# THE EFFECT OF INFLATION AND EFFICIENCY ON PERFORMANCE INDONESIAN SHARIA COMMERCIAL BANK

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## Abstract

This research aims to analyze the influence of inflation and efficiency on the performance of sharia banking in Indonesia, as measured by Return on Assets (ROA). The data used is monthly time series data from 2014 to 2023 obtained from the Financial Services Authority (OJK) and Bank Indonesia (BI). The analysis method used is the Vector Error Correction Model (VECM) to identify short-term and long-term relationships between variables. The research results show that inflation has a significant influence on sharia banking profitability in the short term, but does not have a significant impact in the long term. In contrast, operational efficiency, as measured by the ratio of Operating Costs to Operating Income (BOPO), has a greater impact on Islamic banking profitability than inflation. These findings confirm that increasing operational efficiency is the main factor in maintaining the positive performance of Islamic banking amidst economic fluctuations.

**Keywords**: Inflation, Operational Efficiency, Profitability, Sharia Banking, ROA

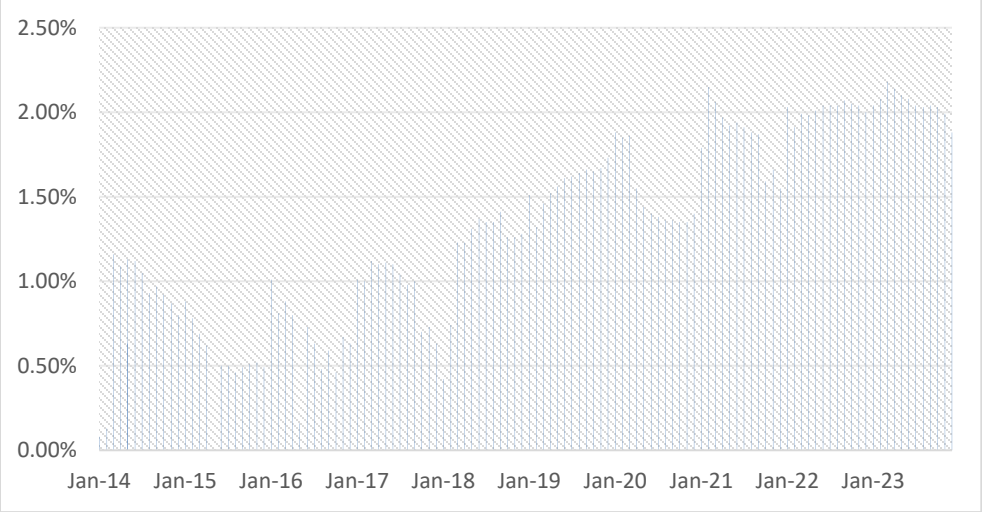
## INTRODUCTION

The banking industry in Indonesia is experiencing significant growth (Khalifaturofi'ah, 2023), as demonstrated by various positive advances in credit distribution. This growth is also supported by technological advancements, enabling innovation in the banking industry to help improve banks' financial performance. Inflation and operational efficiency are important factors influencing the performance of Islamic commercial banks in Indonesia. High inflation can increase the cost of funds and squeeze banks' profit margins, thus hampering banks' ability to maintain their financial performance.(Suryanto, T., & Yulia, 2021).

Islamic banking in Indonesia has experienced rapid growth in recent years. This growth is driven by increasing public awareness of the importance of financial services that adhere to Sharia principles (Hariyadi & Triyanto, 2020). In addition, the growth of this sector is also driven by better regulations and government support.(Faadilah & Ilham, 2024)Therefore, gaining public trust in banks is crucial for the bank's progress. To assess the performance of Islamic banking, the public can consult financial reports and use financial ratio analysis to analyze them. Bank financial ratios typically consist of liquidity, solvency, and profitability ratios (Dwi Suwiknyo, 2010).

To find out the development of ROA in 2014-2023, please see the graph below:

**Figure 1. Development of Return on Assets (ROA) of Islamic Commercial Banks in Indonesia for the 2014-2023 Period**




Source: Processed from data from the Islamic Banking Statistics Report, OJK)

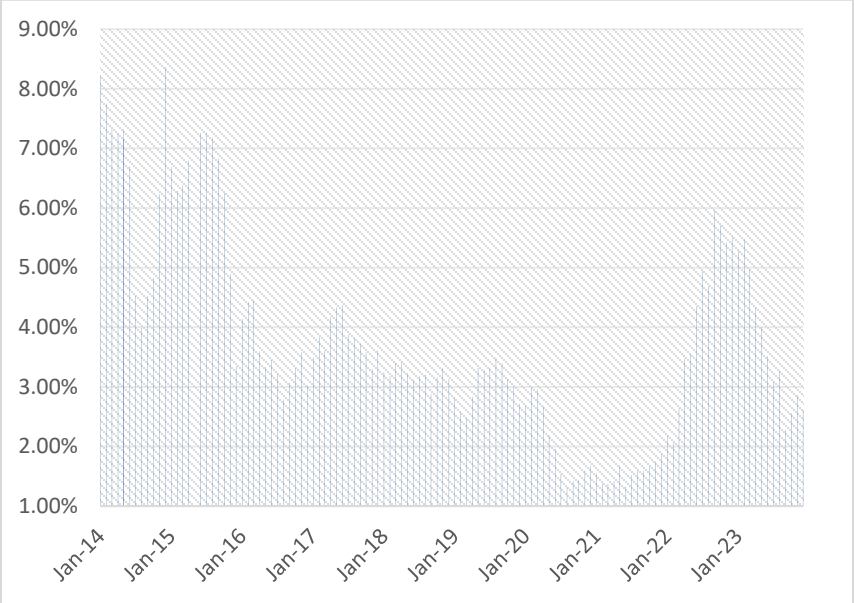
Indonesian Islamic banking faced challenges in achieving optimal profitability in 2014, with a return on assets (ROA) of 1.16%. 2015 saw a decline in return on assets (ROA) to 0.49%. However, in 2016, ROA remained unstable at 0.63%. Then, in March 2017, ROA increased to 1.12%, reflecting increased operating income from household and MSME financing. This positive trend continued in 2018, with ROA reaching 1.41% in September, thanks to the diversification of Islamic financial services and increased efficiency. However, return on assets (ROA) rose slightly to 1.73% in 2019. However, the pandemic in 2020 had a significant impact, reducing ROA to 1.36% due to slowing financing and economic

pressures. In 2021, return on assets (ROA) rose again to 1.55% due to economic recovery and banking digitalization. In 2022, ROA rose sharply to 2.00%, supported by a stronger economic recovery and increased efficiency. In 2023, improved asset management and digital transformation achieved 2.14%, a ten-year high. On the other hand, fluctuating inflation also impacts people's purchasing power and economic stability. Compared to conventional banking, Islamic banking handles inflation differently. Islamic banking operates on a profit-sharing basis and prohibits usury, making it easier to align returns with the performance of the financed assets.(Alaihi Sobri, 2015).

This differs from conventional banking, which maintains fixed interest rates, making it more vulnerable to changes in inflation. Furthermore, Islamic banking tends to be more conservative in its monetary policy, focusing on long-term price stability and economic equity. This strategy can maintain financial stability, increase customer confidence, and cushion the negative impact of inflation.(Ningrum et al., 2024).

**Graph 1.2**

**Inflation Development in Indonesia for the Period 2014-2023**




Source: Processed by Bank Indonesia

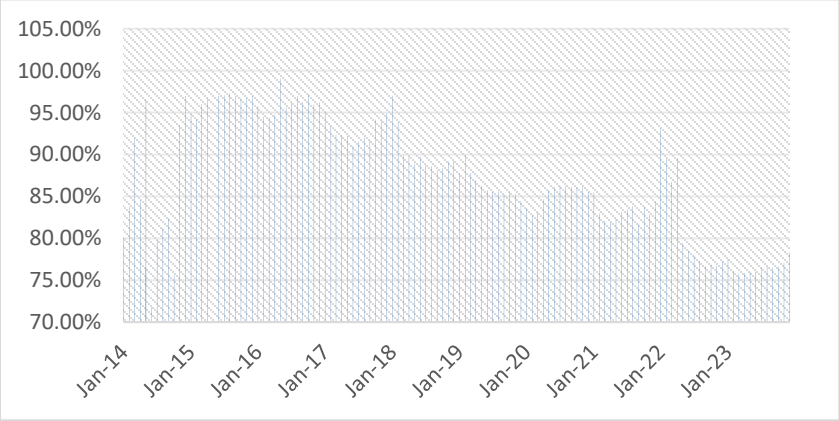
Based on the data above, significant variations are seen in Indonesian inflation from 2014 to 2023. Inflation reached 8.36% in 2014 due to rising fuel and commodity prices. Then, it dropped drastically to 3.35% in 2015, and continued to fall to 3.02% in 2016. In 2017, inflation increased slightly to 3.61%, but fell again to 3.21% in 2018. Entering 2019, inflation was recorded lower again at 2.72% before experiencing a drastic decline due to the COVID-19 pandemic. In 2020, inflation recorded its lowest at 1.68%, but in 2021 and 2022, due to economic recovery and price spikes, inflation rose again to 1.87% and 5.51%, respectively. Ultimately, in 2023, inflation was brought back under control to 2.61%, indicating improved economic stability after the challenges.

An additional factor that can influence the growth of total assets of Islamic banks is the BOPO ratio. This ratio indicates the level of efficiency and ability of Islamic banks to control operational costs. Therefore, the growth of total assets of Islamic banks will increase along with the decline in operational costs.(Setyawati, 2015).

Study by(Darto et al., 2023)This study shows that operational efficiency has a significant impact on increasing the profitability of Islamic banks, with a high efficiency ratio contributing to reduced operating costs and increased revenue. Therefore, a combination of effective inflation management strategies and increased operational efficiency is a key factor in maintaining the positive performance of Islamic banking in Indonesia.

Banking profitability is heavily influenced by a bank's operational efficiency, as measured by the Operating Expense to Operating Income (BOPO) ratio. A lower BOPO ratio indicates that a bank is effectively managing its operating costs relative to its revenue, which increases profitability. Conversely, a high BOPO ratio indicates operational inefficiency, where costs are incurred too much to generate revenue, which can reduce a bank's net profit. Operational efficiency, as measured by the Operating Expense to Operating Income (BOPO) ratio, is crucial for determining a bank's profitability.(Rohmiati et al., 2019).

**Figure 2. Development of BOPO of Islamic Commercial Banks in Indonesia Period 2014-2023**




Source: Processed from data from the Islamic Banking Statistics Report, OJK)

The data above shows a trend of increasing efficiency from 2014 to 2023 in Indonesian Islamic banking. The BOPO ratio of Islamic banking in 2014 was quite high at 96.97%, indicating a problem with operational efficiency. However, in 2015, the average BOPO was between 94 and 97%, indicating that operational efficiency was still suboptimal. This was the result of continuously increasing operational costs, such as technology development and human resource costs, which were not commensurate with operating income. In 2016, there was a slight improvement in the BOPO ratio, falling from 99 to 94%. This was driven by increased operating income, particularly from household financing, and the implementation of efficiency strategies at several large Islamic banks. However, in 2017, the BOPO ratio fell to 90%, indicating improvement. The BOPO ratio decreased to 88.08% in 2018, indicating improved efficiency. In 2019, the BOPO ratio dropped drastically to 89.90%, indicating that Islamic banking began pursuing higher levels of efficiency to increase revenue and reducing costs. Due to the COVID-19 pandemic, the BOPO ratio increased to 86.22% in 2020. However, in 2021, the BOPO ratio fell again to 81.69%,

indicating operational recovery after strategic adjustments during the pandemic. One evidence that Islamic banking has succeeded in significantly improving efficiency is the increase in BOPO to 77.28% in 2022. Furthermore, BOPO in 2023 was around 78.31%, the highest level in the last ten years. This indicates optimal operational efficiency due to digital transformation and service diversification.

This efficiency, which is reflected in the Operating Cost to Operating Income (BOPO) ratio, will have a direct impact on profitability performance because the more efficient a bank is, the greater the possibility of generating a high ROA.(Yuliana & Listari, 2021). Considering the above explanation, researchers are interested in examining how inflation can affect bank performance efficiency. This is because Islamic banks are required to maintain stable financial performance through operational efficiency and adaptation to inflation. Operational efficiency, measured through the BOPO (Operating Cost to Operating Income) ratio, is a crucial factor in optimizing profitability, while fluctuating inflation impacts public purchasing power and economic stability.(Imam Harmain, 2020).

Therefore, this study was conducted to analyze the impact of inflation and efficiency on the performance of Islamic commercial banks in Indonesia. Therefore, the results are expected to serve as a reference for management decision-making to improve the stability and competitiveness of Islamic banks amidst increasingly fierce competition in the banking industry.

## REVIEW OF LITERATURE

### Islamic Bank Performance

The performance of Islamic banks is influenced by various internal and external factors.(Yamin, 2022). shows that BOPO and inflation have a significant influence on the financial performance of Islamic banks.(Anggreni & Taufiq, 2022)emphasizes the importance of digitalization to improve operational efficiency and service diversification, ultimately enhancing the competitiveness of Islamic banks. This is in line with the findings(Judge, 2023)which states that digitalization of services can increase overall profitability by expanding customer reach. Islamic banks that effectively manage their operational costs have been shown to significantly increase profitability.

In addition, recent research also highlights the importance of operational cost efficiency in increasing the profitability of Islamic banks.(Addury et al., 2024)Other internal factors such as sharia-based corporate governance and intellectual capital also play a role in improving the financial performance of Islamic banks.(NENA & LAILAULFA, 2021)From the external side, inflation and economic growth have been proven to have a significant influence on the performance of Islamic banks, where high inflation can suppress profitability.(Muhammad, 2022)Thus, effective operational cost management strategies, the utilization of digitalization, and the strengthening of Sharia-based corporate governance are crucial steps in increasing the competitiveness and profitability of Islamic banks.

### Inflation

Inflation is a tendency for prices of goods and services to increase in general and continuously over a certain period of time, which results in a decrease in people's purchasing power.(Milasari, 2020). The money supply, interest rates, exchange rates, and unemployment rates are some of the main factors that influence inflation.(Abbachh Uddin et al., 2020). Apart

from monetary factors, inflation can also be influenced by structural factors, such as imbalances in the production and distribution of goods in the economy.(A. Rybchuk, 2023).

In recent years, research on the impact of inflation on Islamic banking has shown mixed results.(Djazuli & Candera, 2021)found that inflation does not strengthen the relationship between ROA and the growth of Islamic banks, but can actually reduce bank growth when inflation is high.(Al Sharif, 2023)also confirmed that inflation has a significant positive relationship with Islamic bank performance, especially under favorable economic growth conditions. However, inflation can also have a negative impact if costs increase faster than revenues.

**Efficiency**

Efficiency in Indonesian Islamic banking is generally measured using the Operating Cost to Operating Income (BOPO) ratio. This ratio reflects the bank's management's ability to control operating costs relative to the operating income generated. The lower the BOPO value, the more effectively the bank operates. The ideal BOPO ratio is 70–80%. However, data shows that in 2015, the BOPO ratio for Islamic banking in Indonesia remained between 94–97%, indicating a less-than-ideal level of efficiency.(Arisyanti et al., 2023).

Studies on efficiency show a consistent influence on the performance of Islamic banks.(Alam et al., 2022)provides empirical evidence that efficiency ratios such as BOPO significantly affect ROA. (Anggraini et al., 2023) also found that operational efficiency affects the financial stability of Islamic banks.(Tika Sari et al., 2022)Increasing efficiency can help reduce the likelihood of financing problems. Therefore, efficiency ratios such as BOPO play a crucial role in determining the performance and stability of Islamic banks in Indonesia. For Islamic banks, improving operational efficiency is crucial for achieving better performance and ensuring operational sustainability.

## RESEARCH METHOD

The data used in this study secondary data is a monthly time series for the period 2014 to 2023. The variables in this study are efficiency (X1) and inflation (X2) as independent variables, while the performance of Islamic commercial banks (Y) is measured by ROA (Return on Assets) as the dependent variable. The data sources are taken from the Financial Services Authority (OJK) and Bank Indonesia (BI). Data analysis was performed using the Vector Error Correction Model (VECM). The selection of this model is based on the characteristics of the time series data, with the aim of identifying the dynamic relationship between the independent variables (inflation and economic growth) and the dependent variable (ROA).

The analysis process was performed using EViews software due to its strong ability to manage time series data and support efficient VECM model estimation. EViews offers user-friendly interfaces and comprehensive statistical analysis features. However, EViews is a paid software and less flexible than open-source programs like R or Python.

The analysis begins with a stationarity test using Augmented Dickey-Fuller (ADF) to ensure the data does not contain trends that could affect the estimation results. Next, a cointegration test is performed using the Johansen method to test for long-term relationships between variables. Furthermore, a Granger Causality test is also performed to determine the direction of the causal relationship between variables. The results of this analysis are

expected to provide a deeper understanding of the influence of inflation and efficiency on the performance of Islamic commercial banks, particularly in terms of profitability, as measured by ROA, within a specified period.

## RESULTS AND DISCUSSION

### Stationarity Test

Stationarity testing is performed to determine whether a variable is stationary using the criterion of a probability value less than 0.05. The initial test is performed at a level considered non-stationary because the probability is greater than 0.05, so the first difference level test is performed. Further testing at the first difference level is performed if the data is not yet stationary.

**Table 1.**
**Stationarity Test Results**

| | Level | First Difference | Information |
|---|---|---|---|
| Variables | Prob. | Prob. | |
| ROA | 0.1532 | 0.0000 | Stationary |
| Inflation | 0.0061 | 0.0000 | Stationary |
| BOPO | 0.1896 | 0.0000 | Stationary |

Source: data processed with Eviews 13,2025

The results of the stationarity test in the table show that the inflation variable is stationary at a probability level of 0.0061 (<0.05), so differencing is unnecessary. In contrast, the ROA and BOPO variables have probabilities of 0.1532 and 0.1896, respectively, at levels higher than 0.05, indicating that they are non-stationary. However, after the first differencing, all variables become stationary with a probability of 0.0061. This indicates that ROA and BOPO should be converted to first differences (D(ROA) and D(BOPO)) before being used in further analysis, such as VAR or regression models. This is done to prevent spurious regression and ensure the validity of the estimation results.

### Optimal Lag Test

The lag length can be calculated using available information criteria, namely the likelihood ratio (LR), the final prediction error (FPE), the Akaike information ratio (AIC), the Schwarz information ratio (SC), and the Hannan-Quinn ratio (HQ). The lag that meets the lowest criteria is long or large.

**Table 2.**
**Optimal Lag Test Results**

| Lag | AIC | SC | HQ |
|---|---|---|---|
| 1. | 5.999841* | 6.291109* | 6.118018* |
| 2. | 6.067294 | 6.577012 | 6.274103 |
| 3. | 6.179939 | 6.908108 | 6.475381 |
| 4. | 6.265090 | 7.211711 | 6.649164 |
| 5. | 6.350836 | 7.515907 | 6.823542 |
| 6. | 6.432404 | 7.815926 | 6.993743 |
| 7. | 6.566020 | 8.167993 | 7.215992 |
| 8. | 6.552619 | 8.373043 | 7.291223 |

*Source: data processed with Eviews 13,2025*

Table 2shows the results of the ideal lag length calculation. Based on the information obtained from Table 2, Lag 1 is known to have the minimum number of lags, where the lag with the fewest number is the optimal lag. Therefore, it can be concluded that lag 1 is the optimal lag. According to the Akaike Information Criterion (AIC), the best lag for the VECM model is. In other words, all variables in this model influence each other

**VAR Stability Test**

The VAR stability test results indicate that the analyzed system meets the stability requirements, where all modulus values of the characteristic polynomial roots are below one. In the context of this study, the modulus values obtained are 0.956367, 0.851867, and 0.569565. The highest modulus value found is 0.956367, and the other values are lower, all far below the limit value of one. This indicates that the system's response to shocks will subside over time, and the system will return to its long-term equilibrium without experiencing an explosion or divergence. Thus, the stability test results support the validity of the model used to evaluate the effect of inflation and efficiency ratios on Islamic banking performance.

**Table 3.**
**VAR Stability Test**

| Root | Modulus | Information |
|---|---|---|
| 0.956367 | 0.956367 | Stable |
| 0.851867 | 0.851867 | Stable |
| 0.569565 | 0.569565 | Stable |

Source: data processed with Eviews 13,2025

**Granger Causality Test**

The Granger causality test revealed several interesting findings related to the relationship between inflation, the efficiency ratio (BOPO), and Islamic banking performance, as measured by Return on Assets (ROA). First, the hypothesis that inflation does not affect ROA cannot be rejected, with an F-statistic of 0.84872 and a probability of 0.3588, indicating that inflation does not significantly impact Islamic banking performance during the period tested. Conversely, the relationship between ROA and inflation was also insignificant, with an F-statistic of 0.83580 and a probability of 0.3625.

Furthermore, for BOPO, the results show that BOPO does not affect ROA with an F-statistic value of 2.53592 and a probability of 0.1140, although it is close to the significance limit. However, conversely, ROA turns out to have a very significant effect on BOPO with an F-statistic value of 22.4846 and a very small probability (6.E-06), indicating that better performance of Islamic banks can contribute to bank operational efficiency.

Finally, no significant relationship was found between BOPO and inflation, either from BOPO to inflation or vice versa, with F-statistic values of 0.49471 and 0.61135, respectively, and probabilities above 0.4. This indicates that in the context of this study, inflation and the efficiency ratio do not directly influence each other. Overall, these results suggest that although there are some significant relationships between these variables, the direct effects of inflation and the efficiency ratio on Islamic banking performance still require further research to gain a more comprehensive understanding.

**Table 3.**
**Granger Quality Test Results**

| Null Hypothesis: | Obs | F-Statistic | Prob. |
|---|---|---|---|
| Inflation does not Granger Cause ROA | 119 | 0.84872 | 0.3588 |
| ROA does not Granger Cause Inflation | | 0.83580 | 0.3625 |
| BOPO does not Granger Cause ROA | 119 | 2.53592 | 0.1140 |
| ROA does not Granger Cause BOPO | | 22.4846 | 6.E-06 |
| BOPO does not Granger Cause Inflation | 119 | 0.49471 | 0.4832 |
| Inflation does not Granger Cause BOPO | | 0.61135 | 0.4359 |

Source: data processed with Eviews 13,2025

**Cointegration Test**

In this study, cointegration testing was conducted using the Johansen test approach, which involves comparing the trace statistic value with the critical value and the maximum eigenvalue with the critical value at the 5% significance level. A trace statistic or maximum eigenvalue greater than the critical value indicates cointegration or a long-term relationship in the system of equations. Table 3 shows the results of the Johansen cointegration test. The cointegration relationship between the model variables is indicated by the trace statistic value and the maximum eigenvalue up to the 5% significance level.

**Table 4.**
**Johansen cointegration test**

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistics | 0.05 Critical Value | Prob.** Critical Value |
|---|---|---|---|---|
| None * | 0.587118 | 217.3890 | 29.79707 | 0.0000 |
| At most 1 * | 0.396018 | 113.8915 | 15.49471 | 0.0000 |
| At most 2 * | 0.374511 | 54.89886 | 3.841465 | 0.0000 |

Trace test indicates 3 cointegrating equation(s) at the 0.05 level

Source: data processed with Eviews 13,2025

**VECM Estimation**

Analysis using the Vector Error Correction Model (VECM) aims to identify short-term and long-term relationships between the variables involved. In this case, we analyze three variables: Return on Assets (ROA), Inflation, and Operating Expenses (BOPO). The following table explains the VECM estimation results.

**Table 5.**
**VECM Estimation Results**

| Variables | Coefficient | T Statistics | Information |
|---|---|---|---|
| Long-term | | | |
| ROA (-1) | 1,000,000 | - | - |
| Inflation (-1) | 0.07323709722369789 | 2.91671 | Influential |
| BOPO (-1) | 0.07035378463000926 | 11,0088 | No effect |

| Short-term | | | |
|---|---|---|---|
| D(ROA(-1)) | -0.0553191398111055 | -0.58446 | No effect |
| D(INFLATION(-1)) | 0.01086337640403185 | 0.52578 | No effect |
| D(BOPO(-1)) | 0.006410062786214552 | 1.13031 | No effect |

*Source: data processed with Eviews 13,2025*

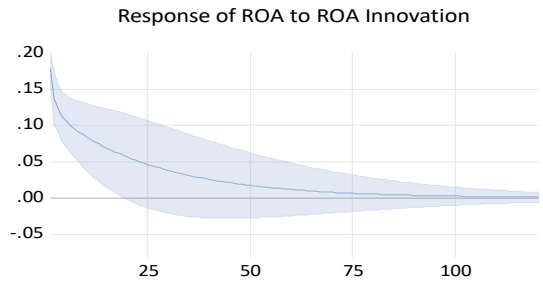
From the VECM estimation results, it can be concluded that in the short term, only inflation has a significant effect on the dependent variable, while ROA and BOPO do not show a significant effect despite having positive coefficients. In the long term, neither variable has a significant effect on ROA. Both inflation and BOPO show low t-statistic values, thus not strong enough to indicate a long-term relationship between these variables and ROA. This indicates that the long-term profitability of Islamic banks is not significantly affected by inflation or operational efficiency as measured by BOPO.

Overall, these findings indicate that in the short term, inflation can affect banking profitability, but in the long term, other factors are likely to be more dominant in determining the ROA performance of Islamic banks.

**Impulse Response Function (IRF) Analysis**

The purpose of impulse response analysis is to evaluate both short-term and long-term reactions to one variable compared to shocks caused by other variables. The Impulse Response Function (IRF) study aims to examine how the Return on Assets (ROA) of Islamic banking in Indonesia responds to shocks from inflation and operating costs to operating income (BOPO). The purpose of this study is to determine how the short-term and long-term relationships between these variables change and how significant their impact is on Islamic banking performance.

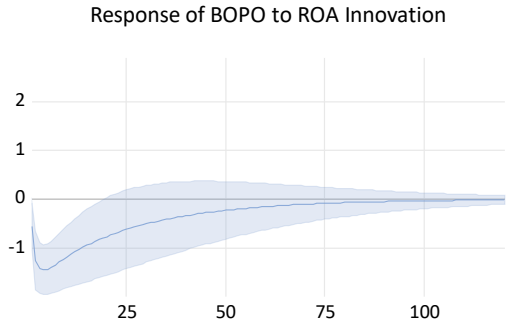
**Figure 3.**
**Results of ROA Response to ROA**




Source: data processed with Eviews 13,2025

This figure shows how Return on Assets (ROA) responds to shocks or innovations affecting ROA itself. The graph shows a slight, though not significant, initial positive response. Afterward, the response fluctuates around zero and tends to stabilize over time. It's important to note the 95% confidence interval depicted by the dotted line; if the zero line falls within this interval, the response is statistically insignificant. Overall, this figure indicates that innovations in ROA have a relatively small and transient impact on ROA performance, with the effect tending to dissipate over time.

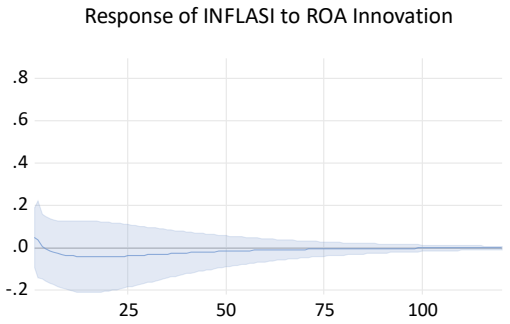
**Figure 4.**
**Results of BOPO Response to ROA**




Source: data processed with Eviews 13,2025

This figure illustrates how Operating Expenses to Operating Income (BOPO) responds to innovations that affect ROA. The graph shows that initially, there is a negative response from BOPO to ROA innovations. This means that when ROA increases due to innovations, BOPO tends to decrease. However, this effect is short-lived, and after a few periods, BOPO returns to its baseline. As before, the 95% confidence interval is important to assess the significance of the response. The interpretation is that innovations that increase ROA tend to reduce operational inefficiency (BOPO) initially, but this effect is temporary.

**Figure 5.**
**Results of Inflation Response to ROA**



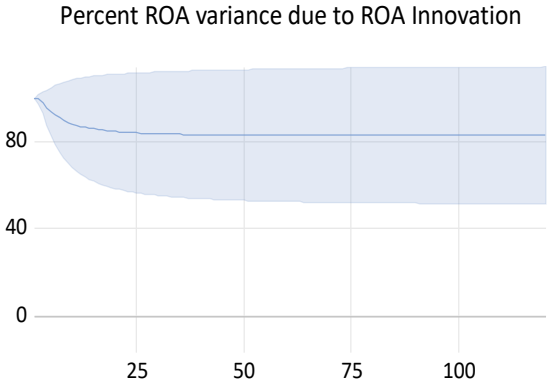

*Source: data processed with Eviews 13,2025*

This figure shows how the inflation rate responds to innovations in ROA. The graph shows that inflation responds positively to ROA innovations. This means that when ROA increases due to innovations, inflation tends to increase as well. A 95% confidence interval is also shown to help determine the significance of the response. In conclusion, innovations in ROA appear to have a positive impact on inflation, which may reflect an increase in overall economic activity.

**Variance Decomposition**

Forecast Error Variance Decomposition (FEVD) analysis divides the variance of a particular variable's forecast error into the proportion caused by changes in each variable in the system, including itself, to show the change in a variable in a given period caused by changes in other variables in previous periods. This method allows for identifying the strengths and weaknesses of each variable based on its impact on other variables in the long run.

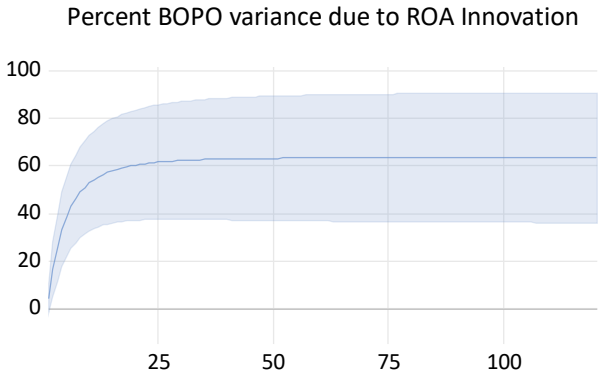
**Figure 6.**
**Results of ROA Analysis of ROA**




Source: data processed with Eviews 13,2025

This figure shows how much of the variation in ROA can be explained by innovations or shocks to ROA itself. The graph displays the percentage of ROA variance attributable to ROA innovations over a given period. Initially, the contribution of ROA innovations to ROA variance may be high, but over time, this contribution may change. A 95% confidence interval is also presented, calculated using a Monte Carlo simulation.

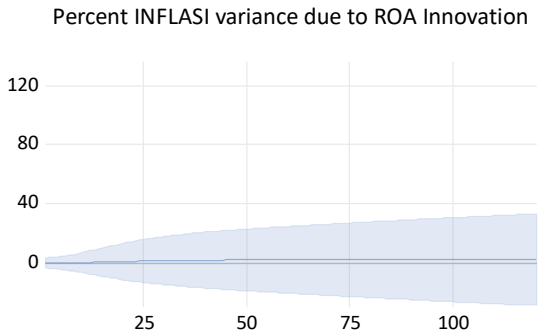
**Figure 7.**
**Results of BOPO Analysis on ROA**




Source: data processed with Eviews 13,2025

This figure shows how much of the variation in BOPO (Operating Expenses to Operating Income) can be explained by innovations in ROA. The graph visualizes the percentage of BOPO variance caused by innovations in ROA over time. This helps understand how much changes in ROA (caused by innovation) affect fluctuations in a company's operational efficiency. A 95% confidence interval calculated using a Monte Carlo simulation is also included.

**Figure 8.**
**Results of Inflation Analysis on ROA**




Source: data processed with Eviews 13,2025

This figure illustrates how much of the variation in the inflation rate can be explained by innovations in ROA. The graph displays the percentage of inflation variance caused by ROA innovations over time. This provides insight into the impact of changes in ROA (due to innovation) on fluctuations in the inflation rate. A 95% confidence interval, estimated using Monte Carlo simulation, is also included.

**The Influence of Efficiency on Islamic Banking Performance**

The results of the analysis show that operational efficiency (BOPO) has a significant impact on Islamic banking performance (ROA), especially in the long term, based on various analyses that have been conducted. Stationarity test shows that the inflation variable is stationary at the initial level (probability 0.0061), while ROA and BOPO require first differencing to achieve stationarity. The optimal lag test indicates lag 1 as the optimal lag based on the AIC criteria. The VAR stability test shows that the model is stable with the highest modulus value of 0.956367, below the threshold of 1. The Granger causality test shows that inflation (F-statistic 0.84872, probability 0.3588) and BOPO (F-statistic 2.53592, probability 0.1140) do not affect ROA, but ROA significantly affects BOPO (F-statistic 22.4846, probability 6.E-06).

Furthermore, the Johansen cointegration test indicates the presence of three cointegration equations at a 5% significance level. VECM estimation shows that in the short term, only inflation significantly influences the dependent variable, while in the long term, no variables significantly affect ROA. Impulse Response Function (IRF) analysis shows that ROA responds positively to ROA innovations with a small and temporary impact, BOPO responds negatively to ROA innovations but is temporary, and inflation responds positively to ROA innovations. Variance Decomposition analysis shows how much variation in ROA, BOPO, and inflation can be explained by innovations that occur in ROA itself.

Operational efficiency has an impact on the performance of Islamic banks because it can increase profitability by optimizing operational costs and income.(Wulandari & Ryandono, 2020)The lower the Operating Expenses to Operating Income (BOPO) ratio, the more efficient the bank is in managing resources, which has a positive impact on Return on Assets (ROA).(Irawan et al., 2019)This result aligns with previous research on operational efficiency, which states that bank profitability is higher with a lower BOPO ratio.(Ariani, 2021),(Amalia & Diana, 2022), And(Wulandari & Ryandono, 2020), but different from research(Safira et

al., 2024)which states that Operating Costs to Operating Income (BOPO) does not have a significant influence on ROA.

Overall, these findings confirm that operational efficiency, as measured by the BOPO ratio, plays a significant role in determining Islamic banking profitability. However, differing research findings suggest the need for further analysis to understand the factors influencing the relationship between BOPO and ROA.

**The Impact of Inflation on Islamic Banking Performance**

The stationarity test results indicate that the inflation variable is stationary at its level with a probability of 0.0061 (<0.05). The optimal lag test produces lag 1 as the optimal lag based on the AIC, SC, and HQ criteria. The VAR stability test shows that the model is stable with the highest modulus value of 0.956367, which is less than 1. The Granger causality test shows that inflation does not affect ROA (prob = 0.3588), and conversely, ROA also does not affect inflation (prob = 0.3625). The Johansen cointegration test indicates cointegration between the variables, with trace statistics and maximum eigenvalues greater than the critical value at the 5% significance level. VECM estimation shows that in the short term, only inflation has a significant effect on the dependent variable, while ROA and BOPO do not show a significant effect. Impulse Response Function (IRF) analysis shows that inflation responds positively to ROA innovation. Variance Decomposition Analysis (FEVD) shows how much of the variation in the inflation rate can be explained by innovations that occur in ROA.

Inflation can affect the performance of Islamic banks by reducing people's purchasing power, thereby reducing demand for financing.(Nurhayati, 2017). In addition, high inflation increases credit risk, especially in profit-sharing schemes, which can reduce bank income and worsen asset quality.(Akbar, 2018)Although Islamic banks do not charge interest, inflation still increases operating costs, forcing banks to adjust their financing strategies to maintain stability. If inflation is not controlled, Islamic banks could experience a decline in profitability and liquidity, which could ultimately impact the growth of the Islamic banking industry as a whole.(Dima Maulika Sehany & Maulida Nurhidayati, 2022).

Study(Maya, 2019)found that inflation can strengthen the effect of non-performing financing on profitability, but weaken the effect of economic growth. Meanwhile,(Atik Rachmawati, 2018)found that inflation does not significantly moderate the relationship between risk and profitability, but can weaken the relationship between capital and profitability.

Therefore, it can be concluded that although inflation has a short-term impact on profitability, Islamic banks need to focus on managing internal factors such as financing quality, operational efficiency, and a strong capital structure to maintain sustainable performance. Furthermore, adapting strategies to economic fluctuations and effective risk management are key to mitigating the long-term impact of inflation, enabling Islamic banks to maintain and improve their profitability amidst changing economic conditions.

## CONCLUSION

Inflation does not significantly impact ROA in the long term because Islamic banks are able to adjust their operational and financial strategies to address the impact of inflation. Meanwhile, BOPO significantly impacts ROA in the short term because effective use of operational costs can increase bank revenue. However, in the short term, inflation has a more

significant impact on ROA than BOPO. Overall, neither inflation nor BOPO significantly impacts ROA in the long term because banks have adaptive strategies in place to address changing economic conditions.

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