

Profitability Determinants of Islamic Banks in Indonesia: The Role of Foreign Ownership

Nunuk Puspa Endrajati^{1*} and Anggraeni²

^{1,2}Study Program of Management, Faculty of Economics and Business, Universitas Hayam Wuruk Perbanas, Surabaya

Email Address:

nunukpuspa15@gmail.com*, anggi@perbanas.ac.id

*Corresponding Author

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Abstract: This study investigates how operational efficiency influences the profitability of Islamic banks in Indonesia, with a specific focus on the moderating role of foreign ownership. Using a quantitative explanatory design, the research applies multiple linear regression on secondary data from 2020 to 2024. Variables analyzed include NPF, FDR, BOPO, Bank Size, and the interaction term BOPO \times Foreign. The results show that NPF, BOPO, and Bank Size negatively affect ROA, while FDR shows a positive influence. Additionally, foreign ownership significantly moderates the relationship between BOPO and profitability, amplifying the negative impact of inefficiency. These findings suggest that cost control becomes more critical in banks with foreign participation. The model demonstrates strong explanatory power, with R^2 reaching 88.800 percent. The study contributes to understanding performance drivers in Islamic finance and highlights the need for strategic alignment and efficiency in banks with international ownership.

Keywords: Credit Risk; Efficiency; Islamic banks; Profitability.

Abstrak: Penelitian ini menganalisis pengaruh efisiensi operasional terhadap profitabilitas bank syariah di Indonesia, dengan menyoroti peran moderasi kepemilikan asing. Menggunakan pendekatan kuantitatif dengan desain eksplanatori, analisis dilakukan melalui regresi linier berganda menggunakan data sekunder tahun 2020 hingga 2024. Variabel yang diuji meliputi NPF, FDR, BOPO, Ukuran Bank, serta interaksi BOPO \times Foreign. Hasil menunjukkan bahwa NPF, BOPO, dan Ukuran Bank berpengaruh negatif terhadap ROA, sementara FDR berpengaruh positif. Kepemilikan asing terbukti memperkuat dampak negatif BOPO terhadap profitabilitas. Temuan ini menegaskan bahwa pengendalian biaya menjadi lebih krusial pada bank yang dimiliki oleh investor asing. Model penelitian ini memiliki daya jelaskan yang kuat, dengan nilai R^2 sebesar 88,800 persen. Studi ini memberikan kontribusi dalam memahami faktor-faktor kinerja bank syariah dan pentingnya efisiensi operasional pada institusi dengan kepemilikan internasional.

Kata kunci: Risiko Kredit; Efisiensi; Bank Syariah; Profitabilitas.

INTRODUCTION

The sector of Islamic financial institutions has experienced notable growth across the globe, offering monetary services that conform to Sharia regulations in response to the increasing demand for morally guided banking alternatives. Adhering to Sharia frameworks, this financial area depends largely on indicators of financial gain to support both social welfare and economic viability through value-driven funding mechanisms. Consequently, ensuring strong profit management necessitates an all-encompassing approach that includes

consideration of factors such as liquidity exposure, operational performance, organizational size, and financing effectiveness.

Figure 1 illustrates information sourced from the Islamic Banking Statistics released by the Financial Services Authority (OJK), emphasizing favorable progress in the financial outcomes of Islamic commercial financial institutions in Indonesia during the period from 2020 to 2024 (Financial Services Authority, 2024). The data shows a steady decline in the ratio of problematic financing (Non-Performing Financing or NPF), indicating improved asset quality and more efficient risk management. The Financing to Deposit Ratio (FDR) also displayed notable fluctuations but ultimately reflected an upward trend, signifying increased financing activity relative to third-party funds, which may offer opportunities for higher profit while introducing additional financial exposure. Simultaneously, the operational productivity ratio (BOPO) improved over the observed period, implying more efficient operations and reduced overhead. Lastly, Return on Assets (ROA) demonstrated consistent growth, highlighting better effectiveness in asset utilization to generate earnings. These trends collectively indicate that internal factors such as NPF, FDR, BOPO, and ROA have played a synergistic role in strengthening the financial performance of Islamic commercial banks.

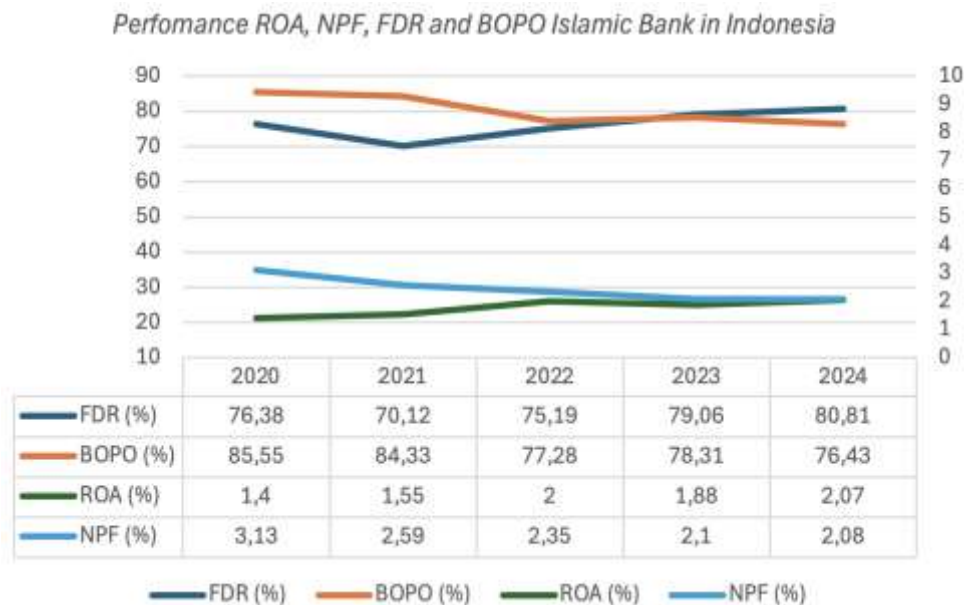


Figure 1. Performance of ROA, NPF, FDR dan BOPO

The NPF metric signifies the share of troubled financing, which may trigger greater allocation for financing losses and ultimately reduce income levels. Findings by (Novalista et al., 2024) indicate that temporary syirkah-based funding and operational productivity, when influenced by NPF as a moderating factor, have a substantial impact on profitability. According to research by (Gusmawanti et al., 2020) there exists an inverse connection between NPF and earnings, largely due to elevated exposure to credit risk. In contrast, the Financing to Deposit Ratio (FDR) reflects how effectively external funds are channeled into

financing. (Karmila, 2022) underline the importance of maintaining healthy FDR levels to promote sustained profit growth, while (Ardiani et al., 2023) warn that overly high FDR values could negatively impact net operational profitability.

Efficiency in operations, measured through the BOPO ratio, represents a key factor in maximizing earnings. Research conducted by (Nurkholifah, 2022), (Setia et al., 2023) and (Syaidi et al., 2024) demonstrate that lower BOPO levels correlate with higher ROA, emphasizing the importance of streamlined operations. Separately, (Badawi et al., 2023) emphasize the significance of cost management efficiency and competitive strength in enhancing overall financial outcomes within Islamic banking entities. Meanwhile, Bank Size yields mixed effects. (Anatasya & Susilowati, 2021) find a positive link between asset size and ROA, but (Yuan et al., 2022) and (Antwi, 2019a) reveal that this association differs depending on national context.

Recent studies on Islamic banking performance in Indonesia have extensively examined ownership structure and efficiency, but most have focused on their direct effects rather than potential interactions. Operational efficiency, typically measured by the BOPO ratio, is consistently recognized as a key determinant of profitability. However, few researchers have explored whether the ownership structure, particularly foreign ownership, can moderate the efficiency–profitability relationship. (Belcaid & Al-Faryan, 2023a) find that domestic institutional ownership can enhance profitability when aligned with strong governance frameworks. In contrast, (Rosalina & Nugraha, 2019) observe that government-linked banks may prioritize social goals at the cost of operational performance. Foreign ownership, on the other hand, is often associated with performance advantages due to access to advanced technology, managerial expertise, and more effective risk controls (Ambarwati, 2021). Nevertheless, (Wahyuni & Umam, 2023) argue that operational efficiency may exert a more dominant influence on Return on Assets (ROA) than ownership structure alone.

Despite these insights, the moderating role of ownership, especially foreign ownership, in shaping the impact of efficiency on profitability has received minimal empirical attention, particularly in the context of Islamic commercial banks. Studies by (Mai et al., 2024), (Fithria et al., 2021), and (Dewi et al., 2021) focus on ownership as a standalone predictor of performance, without testing its interaction with operational efficiency indicators. Similarly, research by Sudarsono et al. (2024) and (Handhayani et al., 2024) investigates the effects of ownership types on credit risk and dividend policy but does not incorporate efficiency measures. While (Hulu & Siswanti, 2023) examine the moderating role of foreign ownership, their focus is limited to the relationship between asset quality and profitability in conventional banks, leaving a gap in understanding how foreign ownership may influence the efficiency–profitability nexus within Islamic financial institutions.

To fill this critical gap, this study investigates the moderating effect of foreign ownership on the relationship between operational efficiency (BOPO) and profitability (ROA) in Islamic commercial banks in Indonesia. This focus is particularly relevant given the distinctive governance, ethical mandates, and operational models that differentiate Islamic banks from their conventional counterparts. Unlike prior research, which treats BOPO and ownership as separate explanatory variables, this study explores whether foreign ownership enhances or weakens the effect of efficiency on profitability.

The analysis is based on quarterly panel data from 2019 to 2024, using published financial reports of Islamic commercial banks regulated by the Financial Services Authority (OJK). Employing panel data regression, the study models BOPO, FDR, bank size, and other relevant controls, while incorporating an interaction term between BOPO and foreign ownership to test for moderation. The findings are expected to offer novel insights into how strategic foreign involvement influences the efficiency-performance dynamic in Indonesia's Islamic banking sector, with implications for regulatory policy, bank governance, and competitive strategy.

THEORETICAL REVIEW

This conceptual overview seeks to clarify the fundamental ideas that form the foundation of studies related to profit generation within Islamic banking institutions in Indonesia. The central aim of this analysis is to explore how multiple factors such as Non-Performing Financing (NPF), Financing to Deposit Ratio (FDR), Bank Size, and operational efficiency (BOPO) interrelate and influence profitability as assessed by Return on Assets (ROA). Furthermore, the framework of ownership classification is examined as a potential moderating factor that could shape the connections between these independent elements and overall financial outcomes. Accordingly, this review intends to offer enhanced understanding of the internal mechanisms that impact Islamic banking institutions' performance and their role in supporting broader economic development.

Agency Theory. Several theoretical approaches are discussed, including Agency Theory. Introduced by, this theory highlights the dynamic between asset owners (principals) and individuals responsible for operational decisions (agents), wherein potential conflicts can arise when agents fail to align with principal objectives. Within the context of bank ownership composition, especially when external, foreign ownership is involved, this framework becomes particularly applicable, as it helps explain how more rigorous oversight and stronger governance structures implemented by international owners may contribute to increased institutional efficiency and financial performance. Studies conducted by (Ambarwati, 2021) and (Rosalina & Nugraha, 2019) lend support to this view, indicating that foreign ownership can amplify the impact of operational effectiveness on financial outcomes due to improved technological resources, knowledge sharing, and stricter management practices. As a result, foreign ownership is proposed in this research as a moderating element that could enhance the relationship between operational efficiency (BOPO) and profitability (ROA), grounded in the assumption that foreign stakeholders tend to promote more disciplined and performance-focused management behavior.

Resource-Based View (RBV). This perspective suggests that long-term competitive strength depends on the ability of the organization to effectively utilize internal resources that are valuable, rare, difficult to imitate, and cannot be substituted. Within the realm of Islamic financial institutions, RBV holds strong relevance, as overall success depends on the strategic handling of internal assets such as operational cost efficiency (BOPO), credit risk control (NPF), liquidity strength (FDR), and Bank Size. Operational efficiency, indicated by the BOPO ratio, reflects how well internal resources are applied to optimize outcomes. Institutions

with strong capabilities in minimizing operational expenses in relation to generated income generally experience higher profitability levels their essential internal resources include asset volume (represented by total institutional size), credit quality oversight (through regulation of NPF), and effective fund management (measured by FDR). RBV emphasizes that when these internal components are managed thoughtfully and cohesively, they can collectively drive superior and long-lasting financial performance (Badawi et al., 2023).

Islamic Banking. The Islamic financial system follows a distinct operational structure. In Indonesia, the regulatory framework for Islamic financial institutions is based on various laws and religious rulings, including Law Number 21 of 2008 concerning Islamic Banking. These legal provisions are designed to ensure that all activities within Islamic banking remain aligned with sharia principles while offering safeguards for clients (Pramesti et al., 2023). The Financial Services Authority (OJK) holds a crucial function in overseeing the adherence of Islamic banking institutions to relevant rules, confirming that these organizations conduct their operations in line with prescribed guidelines (Pramesti et al., 2023).

The foundation of Islamic banking lies in Islamic legal principles, which prohibit the application of interest (*riba*) and restrict involvement in sectors deemed unlawful (*haram*), such as gambling or alcohol-related enterprises (Wahyuna & Zulhamdi, 2022). In practice, Islamic banks adopt profit-and-loss sharing arrangements, employing models such as *mudharabah* and *musyarakah*, where earnings are distributed between financial institutions and clients according to previously agreed terms (Sobarna, 2021a). These arrangements promote transparency and equity, fostering financial support for ventures that contribute positively to societal development (Khoiriyah et al., 2023).

The fundamental distinction between Islamic and conventional financial systems lies in the methods of generating income and managing financial risk. Conventional financial institutions primarily depend on interest derived from lending activities as a key revenue stream, whereas Islamic financial institutions utilize a profit-sharing approach that emphasizes fairness and transparency, allowing risk to be distributed equitably between institutions and clients (Sobarna, 2021a). Earlier studies suggest that Islamic financial systems applying these principles tend to exhibit greater resilience and can contribute positively to economic development, particularly by supporting both social welfare and long-term economic balance (Khoiriyah et al., 2023).

Profitability. Profitability within the Islamic banking framework signifies the capacity of financial institutions to produce earnings based on asset utilization. This is commonly assessed using several financial indicators, including Return on Assets (ROA), Return on Equity (ROE), and Profit Margin. Profitability serves as a key metric for evaluating the performance of Islamic financial institutions, as it reflects both the effectiveness of operations and the sustainability of financial outcomes over time. As noted by, ROA recognized as a principal measure of profitability is derived by dividing net earnings by total assets. This indicator reveals how efficiently resources are employed to generate income and is frequently used as a fundamental tool for assessing the financial strength of Islamic financial institutions. Financial Services (Authority, 2020), also states that ROA demonstrates how effectively management applies institutional resources to achieve financial results.

Non-Performing Financing (NPF). The NPF ratio indicates the portion of financing considered problematic, which has the potential to raise the need for loss reserves and reduce the level of profit earned by the bank. A high level of NPF indicates the existence of problematic financing, which may hinder the ability of the institution to generate income. Based on findings from (Azzahra et al., 2024), NPF shows a notable negative impact on the profitability of Islamic financial entities. This conclusion aligns with research conducted by , which reveals that high NPF values increase the necessity for loss provisioning, thereby reducing operational revenue. As a measurement of risk, NPF highlights the likelihood of financial losses, which can ultimately weaken the overall financial health and performance of an Islamic banking institution.

Within the framework of Islamic banking in Indonesia, Non-Performing Financing (NPF) functions as a vital measure indicating the quality of financing. Research conducted by (Novalista et al., 2024) shows that NPF has a detrimental effect on profitability, where rising NPF levels are linked to elevated credit risk. Similar conclusions are presented by (Gusmawanti et al., 2020) who state that high NPF figures can negatively influence financial outcomes due to increased obligations for loss provisioning. As a result, managing NPF effectively becomes essential to ensure the resilience and profit-generating ability of Islamic financial institutions. Based on these insights, the formulated hypothesis is as follows:

H1: NPF has a negative effect on profitability (ROA) in Islamic banks in Indonesia.

Financing to Deposit Ratio (FDR). The Financing to Deposit Ratio (FDR) serves as a key indicator for assessing how efficiently Islamic financial institutions allocate third-party funds into financing activities. Elevated FDR values demonstrate strong capabilities in fund distribution and utilization, which can enhance income especially through profit margin returns. Reveals that maintaining FDR at optimal levels positively influences the profitability of Islamic financial institutions (Marsha et al., 2024). This conclusion is further supported by (Karmila, 2022), who highlight that effective control of FDR is essential for fostering profitability growth, as a balanced ratio helps to maintain equilibrium between liquidity needs and productive fund allocation.

Nonetheless, caution is necessary, as extremely high FDR levels may elevate exposure to liquidity-related risk. (Ardiani et al., 2023) caution that such conditions could strain net operational returns, thereby requiring thorough oversight to preserve financial soundness. As a result, maintaining FDR within a balanced range is vital for ensuring the financial stability and sustained profitability of Islamic financial institutions. In accordance with these insights, the proposed hypothesis is as follows:

H2: FDR affects profitability (ROA) in Islamic banks in Indonesia.

Bank Size. Bank Size, as indicated by total asset value, plays an essential role in shaping operational capacity and financial resilience. Institutions with larger asset bases generally possess broader potential to generate higher income, backed by more substantial resources for conducting operations, expanding activities, and diversifying products and services.

According to findings by (Antwi, 2019a) a larger Bank Size may enhance income-generating ability and profitability, provided that resources are managed efficiently. This perspective is further supported by (Anatasya & Susilowati, 2021) who observe that larger institutions are typically more capable of diversifying offerings and managing financial risks, which contributes positively to profit outcomes.

However, not all research presents uniform conclusions. (Yuan et al., 2022) and (Antwi, 2019a) also note that in certain national contexts, very large Bank Size does not necessarily lead to improved profitability. This discrepancy may occur when asset growth is not matched by sufficient operational effectiveness and sound risk oversight. Therefore, while Bank Size remains a significant factor, its influence on profitability is highly dependent on how effectively assets are managed and on the strategic decisions taken by leadership. Based on this analysis, the proposed hypothesis is:

H3: Bank Size affects profitability (ROA) in Islamic banks in Indonesia.

Operating Expenses to Operating Income (BOPO). The Operating Expenses to Operating Income (BOPO) ratio serves as a crucial metric for assessing the operational efficiency of a financial institution, particularly in managing costs relative to the revenue generated. This metric illustrates how much cost is incurred to generate operating revenue. A lower BOPO value indicates stronger operational efficiency, which corresponds to greater potential for generating profit. According to research by BOPO has a significant inverse relationship with Return on Assets (ROA), suggesting that effective cost management is a critical factor in improving financial outcomes.

Consistent results were also identified in studies by (Nurkholifah, 2022), as well as (Syaidi et al., 2024) both of which revealed that a lower BOPO ratio has a favorable influence on the enhancement of Return on Assets (ROA). In addition, research conducted by (Setia et al., 2023) confirms that operational efficiency directly affects financial outcomes, highlighting that effective cost control is a vital component in supporting the long-term stability and competitive strength of financial institutions, particularly within the Islamic banking sector. Based on these conclusions, the proposed hypothesis is:

H4: BOPO has a negative effect on profitability (ROA) in Islamic banks in Indonesia.

Foreign Ownership Structure. Within Islamic financial institutions, the structure of foreign ownership can act as a moderating factor that affects the relationship between financial indicators and profitability. According to (Badawi et al., 2023) the presence of foreign stakeholders tends to improve operational effectiveness, which in turn supports stronger institutional performance. However, reliance on foreign ownership may introduce certain vulnerabilities to economic resilience, particularly during periods of global financial disturbance. As a result, deeper examination is required to understand the extent to which foreign ownership influences both risk mitigation and profit outcomes within Islamic financial institutions.

Moreover, the configuration of ownership, whether foreign or domestic also holds an important role in shaping institute (Belcaid & Al-Faryan, 2023b) by (Belcaid & Al-Faryan, 2023b) report that domestic ownership may exert a positive influence on profitability, particularly when institutional investors possess strong governance capabilities and integration with local market conditions. In contrast, observe that domestic institutions under state control often show limited performance levels, as their focus tends to prioritize public welfare rather than operational efficiency. On the other hand, (Ambarwati, 2021) demonstrates that foreign ownership can elevate institutional efficiency and effectiveness through the adoption of advanced technologies and improved managerial systems. Drawing from these diverse perspectives, the proposed hypothesis is as follows:

H5: Foreign ownership structure moderates the effect of BOPO on profitability (ROA) in Islamic banks in Indonesia.

Conceptual Framework. This research examines several key variables to determine their impact on the profitability of Islamic banking institutions in Indonesia. Profitability is measured using Return on Assets (ROA), which reflects the capability of the institution to generate income from its total assets. One influential factor is Non-Performing Financing (NPF), which reflects the proportion of financing considered problematic and may lower overall asset quality. Elevated NPF levels tend to negatively influence profitability by increasing the requirement for loss provisions. Findings from (Winawati & Anam, 2020) confirm that NPF significantly reduces ROA, with rising NPF values linked to decreased operational income.

In addition, the Financing to Deposit Ratio (FDR) is used to evaluate the efficiency with which third-party funds are converted into financing. A well-maintained FDR suggests a stable balance between productive lending and liquidity, which can support profitability improvements. Studies by (Ramadhani et al., 2021), show that a sound FDR contributes positively to ROA. However, if the FDR exceeds a manageable level, it may trigger liquidity-related risks that harm financial performance.

The scale of financial institutions also plays a significant role in shaping profit-generating capacity. Institutions with larger asset bases generally have enhanced potential to diversify service offerings, leverage economies of scale, and pursue a wider range of investments, which may contribute to increased income. However, empirical evidence provides mixed conclusions. (Yuan et al., 2022) suggest that larger asset volumes often enable higher profit potential, whereas findings by (Antwi, 2019a) argue that excessive growth in assets may negatively affect financial returns due to rising operational burdens and managerial complexity.

Additionally, the Operating Expenses to Operating Income (BOPO) ratio serves as an important measure of efficiency that influences earnings. A lower BOPO value implies more effective control of operational spending, thereby fostering greater profitability. Research validates that the BOPO ratio exhibits a significant inverse relationship with Return on Assets (ROA), indicating that enhanced cost-efficiency supports superior financial performance.

Moreover, the composition of ownership, especially foreign ownership, operates as a

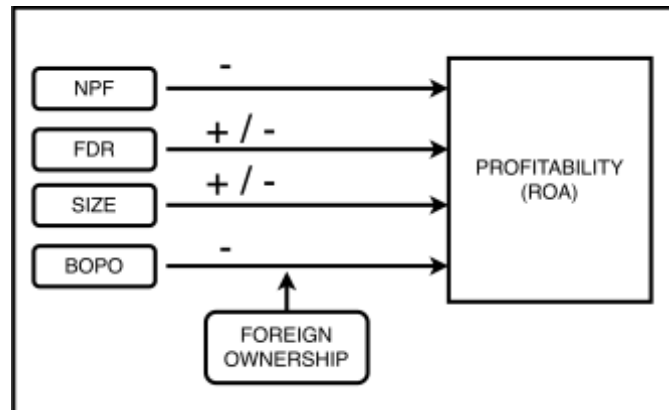


Figure 2. Conceptual Framework

moderating factor in this research. External investors often contribute to increased efficiency by enforcing higher managerial discipline and sharing advanced expertise. Investigations conducted by (Ambarwati, 2021) along with findings by highlight that the effects of foreign ownership on financial performance depend on the particular institutional environment and managerial practices adopted by each financial entity. Therefore, the structure of ownership serves as a crucial factor in determining how efficiency indicators like BOPO affect profitability within the Islamic financial sector in Indonesia.

As depicted in **Figure 2**, the conceptual framework of this study outlines the interaction between core independent variables such as NPF, FDR, bank size, and BOPO and their collective influence on ROA as a measure of profitability. Ownership structure is introduced as a moderating variable that may adjust the strength of the relationships between these independent elements and financial performance. The proposed conceptual framework demonstrates how NPF, FDR, institutional size, and BOPO are expected to shape profitability outcomes, while ownership structure potentially enhances or weakens these effects.

METHODOS

This investigation adopts a quantitative methodology, applying an explanatory design to explore the connections between operational efficiency and profit generation within Islamic financial institutions, as well as to examine the moderating role played by foreign ownership. The explanatory framework was chosen for its suitability in testing cause-and-effect links between independent indicators (NPF, FDR, Bank Size, and BOPO) and the outcome variable (ROA), while incorporating foreign ownership as a moderating factor. The scope of this

analysis is limited to Islamic financial institutions that conduct business in Indonesia under the authority of the Financial Services Authority (OJK). Data used in this study consist of annual reports produced by each financial entity from 2020 to 2024. The emphasis on Islamic financial institutions is based on the unique regulatory and operational environment that distinguishes them from conventional counterparts, especially concerning financing practices that comply with Sharia requirements. The selected variables include NPF, FDR, Bank Size, and BOPO, alongside an examination of the capacity of foreign ownership to influence the link between BOPO and profitability.

Variables and Measurements. This research incorporates three categories of variables: independent, dependent, and moderating. The independent variables consist of Non-Performing Financing (NPF), Financing to Deposit Ratio (FDR), Bank Size, and the Operating Expenses to Operating Income (BOPO) ratio. The outcome variable under investigation is profitability, assessed through Return on Assets (ROA). The moderating factor in this study is the structure of foreign ownership, which is tested to determine whether it amplifies or reduces the influence of operational efficiency on profitability. A summary of the specific variables and the metrics applied is presented in **Table 1**.

Table 1 Summary of Variable Operationalization

No	Variable	Operational Definition	Equation (Percent)
1	Profitability (ROA)	This metric assesses the efficiency of a bank in producing earnings relative to its total assets and is widely recognized as a principal measure of profitability.	$ROA = \frac{Net\ Profit}{Total\ Assets} \times 100$
2	Non-Performing Financing (NPF)	Describes the level of non-performing financing in Islamic banks.	$NPF = \frac{Non-Performing\ Financing}{Total\ Financing} \times 100$
3	Financing to Deposit Ratio (FDR)	Assesses the efficiency of a bank in channeling third-party funds toward financing activities.	$FDR = \frac{Total\ Financing}{Total\ Third-Party\ Funds} \times 100$
4	Bank Size	Measures the operational scale of Islamic banks, indicating financial strength expressed in the natural logarithm of total assets.	$Bank\ Size = \ln(\text{total assets})$
5	BOPO (Operating Expenses to Operating Income)	This ratio indicates operational efficiency in cost management relative to income, where a lower BOPO suggests greater efficiency	$BOPO = \frac{Total\ Operating\ Cost}{Total\ Operating\ Income} \times 100$
6	Foreign Ownership Structure	Measures the percentage of foreign ownership of shares relative to the total outstanding shares. It is used to assess the moderating role.	$foreign = \frac{foreign\ Share\ Ownership}{Foreign\ Ownership} \times 100$

Source: Processed by Author.

Data. The research population comprises all Islamic commercial financial institutions that are registered and monitored by the Financial Services Authority (OJK) in Indonesia. The sample selection process applies a purposive sampling approach, based on the following criteria: (1) availability of complete financial statements covering the years 2020 to 2024, (2) absence of merger or acquisition activities during the observation period, and (3) disclosure of detailed information regarding ownership composition. This research relies on secondary data gathered from annual reports to ensure data validity and objectivity, as these reports have been audited by accredited external parties. The data collection method adopted for this research is documentation, involving the extraction of data from financial statements released by Islamic banks and the OJK during the specified period (2020 to 2024). The documentation technique was chosen because it enables access to credible and verifiable financial information.

Analytical Process. This research utilizes a structured analytical process to explore the relationships among the studied variables. Initially, a descriptive statistical evaluation is performed to highlight the characteristics of each variable, such as central tendency (average), dispersion (standard deviation), and data range (minimum and maximum). Next, a multiple linear regression procedure is applied to assess the direct impact of the independent variables (NPF, FDR, institutional size, and BOPO) on ROA. This analysis also seeks to establish whether the foreign ownership structure modifies the connection between operational efficiency and profitability, with particular attention to the impact of BOPO on ROA. The regression model with a moderating influence adopted in this research is a multiple linear regression model that incorporates a moderation component, as specified in **Equation 1**:

$$ROA_{it} = \alpha + \beta_1 NPF_{it} + \beta_2 FDR_{it} + \beta_3 TotalAsset_{it} + \beta_4 CIR_{it} + \beta_5 BOPO_{it} + \beta_6 (BOPO_{it} \times FRGN_{it}) + \varepsilon_{it} \quad (1)$$

The regression model in this study is formulated to analyze the factors influencing profitability. In the equation, ROA serves as the dependent variable, representing the profitability value. The constant, α (alpha), is the intercept value, which indicates the baseline level of profitability when all independent variables are equal to zero. The terms β_1 , β_2 , β_3 , β_4 and β_5 are the regression coefficients, each indicating the magnitude of the influence of its respective independent variable on profitability. Furthermore, the model includes $BOPO \times FRGN$, an interaction term between the operational efficiency ratio (BOPO) and the foreign ownership structure, which is specifically used to assess its moderating effect.

To validate the regression model, a series of classical assumption tests were conducted, including checks for normality, multicollinearity, autocorrelation, and heteroscedasticity. The purpose of hypothesis testing was to evaluate the impact of the independent variables on the profitability of Islamic banks (as measured by ROA) and to determine whether ownership structure plays a moderating role. The proposed hypotheses are as follows: NPF is presumed to negatively affect profitability; FDR is anticipated to influence profitability; Bank Size is projected to influence profitability; BOPO is expected to exhibit a negative effect on profitability; and foreign ownership is hypothesized to moderate the link between BOPO and

profitability. The significance of the independent variables effects on the dependent variable was tested using the t-statistic.

To examine the hypothesized negative relationships between NPF and ROA, as well as between BOPO and ROA, a left-tailed t-test was applied. The test was formulated with the null hypothesis stating that their respective regression coefficients ($\beta_{1,4,5}$) are greater than or equal to zero, and the alternative hypothesis that the coefficients are less than zero. For assessing the influence of FDR and Bank Size on ROA, a two-tailed t-test was utilized. The corresponding hypothesis was set with the null condition that their coefficients ($\beta_{2,3}$) are equal to zero and the alternative condition that they are not equal to zero. Furthermore, a two-tailed t-test was also performed to investigate the moderating effect of the foreign ownership structure. This was formulated with the null hypothesis that its coefficient (β_6) is equal to zero and the alternative hypothesis that it is not equal to zero.

RESULTS

Descriptive Analysis. A descriptive statistical review was performed to offer a general overview of the data and depict the distribution as well as the dispersion of each variable in the research. This stage is intended to provide preliminary understanding of the variation and central values of the observations, which consist of Islamic financial institutions in Indonesia across the designated observation period. The summary statistics displayed in **Table 2** feature the minimum, maximum, average, and standard deviation for each variable examined in this study: ROA, NPF, FDR, BOPO, Bank Size, and foreign ownership.

Table 2. Descriptive Statistics of Research Variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
ROA	163	0.020	13.580	2.155	2.818
NPF	163	0.000	4.980	1.160	1.264
FDR	163	39.270	118.940	80.782	16.209
BOPO	163	54.850	99.860	83.569	10.884
Size	163	14.120	18.010	16.478	0.804
Foreign	163	0.000	87.420	18.459	26.619

Source: Processed by Author.

The descriptive results displayed in **Table 2** highlight several noteworthy patterns across the study variables. The mean ROA reaches 2.155, with a standard deviation of 2.818, spanning from a minimum of 0.020 up to a maximum of 13.580. This considerable dispersion suggests significant differences in profitability among the sampled Islamic financial institutions, implying variations in the effectiveness of asset utilization. Regarding NPF, which functions as a gauge of financing quality, the average is 1.160 with a standard deviation of 1.264 and values ranging between 0 and 4.980. These figures reflect that some banks successfully keep financing risks very low, while others encounter higher levels of risky financing that could negatively influence their earnings and operational health. Meanwhile, the FDR exhibits a mean value of 80.782 and a standard deviation of 16.209, with the range

extending from 39.270 to 118.940. This broad distribution points to substantial variation in the allocation of third-party funds to financing, where larger FDR figures generally suggest a more proactive deployment of deposits into earning assets.

The BOPO ratio has an average of 83.569 and a standard deviation of 10.884. Elevated BOPO levels imply that considerable portions of income are consumed by operating expenses, indicating that most banks face challenges in achieving high levels of cost-efficiency. The institution size, measured as the logarithm of total assets, averages at 16.478 with a standard deviation of 0.804, varying between 14.120 and 18.010. This indicates a noticeable disparity in scale across the institutions in the sample, where larger entities may possess more substantial resources and market reach, potentially supporting enhanced profitability and efficiency. Finally, foreign ownership displays an average of 18.459 and a standard deviation of 26.619, reaching as high as 87.420 percent. This suggests that several Islamic financial institutions feature substantial foreign participation, which may influence governance practices, strategic decisions, and overall management approaches.

Classical Assumption Test. Prior to conducting the regression analysis, it is important to confirm that all classical assumptions are satisfied to guarantee the validity of the regression model. In this research, several diagnostic tests were performed, including assessments of normality, multicollinearity, autocorrelation, and heteroscedasticity. The findings from these tests are presented as follows:

Normality Test. The purpose of the normality test is to verify whether the residuals in the regression model follow a normal distribution. Establishing normality is important because multiple regression assumes that residuals are normally distributed to produce unbiased and efficient estimates. In this research, the Kolmogorov-Smirnov (KS) test was conducted to evaluate residual distribution. The outcome revealed an Asymptotic Significance (2-tailed) of 0.200, exceeding the threshold of 0.050, indicating insufficient grounds to reject the null hypothesis that residuals are normally distributed. Furthermore, the Monte Carlo significance yielded a value of 0.373, also greater than 0.050, supporting the inference that the residuals follow a normal pattern. The 95 percent confidence interval for the Monte Carlo significance, spanning 0.361 to 0.386, further reinforces this conclusion.

Multicollinearity Test. **Table 3** presents the Tolerance and Variance Inflation Factor (VIF) values for each independent variable used in the regression model, including NPF, FDR, BOPO, institutional size, and the interaction term $\text{BOPO} \times \text{Foreign}$. The multicollinearity test is performed to detect whether there are strong correlations between the independent variables. Excessive multicollinearity can result in unstable regression coefficients, making it difficult to reliably interpret the regression model. This study applies the Variance Inflation Factor (VIF) and Tolerance as diagnostic measures, where a VIF exceeding 10 or a Tolerance value below 0.1 is taken as evidence of serious multicollinearity. As displayed in **Table 3**, all VIF scores are under 10, while all Tolerance values exceed 0.100, suggesting that multicollinearity is not present at a problematic level. Hence, the regression model can be considered free from multicollinearity-related concerns.

Table 3. Multicollinearity Test Results (VIF and Tolerance)

Variable	Tolerance	VIF
NPF	0.574	1.742
FDR	0.744	1.345
BOPO	0.603	1.657
Size	0.717	1.396
BOPO × Foreign	0.694	1.442

Source: Processed by Author

Autocorrelation Test. The Durbin-Watson (DW) statistic yielded a value of 2.178. This value was then compared against the critical values from the Durbin–Watson table: the lower bound (dL) is 1.6811 and the upper bound (dU) is 1.8074 for the given sample size and number of independent variables. Because the calculated DW value of 2.178 is greater than the upper bound dU and less than 4 – dU (2.1926), we can infer that no autocorrelation is present (Savin & White, 1977). These findings confirm the model’s suitability for subsequent statistical testing.

Heteroscedasticity Test. The heteroscedasticity test is conducted to check whether the variance of the residuals remains uniform across all levels of the independent variables. Homoscedasticity is a key condition for ensuring efficient and unbiased parameter estimates. In this research, the Glejser test was employed by regressing the absolute residuals against the independent variables, as detailed in **Table 4**, which presents the coefficients, significance levels, and standard errors for each predictor. As displayed in the table, none of the independent variables exhibit a p-value less than 0.050, indicating the absence of a significant relationship between these variables and the absolute residuals. Accordingly, the model can be considered free of heteroscedasticity.

Table 4. Heteroscedasticity Test (Glejser Test) Results

Variable	Coefficient	Std. Error	t	Sig.
(Constant)	1.150	0.752	1.529	0.128
NPF	0.048	0.027	1.798	0.074
FDR	0.002	0.002	1.130	0.260
BOPO	0.000	0.003	0.064	0.949
Size	-0.062	0.038	-1.647	0.102
BOPO × Foreign	0.000	0.000	0.611	0.542

Source: Processed by Author.

Multiple Linear Regression Analysis. The preliminary regression model explores the direct effects of the independent variables NPF, FDR, BOPO, and Bank Size on ROA without incorporating the moderating factor. As shown in **Table 5**, which reports the estimated coefficients, standard errors, t-values, and significance levels for each predictor, this model evaluates the strength and direction of each variable’s impact on profitability. The regression formula used in this stage is expressed in **Equation (2)**.



Table 5. Results of Multiple Linear Regression without Moderation

Variable	Unstd. Coefficient (B)	Std. Error	Std. Coefficient (Beta)	t-value	Sig.
(Constant)	14.583	1.153		12.643	0.001
NPF	-0.280	0.042	-0.234	-6.737	0.001
FDR	0.008	0.003	0.087	2.877	0.005
BOPO	-0.105	0.005	-0.758	-21.282	0.001
Size	-0.372	0.056	-0.198	-6.651	0.001

Source: Processed by Author

The multiple regression equation (without moderation) is:

$$ROA_{it} = 14.583 - 0.280 \times NPF_{it} + 0.008 \times FDR_{it} - 0.105 \times BOPO_{it} - 0.372 \times Size_{it} \quad (2)$$

Findings from the multiple regression model without moderation provide several important observations concerning the factors that influence the profitability of Islamic financial institutions in Indonesia. The estimated coefficients reveal that NPF exhibits a significant negative association with ROA, as reflected by a coefficient of -0.280 and a p-value below 0.001. This implies that higher levels of problematic financing tend to lower the capacity of these institutions to generate returns, underlining the critical need for prudent risk control. On the other hand, the FDR variable displays a significant positive relationship with ROA, shown by a coefficient of 0.008 and a p-value of 0.005. This result suggests that banks more adept at utilizing third-party funds for financing can enhance their profit-making potential.

BOPO, representing operational efficiency, negatively affects ROA, with a coefficient of -0.105 and a p-value lower than 0.001. This indicates that increasing operational expenses relative to income considerably undermines profitability. Similarly, Bank Size, measured using the logarithm of total assets, shows a significant negative influence on ROA, with a coefficient of -0.372 and a p-value less than or equal to 0.001. This outcome implies that, during the observation period, larger Islamic banks may experience inefficiencies or face diminishing returns to scale, resulting in reduced overall profitability.

Regression with Moderation (Interaction Term). This stage of analysis includes the moderating variable $BOPO \times Foreign$ to assess whether foreign ownership alters the effect of operational efficiency on ROA. **Table 6** presents the regression results, including coefficients and significance values for each independent variable and the interaction term. The corresponding regression model is outlined in Equation (3):

Table 6. Results of Multiple Linear Regression with Moderation

Variable	Unstd. Coefficient (B)	Std. Error	Std. Coefficient (Beta)	t-value	Sig.
(Constant)	12.853	1.186		10.839	0.001
NPF	-0.224	0.042	-0.187	-5.289	0.001
FDR	0.012	0.003	0.131	4.229	0.001



BOPO	-0.108	0.005	-0.778	-22.600	0.001
Size	-0.269	0.059	-0.143	-4.528	0.001
BOPO × Foreign	-0.000	0.000	-0.128	-3.975	0.001

Source: Processed by Author.

The regression equation with the moderating variable is:

$$ROA_{it} = 12.853 - 0.224 \times NPF_{it} + 0.012 \times FDR_{it} - 0.108 \times BOPO_{it} - 0.269 \times Size_{it} - 0.000 \times (BOPO_{it} \times Foreign_{it}) \quad (3)$$

Upon incorporating the moderating variable, the regression results reveal several notable shifts. The coefficient for NPF remains negative and significant at -0.224, although its effect slightly weakens, suggesting that the adverse impact of problematic financing on profitability diminishes marginally in the presence of foreign ownership. The influence of FDR strengthens, with its coefficient increasing to 0.012, indicating that efficient use of third-party funds contributes more robustly to profitability under foreign ownership. BOPO continues to show a significant negative relationship with ROA, with its coefficient becoming slightly more negative at -0.108, implying that operational inefficiency exerts a stronger negative effect when foreign ownership is involved.

Bank Size also maintains a significant negative association with ROA, though its coefficient becomes less negative at -0.269, indicating a modest reduction in the adverse scale effect. Most importantly, the interaction term (BOPO × Foreign Ownership) is negative and statistically significant, with a coefficient of -0.000 and a p-value less than 0.001. This confirms that foreign ownership amplifies the negative impact of operational inefficiency on profitability. In essence, Islamic banks with higher foreign shareholding experience sharper declines in profitability when operational costs are not effectively controlled, underscoring the critical need for enhanced cost efficiency in foreign-influenced institutions.

Model Summary and Simultaneous Effects. The overall validity and strength of the regression models are confirmed through both the F-statistic and the coefficient of determination (R^2). The F-test reveals that the independent variables both in the basic and moderated models exert a significant joint influence on Return on Assets (ROA). In particular, the model without the moderating factor yields an F-value of 280.112 with a p-value less than 0.001, while the model incorporating moderation produces an F-value of 248.236 with a p-value also below 0.001, confirming the statistical robustness of both models.

Furthermore, the R^2 value shows a noticeable increase, rising from 0.876 in the initial model to 0.888 after integrating the moderating variable. This suggests that as much as 88.800 percent of the variation in Islamic bank profitability can be accounted for by the set of predictors, including the interaction between operational efficiency and foreign ownership. This enhanced explanatory capacity reinforces the significance of including moderating influences in the analysis.

To conclude, the findings confirm that variables such as Non-Performing Financing (NPF), Financing to Deposit Ratio (FDR), operational efficiency (BOPO), and institutional scale (Bank Size) have a considerable impact on profitability. Additionally, incorporating foreign ownership as a moderating factor enhances the predictive capability of the model.



These insights carry practical implications for both managers and policymakers, highlighting the importance of efficient risk control, cost management, strategic allocation of resources, and governance particularly in financial institutions with foreign equity participation.

DISCUSSION

Following the estimation of the regression models both with and without the moderating variable, this section explores the impact of each independent variable on the profitability of Islamic financial institutions in Indonesia, as indicated by ROA. The discussion is structured into separate sub-sections for NPF, FDR, Bank Size, and BOPO, along with an examination of the moderating influence of foreign ownership structure. Within each sub-section, the coefficient estimates and levels of significance are examined, the results of hypothesis testing are reviewed, and the findings are compared against existing empirical evidence and relevant theoretical frameworks. The discussion concludes by evaluating the collective influence of the independent variables and the overall explanatory capacity of the regression models.

The Effect of NPF on ROA. This research consistently indicates that Non-Performing Financing (NPF) exerts a significant adverse impact on the profitability of Islamic financial institutions in Indonesia, as measured by ROA. The negative relationship remains stable even after the inclusion of the moderating variable, confirming the robustness of the findings across different model specifications. These results reaffirm that higher levels of NPF are detrimental to bank profitability, underscoring the importance of effective credit risk management in the Islamic banking sector. Higher levels of problematic financing reduce the capacity of Islamic banks to generate income, impairing their operational efficiency and sustainability.

These findings provide strong empirical support for hypothesis H1 and align with fundamental banking theory, which emphasizes asset quality as a critical determinant of financial performance. Such results also concur with earlier empirical studies. Research conducted by (Antwi, 2019a) reports a significant negative effect of NPF on ROA across both domestic and international contexts. This reinforces the argument that sound credit risk management and strict oversight of financing quality play a crucial role in sustaining the long-term profitability of financial institutions.

The implications are clear: Islamic bank managers must continuously enhance credit evaluation procedures, implement rigorous monitoring of financing portfolios, and adopt early warning systems to prevent accumulation of non-performing assets. Accordingly, Islamic bank managers must continuously enhance credit quality control processes to preserve institutional resilience and ensure ongoing financial stability (Marsha et al., 2024).

The Effect of FDR on ROA. The FDR is found to have a significant positive effect on ROA, both before and after the inclusion of the moderating variable. The strength of this relationship increases with the presence of the moderator, indicating greater efficiency in the intermediation function of Islamic banks. This result confirms hypothesis H2, demonstrating that a higher FDR, which reflects greater efficiency in channeling third-party funds into financing, contributes to enhanced bank profitability.

These findings align with the notion that effective utilization of depositor funds into productive financing activities strengthens a bank's earning potential. This is supported by

studies such as (Azzahra et al., 2024), which found that optimal FDR management enhances Islamic bank profitability. However, some studies, such as

note that the effect of FDR can vary depending on macroeconomic conditions and specific bank strategies. From a practical perspective, the results emphasize the importance of balancing fund allocation to maximize returns without compromising risk management. Islamic banks must carefully balance FDR to optimize profitability while maintaining asset quality, especially in a competitive banking environment.

The Effect of Bank Size on ROA. The findings of this study reveal that Bank Size has a statistically significant negative influence on the Return on Assets (ROA) of Islamic banks in Indonesia. This negative relationship remains consistent across models, even after the inclusion of the moderating variable. These results provide strong support for hypothesis H3, which is accepted, confirming that an increase in total assets is associated with reduced profitability in the context of Indonesian Islamic banking.

This finding challenges the conventional assumption that larger institutions automatically benefit from economies of scale. Instead indicating that size may lead to diseconomies of scale or increased operational inefficiencies. These findings are in line with prior studies by (Antwi, 2019a) who observed similar patterns in both Islamic and conventional banking sectors.

The implication is that asset growth alone is not sufficient to enhance profitability. It must be accompanied by improvements in operational oversight, technological integration, and governance (Antwi, 2019a; Hamdillah et al., 2021). Thus, Islamic banks must focus on enhancing their internal capabilities as they expand, ensuring that growth strategies are supported by efficient management practices and innovations that prevent escalating costs and erosion of returns.

The Effect of BOPO on ROA. The BOPO variable demonstrates a strong and statistically significant negative association with Return on Assets (ROA). This relationship remains consistent and even slightly intensifies after the inclusion of the moderating factor, reaffirming its robustness across different model specifications. These consistently significant and negative results confirm the acceptance of hypothesis H4, indicating that higher operational expenses relative to operating income have a substantial adverse impact on the profitability of Islamic banks.

This outcome is aligned with the theoretical perspective that operational efficiency is a critical determinant of financial performance. It also supports prior empirical findings from studies such as (Azzahra et al., 2024), (Antwi, 2019) and (Badawi et al., 2023), which state that the BOPO ratio, representing operational efficiency, plays a key role in determining the financial performance of banks. The practical implication is clear: Islamic banks must continuously focus on reducing operational inefficiencies to improve their financial outcomes. Executives are encouraged to implement cost management strategies, adopt advanced technological systems, and streamline internal processes. Such efforts are essential to maintaining profitability and sustaining competitiveness in an increasingly dynamic and efficiency-driven financial services environment.

The Moderating Role of Foreign Ownership Structure. The analysis reveals that the interaction term between operational efficiency and foreign equity participation, represented

by BOPO multiplied by Foreign, significantly and negatively influences Return on Assets (ROA). The moderation effect remains robust across specifications, supporting the conclusion that foreign ownership strengthens the negative relationship between operational inefficiency and profitability. These results validate hypothesis H5, which is accepted, indicating that the presence of foreign ownership amplifies the adverse impact of operational inefficiency on bank performance.

This finding suggests a compelling dynamic within Islamic financial institutions: as the share of foreign ownership increases, the sensitivity of profitability to cost inefficiencies becomes sharper. In other words, Islamic banks with higher levels of foreign participation experience greater declines in ROA when they operate inefficiently. This aligns with the view that foreign investors, particularly strategic institutional stakeholders, bring with them higher performance expectations and stricter governance standards, which may not tolerate elevated operational costs or bureaucratic inefficiencies.

Several studies reinforce this conclusion. For instance, (Rahman & Nordin, 2022) found that foreign Islamic banks in Malaysia exhibited more stable but less flexible profitability patterns, driven by strict adherence to standardized performance metrics and global operational benchmarks. Similarly, (Hartini et al., 2024) revealed that in Indonesia, foreign ownership in Islamic banks significantly improves performance only when paired with effective cost management and institutional alignment. These findings echo the arguments of (Ambarwati, 2021) and (Rosalina & Nugraha, 2019), who noted that foreign involvement in ownership structure does not automatically translate into profitability gains unless accompanied by robust internal controls, efficient expense structures, and governance transparency.

Moreover, (Saw et al., 2022) emphasize that the origin of the foreign parent company matters. Banks with parent firms from high-GDP countries tend to embed more advanced risk management, performance tracking, and digital systems, which may inadvertently expose operational inefficiencies in the host institution. In light of these findings, Islamic banking institutions in Indonesia with foreign shareholders must proactively align their operational strategies with international expectations. This involves integrating cost-efficiency tools, strengthening internal audit mechanisms, and investing in digital transformation. Failure to meet these standards not only diminishes the strategic value of foreign capital but may also expose the bank to performance volatility and stakeholder dissatisfaction.

Ultimately, foreign ownership can serve as both a catalyst and a constraint: while it introduces access to global expertise and capital, it also raises the bar for operational discipline. To convert foreign involvement into a sustainable advantage, Islamic banks must close the gap between strategic intent and operational execution.

CONCLUSION

This research concludes that Non-Performing Financing (NPF), operational efficiency (BOPO), and bank size have a significant negative impact on the profitability (ROA) of Islamic banks in Indonesia, whereas the Financing to Deposit Ratio (FDR) exerts a positive effect. These results underscore the critical roles of credit risk management, efficient fund



utilization, and cost control in boosting financial performance. Moreover, the interaction analysis reveals that foreign ownership intensifies the negative impact of BOPO on ROA, suggesting that operational inefficiencies are more harmful in banks with higher foreign equity thus highlighting the urgency for robust cost-efficiency strategies.

With an R^2 value exceeding 87 percent, the regression model exhibits strong explanatory capacity, offering practical insights for bank executives aiming to improve financial outcomes and for regulators seeking to craft more effective oversight policies. Even so, this study is limited due to its dependence on quantitative approaches and financial statement data as secondary sources. Future research is encouraged to adopt qualitative methodologies, examine additional moderating variables such as corporate governance or digital transformation, and perform cross-country or cross-system comparisons to enrich the understanding of profitability dynamics in Islamic banking.

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