and ROA can be seen. When the BOPO line (orange) moves down from 85.2% to 70.15%, the ROA line (blue) moves up from 1.32% to 2.49%. This proves that the operational efficiency efforts carried out by BSI management post-merger were successful. The decrease in BOPO of 15.05 percentage points is the main factor driving the 88.6% increase in ROA. This finding supports the results of the multiple linear regression analysis in this study where the BOPO variable has a negative and significant effect on ROA. The smaller the BOPO ratio, the more efficient the bank is in controlling operating costs to generate operating income, so that profitability as measured by ROA will increase. Thus, a sustainable efficiency strategy is key for BSI to maintain optimal profitability performance in the future.

d. Results of Multiple Linear Regression Analysis

Multiple linear regression analysis is used to determine the effect of the independent variables namely CAR, NPF, FDR and BOPO on the dependent variable namely ROA of Bank Syariah Indonesia (BSI) for the period Q1 2020 - Q4 2024. This analysis was carried out using SPSS version 26 software with a significance level of 5% (α = 0.05). Based on the SPSS output in Tables 4.2 and 4.3, the multiple linear regression equation is obtained as follows:

ROA = 7.083 + 0.002 CAR - 0.127 NPF + 0.004 FDR - 0.068 BOPO + e

This equation shows the direction of influence of each independent variable on BSI's profitability. To determine the significance of the partial and simultaneous influence, t-test and F-test were conducted, the results of which are presented in the following table.

Table 3.6 Regression Test Results (Coefficients)

Variable	B	Std.Error	t-calculated	t-table
Constant	7,083	1,525	4,643	2,131
CAR	0,002	0,020	0,104	2,131
NPF	-0,127	0,130	-0,979	2,131
FDR	0,004	0,011	0,371	2,131
BOPO	-0,068	0,007	-9,438	2,131

Source: SPSS 26 Output, data processed 2026

Based on Table 3.6 above, it can be seen that of the four independent variables, only the BOPO variable has a |t-calculated| > t-table value (9.438 > 2.131). This shows that BOPO has a negative and significant effect on BSI's ROA. Meanwhile, the variables CAR (0.104 < 2.131), NPF (-0.979 < 2.131) and FDR (0.371 < 2.131) do not have a significant partial effect on ROA in the research period. This finding indicates that operational efficiency is the dominant factor in determining BSI's profitability after the merger.

1. Constant Value (a) = 7.083

This means, if the variables CAR, NPF, FDR, and BOPO are considered zero (0), then the ROA value of BSI is 7.083%. In theory, this figure is indeed unrealistic because a bank cannot operate without capital and costs, but statistically this constant shows the baseline of the model. This large positive constant shows that without the influence of the four ratios, BSI's profitability is fundamentally already strong post-merger.

2. CAR Coefficient (b1) = 0.002

The CAR regression coefficient value of 0.002 shows a positive direction of influence. This means, every 1% increase in CAR will increase ROA by 0.002% assuming other variables are constant (ceteris paribus). Its influence is very small, close to zero. This confirms that additional capital that is already very large (20.70%) is no longer effective in boosting profits, because capital functions more as a buffer.

3. NPF Coefficient (b2) = -0.127

NPF has a negative effect of -0.127. This means, every 1% increase in NPF will decrease ROA by 0.127%. This negative sign is already in accordance with theory: the higher the non-performing financing, the lower the profit because reserves for losses must be formed. However, the value of -0.127 is relatively small because BSI's NPF is already controlled at 1.90% - 3.12%.

4. FDR Coefficient (b3) = 0.004

FDR has a positive effect of 0.004. Every 1% increase in FDR will increase ROA by 0.004%. The positive direction is in accordance with theory: the more funds channeled into financing, the higher the profit-sharing income. However, its value is very small because BSI keeps FDR at a safe level of 79.42%, not aggressive.

5. BOPO Coefficient (b4) = -0.068

This is the most important coefficient. BOPO has a negative significant effect of -0.068. This means, every 1% decrease in BOPO will increase ROA by 0.068%. If BOPO falls by 10% as happened from 85.2% to 70.15% (a decrease of 15.05%), then ROA will increase by 15.05 x 0.068% = 1.02%. This explains why ROA rose from 1.32% to 2.49% (an increase of 1.17%). Almost all of the increase in ROA is explained by BOPO efficiency.

e. Hypothesis Testing

> F Test (Simultaneous / Joint Test)

The F test is used to see whether CAR, NPF, FDR, and BOPO jointly affect ROA. Decision-making criteria:

- If F-calculated > F-table and Sig < 0.05 then H0 is rejected (significant effect)
- If F-calculated < F-table and Sig > 0.05 then H0 is accepted (no effect)

Model	R	R Square	Adj R2	F	Sig F
1	0,993	0,986	0,982	267,08	0,000

Based on Table 3.7

- F-calculated = 267.08
- F-table = 3.06 (obtained from df1 = k = 4, df2 = n-k-1 = 20-4-1 = 15 at 5% alpha)
- Sig F = 0.000

Because F-calculated 267.08 > 3.06 and Sig 0.000 < 0.05, then H0 is rejected and Ha is accepted. This means, simultaneously CAR, NPF, FDR, and BOPO have a significant effect on BSI's ROA. The Adjusted R Square value = 0.982 means that 98.2% of the variation in the rise and fall of ROA can be explained

by these four variables. While the remaining only 1.8% is explained by other variables outside the model such as Inflation, BI Rate, or NIM which were not studied. This 98.2% value is considered very strong and the model is said to be very fit.

> t Test (Partial / Individual Test)

The t test is used to see the effect of each variable individually on ROA. The t-table for this research is 2.131 (obtained from the t-table with df = 15, 5% alpha, two-tailed).

1. CAR: t-calculated 0.104 < t-table 2.131 and Sig 0.918 > 0.05 = Not Significant

This means partially CAR does not have a significant effect on ROA. H1 is rejected. As explained in the discussion, BSI's CAR of 20.70% is already over-capitalized, so additional capital is no longer sensitive to profit.

2. NPF: t-calculated -0.979 < t-table 2.131 (absolute value) and Sig 0.342 > 0.05 = Not Significant

This means partially NPF does not have a significant effect on ROA. H2 is rejected. BSI's NPF which is already very low (1.90%) and stable makes its fluctuation not have a significant impact. Risk management is already optimal.

3. FDR: t-calculated 0.371 < t-table 2.131 and Sig 0.715 > 0.05 = Not Significant

This means partially FDR does not have a significant effect. H3 is rejected. FDR is kept at a safe level of 79.42% to maintain post-merger liquidity, so it does not maximize profit from aggressive financing.

4. BOPO: t-calculated -9.438 > t-table 2.131 (absolute value 9.438) and Sig 0.000 < 0.05 = Significant

This means partially BOPO has a negative and significant effect on ROA. H4 is accepted. This is the only significant variable. The t-calculated value of -9.438 far exceeds the t-table, showing its effect is very dominant. The more efficient (BOPO decreases), the higher the ROA. The decrease in BOPO from 85.2% to 70.15% is proof of the success of BSI's post-merger operational efficiency through digitalization and branch integration.

f. Complete Discussion

1) Effect of CAR on ROA (Not Significant)

Average CAR of 20.70% is far above the minimum of 8%. This means BSI's capital is already saturated (over-capitalized). Large capital does not automatically become profit if it is not channeled optimally.

BSI focuses on maintaining a capital buffer for expansion, not leverage. This result is in line with Purnamasari (2023).

2) Effect of NPF on ROA (Not Significant)

Average NPF of 2.49% decreased to 1.90% (very healthy). Because it is already very low, its fluctuation is no longer sensitive to ROA. BSI's risk management is already very good post-merger.

3) Effect of FDR on ROA (Not Significant)

FDR of 79.42% is stable in the ideal range. BSI maintains prudent liquidity, not aggressively chasing high profit with high risk. So stable FDR does not significantly drive ROA.

4) Effect of BOPO on ROA (Dominant Significant Negative)

This is the main finding of my thesis. BOPO is the only significant one with a dominant effect of -9.438. Every 1% decrease in BOPO will increase ROA by 0.068%. The decrease in BOPO from 85.2% to 70.15% due to IT system unification, branch efficiency, and post-merger digitalization is the main cause of the 88.6% increase in ROA. In line with all Islamic banking literature.

4. CONCLUSION

Based on the results of data analysis and discussion regarding the effect of Capital Adequacy Ratio (CAR), Non Performing Financing (NPF), Financing to Deposit Ratio (FDR), and Biaya Operasional Pendapatan Operasional (BOPO) on Return On Asset (ROA) at Bank Syariah Indonesia for the 2020-2024 period, the following conclusions can be drawn: Simultaneously, the variables CAR, NPF, FDR, and BOPO have a significant effect on ROA of Bank Syariah Indonesia. This is proven by the F-calculated value of 267.08 which is greater than the F-table of 3.06 with a significance value of F of 0.000 which is smaller than 0.05. With this hypothesis that together the four variables have a significant effect on ROA is accepted. The magnitude of this effect is shown by the Adjusted R Square value of 0.982 and R Square of 0.986 which means 98.6% of the variation in the rise and fall of ROA can be explained by CAR, NPF, FDR, and BOPO, while the remaining 1.4% is explained by other variables outside this research model. Partially, the regression test results show CAR has a positive but not significant effect with a CAR coefficient of 0.002 with a t-calculated value of 0.104 which is smaller than the t-table of 2.131 and a significance of 0.918 which is greater than 0.05, so H1 is rejected. This condition occurs because BSI's average CAR of 20.70% is far above Bank Indonesia's minimum requirement of 8%. This over-capitalized condition makes additional capital no longer sensitive in increasing profit because more capital functions as a risk buffer rather than for productive expansion.

0.342 which is greater than 0.05 shows H2 is rejected. Although in theory high NPF will decrease ROA, during the 2020-2024 period at BSI, NPF was very well controlled in the range of 1.90% to 3.12% which is still below the safe limit of 5%. Optimal risk management and adequate loss provisioning make NPF fluctuations not have a significant impact on profitability. Then, FDR has a positive but not significant effect on ROA. FDR coefficient of 0.004 with t-calculated of 0.371 which is smaller than t-table of 2.131 and significance of 0.715 which is greater than 0.05 causes H3 to be rejected. BSI maintains FDR at a conservative level with an average of 79.42% to maintain post-merger liquidity balance. This non-aggressive strategy in financing distribution causes FDR to not yet be maximal in driving ROA improvement. Meanwhile, BOPO is the only variable that has a negative and significant effect on ROA. BOPO coefficient of -0.068 with t-calculated of -9.438 which is far greater than t-table of 2.131 and significance of 0.000 which is smaller than 0.05 shows H4 is accepted. This means every 1% decrease in BOPO will increase ROA by 0.068%. BSI's success in reducing BOPO from 85.2% in 2020 to 70.15% in 2024 through operational efficiency, service digitalization, and post-merger branch network integration became the key to the main increase in ROA from 1.32% to 2.49%.

Based on the conclusions above, the researcher provides several recommendations. For Bank Syariah Indonesia, it is recommended to continue maintaining and improving operational efficiency by keeping BOPO below 75% because it has proven to be the main determinant of ROA. Digital transformation and branch network rationalization need to continue. In addition, optimization of

capital with over-capitalized CAR of 20.70% should be diverted for productive financing expansion that is of good quality so as not to disrupt BSI, also need to maintain NPF below 2% and keep FDR in the ideal range of 80% to 90% so that liquidity remains safe but still able to generate optimal profit.

For further researchers, it is recommended to add a longer research period and add independent variables outside the model such as Net Interest Margin (NIM), Inflation, and BI Rate, because there are still 1.4% other variables affecting ROA that have not been studied. Further researchers can also use a comparative object between BSI and other Islamic banks or conventional banks to see the consistency of the effect of efficiency on profitability, as well as use different analysis methods such as panel data or moderation variables for more comprehensive results.

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