Risk Management and Financial Performance: An Empirical Analysis of Profitability in Islamic Rural Banks

Fuadillah Putri Valencia[1], Rahmat Kurnia[1*], Welhendra [1], Gusti Dirga Alfakhri Putra[1], Haura Hazimah Melzatia[2]

1. Faculty of Islamic Economics and Business, Universitas Islam Negeri Imam Bonjol Padang, Indonesia
2. Faculty of Economics and Business, Universitas Brawijaya, Indonesia

*corresponding author e-mail: rahmatkurnia@uinib.ac.id

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Abstract

This study examines the profitability of Islamic Rural Bank (BPRS) Carana Kiat Andalas Bukittinggi, focusing on the influence of Financing Risk (NPF), Liquidity Risk (FDR), and Operational Risk (BOPO). The combination of financing risk, liquidity risk, and operational costs collectively impacts bank profitability as they reflect overall financial performance. The research method employed is quantitative, utilizing secondary data sourced from the Quarterly Publication Financial Report of BPRS Carana Kiat Andalas. The results of this study show that financing risk (X1) does not significantly affect profitability, while liquidity risk (X2) has a positive and significant effect on profitability. Additionally, operational costs and operating income (X3), measured by BOPO, do not significantly influence profitability. However, when considered together, financing risk, liquidity risk, and operational financing and operating income are able to explain the profitability variable. The findings contribute to a better understanding of risk management's role in enhancing the financial performance of Islamic rural banks, offering valuable insights for practitioners and policymakers in optimizing risk mitigation strategies.

1. Introduction

The development of the banking industry in Indonesia has increased awareness of the importance of effective risk management in anticipating potential business risks. As one of the key pillars supporting economic stability, banks serve as financial intermediaries that channel funds from surplus units to deficit units. According to Law No. 10 of 1998 on Banking, banking encompasses all aspects related to banks, including institutions, business activities, and operational processes (Ismail, 2015). Banks thus play a vital role in maintaining the smooth functioning of the economy through efficient fund mobilization and distribution.

Profitability is a primary indicator of a bank's performance. It reflects the institution's ability to generate returns from its assets and operations over a given period. According to Bank Indonesia Circular Letter (SERBI) No. 13/30/DPNP/2011, profitability ratios measure a bank's capacity to generate profits and include Return on Assets (ROA) and Return on Equity (ROE). In this study, the focus is on ROA, as it reflects how effectively the bank manages its total assets to produce income (Nuryuwono, 2017). A higher ROA indicates better efficiency and management performance in generating profits from available resources.

In Islamic banking, profitability is closely linked to the implementation of sound risk management. As bank activities become more complex, the types and levels of risks faced also increase, necessitating effective risk control mechanisms (Bank Indonesia Regulation No.

11/25/PBI/2009; Dendawijaya, 2009). Among the key risks influencing profitability are financing risk, liquidity risk, and operational risk.

Financing risk, represented by Non-Performing Financing (NPF), arises when customers fail to fulfill their financing obligations. According to Bank Indonesia Regulation No. 13/23/PBI/2011, this risk stems from the inability of debtors or other parties to meet their obligations to the bank. A high NPF ratio signals potential financial distress and threatens profitability, as profits decline when non-performing assets rise. As stated in POJK No. 18/PJOK.03/2016, banks are categorized as unhealthy when NPF exceeds 5%, underscoring the importance of maintaining financing quality (Novryandi & Abdullah, 2024).

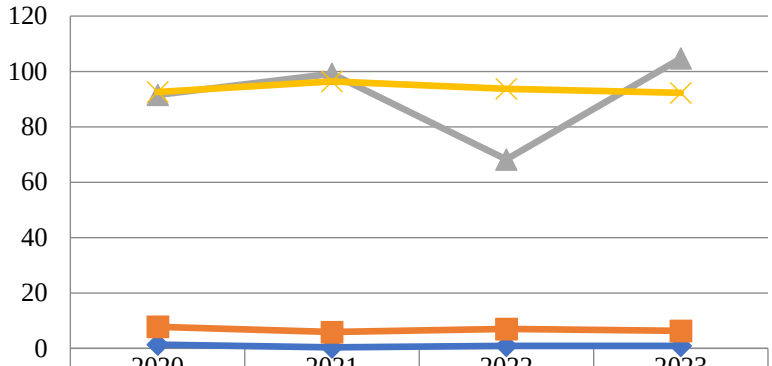
Operational risk, measured by the ratio of Operational Costs to Operational Income (BOPO), reflects the bank's efficiency in managing expenses relative to income. According to Bank Indonesia, the maximum acceptable BOPO is 90%; a lower BOPO indicates better cost control and higher profitability (Annisa et al., 2018). Conversely, an increase in operational costs without proportional income growth leads to declining performance. Liquidity risk, proxied by the Financing to Deposit Ratio (FDR), measures a bank's ability to meet its short-term obligations and support credit expansion. A higher FDR suggests a greater proportion of funds allocated for financing activities, which can enhance profitability through increased returns, provided liquidity remains adequate (Sunaryo et al., 2021).

Although the basic theoretical framework establishes clear relationships, for example, NPF and BOPO are theoretically negatively related to ROA, while FDR can have either a positive or negative relationship depending on liquidity risk management (Novryandi & Abdullah, 2024; Annisa et al., 2018; Sunaryo et al., 2021), empirical findings in the Islamic banking industry often show contradictory results. Several studies found that NPF was insignificant or even had a positive effect on ROA, and FDR often showed varying effects (Fadhilah & Suprayogi, 2019; Destiani et al., 2023). This empirical contradiction creates a gap in the literature, especially in the Islamic Rural Bank (BPRS) segment, which has a micro business model and more focused risks than Islamic Commercial Banks (BUS). This gap indicates the need to retest the fundamental risk-profitability relationship in the context of Islamic micro institutions.

The development of the Islamic banking industry in Indonesia has shown significant growth in recent decades. Sharia Rural Banks (BPRS), as one of the Islamic microfinance institutions, play a crucial role in promoting financial inclusion and the development of microeconomics. BPRS Carana Bukittinggi is one of the BPRS institutions operating in Bukittinggi City, West Sumatra, which focuses on providing Sharia financial services to the local community. Along with this development, BPRS Carana Bukittinggi faces challenges in managing risks that could affect its stability and profitability. Risk management becomes crucial to ensure that the bank can operate efficiently and effectively, as well as to cope with various uncertainties that may arise.

Several data points on profitability, financing risk, and liquidity risk at BPRS Carana Bukittinggi for the years 2020-2023 can be seen in the table below as follows:

Table 1. ROA, NPF, and FDR Data for the Yeas 2020-2023 at BPRS Carana Bukittinggi



	2020	2021	2022	2023
ROA	1,34	0,36	0,89	0,94
NPF	7,78	5,91	7,05	6,29
FDR	91,56	99,14	68,23	104,67
BOPO	92,57	96,4	93,72	92,28

Source: Financial Report of BPRS Carana Bukittinggi (Processed data, 2025)

Based on the data above, it can be concluded that there is an inconsistency in the results compared to the theoretical concept, which states that when ROA increases, FDR will decrease. However, the results obtained show that both ROA and FDR increased. Additionally, while ROA decreased, NPF also reduced, whereas theory suggests that when ROA increases, NPF should decrease (Puteri et al., 2022). While many studies have analyzed the effects of NPF, FDR, and BOPO on bank profitability, the results remain inconsistent. Some studies found that NPF negatively affects profitability, while others reported an insignificant relationship. Similarly, FDR and BOPO show varying impacts across different contexts and time periods. These discrepancies indicate that the relationship between risk management and profitability may depend on specific institutional and operational characteristics.

This research aims to examine the influence of NPF, FDR, and BOPO on ROA at BPRS Carana Kiat Andalas Bukittinggi. The novelty of this study lies in its contextual focus on a single Islamic rural bank, providing empirical evidence from a micro-level institution where the interplay of risk and profitability may differ from that of larger commercial banks. Nevertheless, further development is required to strengthen the literature review, particularly by identifying the research gap that is, where previous findings diverge and why a focused investigation on BPRS is warranted. A more explicit mapping of prior studies will enhance the study's contribution to both theory and practice in Islamic banking management.

Specifically, observations in 2023 show a decline in NPF followed by a decline in ROA, which is contrary to theoretical principles. Similarly, in 2022, there was an increase in NPF followed by an increase in ROA. This inconsistency shows that NPF movements are not always the main determinant of BPRS profitability. BPRS Carana Bukittinggi was chosen not only because of its position as a microfinance institution, but more importantly, because its historical data shows a significant empirical anomaly in the relationship between NPF and ROA in 2022 and 2023. This phenomenon offers a unique opportunity to re-examine the model of risk influence on profitability, particularly the dominant role of efficiency (BOPO), in the context of a typical BPRS.

2. Research Method

This study employs a quantitative research approach to examine the relationship between selected financial ratios and the financial performance of Sharia Rural Bank (BPRS) Carana Kiat Andalas. The quantitative method is appropriate for testing hypotheses and determining the strength and direction of relationships among measurable variables using numerical data. The research utilizes

secondary data obtained through documentation and literature review. The dataset consists of quarterly financial ratios derived from the audited financial statements of BPRS Carana Kiat Andalas for the period 2013–2023. This ten-year time series captures long-term trends in the bank's financial condition and performance.

Data were analyzed using multiple linear regression with the assistance of EViews 12 software to identify the effect of each financial ratio on the bank's performance. The general regression model is specified as follows:

$$Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \cdots + \varepsilon_t$$

Where:
Y_t = Dependent variable (Bank performance)
X_{it}= Independent variables (financial ratios)
β_i = are the coefficients
ε_t = Error term.

The study uses several financial ratios as independent variables, defined and measured as follows:

Table 2. Inclusion and Exclusion Criterion

Variable	Type	Formula	Expected Effect
Y	Dependent	$\text{ROA} = \frac{\text{Net Income}}{\text{Total Assets}} \times 100\%$	—
X1	Independent	$\text{NPF} = \frac{\text{Non-Performing Financing}}{\text{Total Financing}} \times 100\%$	Negative
X2	Independent	$\text{FDR} = \frac{\text{Total Financing}}{\text{Third-Party Funds}} \times 100\%$	Positive
X3	Independent	$\text{BOPO} = \frac{\text{Operating Expenses}}{\text{Operating Income}} \times 100\%$	Negative

Source: Processed data (2024)

The analytical process in this study is conducted through several systematic stages. First, data collection is carried out by obtaining financial data from the official financial statements of BPRS Carana Kiat Andalas. Second, data preparation involves organizing the collected data into a quarterly time-series format covering the 2013–2023 period to ensure consistency and suitability for econometric analysis. Third, descriptive statistical analysis is employed to summarize the main characteristics of each research variable, including the mean, standard deviation, minimum, and maximum values. This step provides an initial overview of the data distribution and variability.

Fourth, classical assumption tests are performed to ensure that the estimated model satisfies the assumptions of the Ordinary Least Squares (OLS) method. These diagnostic tests include a normality test using the Jarque–Bera statistic, a multicollinearity test based on the Variance Inflation Factor (VIF), a heteroscedasticity test using the Breusch–Pagan–Godfrey method, and an autocorrelation test employing either the Durbin–Watson statistic or the Breusch–Godfrey Lagrange Multiplier (LM) test. Finally, regression estimation is conducted using multiple linear regression analysis to identify variables that significantly influence Return on Assets (ROA). Hypothesis testing is then carried out through partial significance testing using the t-test, simultaneous significance testing using the F-test, and evaluation of the coefficient of determination (R^2) to assess the explanatory power of the model.

3. Result and Discussion

Descriptive data analysis is used to examine data by observing the maximum value, minimum value, average value (mean), and standard deviation value, including Non-Performing Financing (NPF), Financing to Deposit Ratio (FDR), Operational Costs and Operational Income (BOPO), and Return on Assets (ROA).

Table 3. Descriptive Statistical Test Results

Criterion	Y	X1	X2	X3
Mean	3.278636	24.94477	328.9452	95.61091
Median	0.720000	21.67000	90.57000	96.84000
Maximum	92.17000	56.62000	459.6700	177.9500
Minimum	0.040000	5.910000	58.03000	0.000000
Std. Dev.	13.78314	16.40537	1536.626	37.89998
Skewness	6.304471	0.568527	6.390882	-0.802892
Kurtosis	41.16958	1.992970	41.90344	4.409367
Jarque-Bera	2962.487	4.229502	3074.227	8.368899
Probability	0.000000	0.120663	0.000000	0.015231
Sum	144.2600	1097.570	14473.59	4206.880
Sum Sq. Dev.	8168.918	11572.85	1.02E+08	61765.55
Observations	44	44	44	44

Source: Processed data (2024)

Based on the descriptive statistical analysis presented in Table.3 several key observations can be made regarding the financial performance of BPRS Carana Kiat Andalas Bukittinggi over the 2013–2023 period. The Non-Performing Financing (NPF) ratio exhibits a relatively high average value of 24.94%, with a median of 21.67%, indicating persistent credit quality challenges during the observation period. The NPF reached its peak at 56.62% in the third quarter of 2015, while the lowest level of 5.91% was recorded in the fourth quarter of 2021, suggesting a notable improvement in asset quality toward the end of the period. The Financing-to-Deposit Ratio (FDR) demonstrates substantial volatility, as reflected in a very high mean value of 328.95% compared to a median of 90.57%. This discrepancy indicates the presence of extreme values, with the highest FDR of 459.67% occurring in the third quarter of 2014 and the lowest value of 58.03% in the third quarter of 2016. Such fluctuations suggest periods of aggressive financing relative to deposit mobilization, potentially implying liquidity management challenges.

Furthermore, the ratio of Operational Costs to Operational Income (BOPO) records an average of 95.61% and a median of 96.84%, reflecting generally high operational inefficiency throughout the period. The BOPO ratio peaked at 177.95% in the first quarter of 2015, indicating that operational costs substantially exceeded operating income during that quarter. In contrast, the minimum value of 0.00% observed in the first quarter of 2022 may reflect exceptional conditions, such as restructuring or reporting adjustments. Lastly, the Return on Assets (ROA) shows an average value of 3.28% with a median of 0.72%, highlighting uneven profitability performance over time. The exceptionally high

ROA of 92.17% recorded in the first quarter of 2013 suggests the presence of extraordinary income or accounting effects, whereas the lowest ROA of 0.04% in the second quarter of 2014 indicates a period of very weak profitability. Overall, these descriptive statistics reveal considerable variability in the financial ratios of BPRS Carana Kiat Andalas Bukittinggi, reflecting fluctuating conditions in asset quality, liquidity, efficiency, and profitability during the 2013–2023 period.

Classical Assumption Test

Normality Test

The significance criterion of more than 0.05 means that the variable is normally distributed; however, if the significance is less than 0.05, it indicates that the variable is not normally distributed.

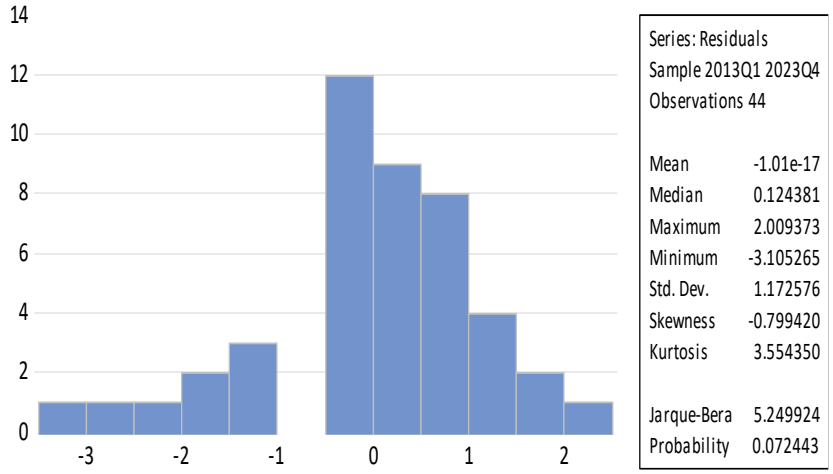


Figure 1. Normality Test Results (Processed data, 2024)

Based on the normality test results in Diagram 1, the Jarque-Bera statistic shows a value of 5.249924 with a probability value of 0.072443, which exceeds 0.05. This means that the regression model and the data used in this study can be confirmed to be normally distributed.

Heteroscedasticity Test

The decision rule for the Glejser test is that if the significance is greater than $\alpha = 0.05$, there is no heteroscedasticity problem. Conversely, if the significance value is less than $\alpha = 0.05$, it indicates a heteroscedasticity issue.

Table 4. Heteroscedasticity Test Results

Heteroskedasticity Test : Glejser			
Null hypothesis : Homokedasticity			
F-statistic	2.227789	Prob. F(3.40)	0.0998
Obs*R-squared	6.299205	Prob. Chi-Squared (3)	0.0979
Scaled examplained SS	7.206584	Prob. Chisquare (3)	0.0656

Source: Processed data (2024)

Based on the results in Table 4, the heteroscedasticity test shows an F value of 0.0998 > 0.05, which means that there is no heteroscedasticity symptom in this regression model and it can be used for further analysis.

Multicollinearity Test

If the Variance Inflation Factor (VIF) value is less than 10, multicollinearity is not considered to occur**.**

Table 5. Multicollinearity Test Results

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.335621	9.991049	NA
X1	0.000130	3.422333	1.016807
X2	1.48E-08	1.064707	1.017018
X3	2.39E-05	7.514016	1.000255

Source: Processed data (2024)

Based on the results of the multicollinearity test in Table 5, it can be seen that the centered VIF values for X1 (1.016807), X2 (1.017018), and X3 (1.000255) are all less than 10, which indicates that there is no multicollinearity present, meaning the multicollinearity test has been passed.

Autocorrelation Test

Table 6. Autocorrelation Test Results

R-squared	0.299020	Mean dependent var	-0.298963
Adjusted R-squared	0.246447	S.D. dependent var	1.400517
S.E. of regression	1.215753	Akaike info criterion	3.315112
Sum squared resid	59.12218	Schwarz criterion	3.477311
Log likelihood	-68.93246	Hannan-Quinn Criter.	3.375263
F-statistic	5.687666	Durbin-Watson stat	1.498656
Prob (F-statistic)	0.002429		

Source: Processed data (2024)

Based on Table 6, the Durbin Watson statistic obtained is 1.498656. Referring to the Durbin Watson table with a sample size of n = 44 and k = 3 independent variables, the upper critical value (dU) is approximately 1.684. Since the calculated Durbin Watson value (1.498) is less than dU, the result falls within the inconclusive region, indicating a potential presence of positive autocorrelation in the regression residuals.

Time Series Regression Analysis

This test measures whether there is an influence between one variable and another, as a function of multiple linear regression analysis.

Table 7. Time Series Regression Test Results

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-0.976110	0.579328	1.684901	0.0998

X1	0.013973	0.011396	1.226171	0.2273
X2	0.000492	0.000122	4.047009	0.0002
X3	0.001743	0.004892	0.356173	0.7236

Source: Processed data (2024)

Hypothesis Testing

The T-test is used to determine whether the independent variables (NPF, FDR, BOPO) have an effect on the dependent variable (ROA). If the significance value is < 0.05, the regression model can be used to predict the dependent variable, meaning the independent variables have an effect on the dependent variable.

Table 8. T-Statistic Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.976110	0.579328	1.684901	0.0998
X1	0.013973	0.011396	1.226171	0.2273
X2	0.000492	0.000122	4.047009	0.0002
X3	0.001743	0.004892	0.356173	0.7236

Source: Processed data (2024)

The effect of the independent variables on the dependent variable, based on the T-statistic test results, is as follows:

The test result for variable X1 (NPF) shows a t-value of 1.226171, which is less than the t-table value of 2.021075, with a significance value of 0.2273 > 0.05. Thus, it can be concluded that variable X1 (NPF) does not have a significant effect on variable Y (ROA). The test result for variable X2 (FDR) shows a t-value of 4.047009, which is greater than the t-table value of 2.021075, with a significance value of 0.0002 < 0.05. Therefore, it can be concluded that variable X2 (FDR) has a significant effect on variable Y (ROA). The test result for variable X3 (BOPO) shows a t-value of 0.356173, which is less than the t-table value of 2.021075, with a significance value of 0.7236 > 0.05. Thus, it can be concluded that variable X3 (BOPO) does not have a significant effect on variable Y (ROA).

Table 9. Simultaneous F-Test Results

R-squared	0.299020	Mean dependent var	-0.298963
Adjusted R-squared	0.246447	S.D. dependent var	1.400517
S.E. of regression	1.215753	Akaike info criterion	3.315112
Sum squared resid	59.12218	Schwarz criterion	3.477311
Log likelihood	-68.93246	Hannan-Quinn Criter.	3.375263
F-statistic	5.687666	Durbin-Watson stat	1.498656
Prob (F-statistic)	0.002429		

Source: Processed data (2024)

The F-value of 5.687666 > the F-table value of 2.838745 means that the null hypothesis (Ho) is rejected and the alternative hypothesis (Ha) is accepted, with a significance value of 0.002429 < 0.05. Thus, it can be concluded that X1 (NPF), X2 (FDR), and X3 (BOPO) simultaneously influence Y (ROA).

Coefficient of Determination (R2) Test

The coefficient of determination (R2) is often used in cross-sectional data because there is a high variation between each observation, which causes the results to show relatively low values. In contrast, a high coefficient of determination (R2) is indicated by consistent data.

Table 10. Coefficient of Determination Test Results

R-squared	0.299020	Mean dependent var	-0.298963
Adjusted R-squared	0.246447	S.D. dependent var	1.400517
S.E. of regression	1.215753	Akaike info criterion	3.315112
Sum squared resid	59.12218	Schwarz criterion	3.477311
Log likelihood	-68.93246	Hannan-Quinn Criter.	3.375263
F-statistic	5.687666	Durbin-Watson stat	1.498656
Prob (F-statistic)	0.002429		

Source: Processed data (2024)

The adjusted R-squared value is 0.246447 or 24.6447%, which indicates that the independent variables X1 (NPF), X2 (FDR), and X3 (BOPO) explain 24.6447% of the variation in the dependent variable Y (ROA). The remaining 75.3553% (100 – Adjusted R-squared) is described by other variables.

The Effect of Financing Risk on Profitability

In the first hypothesis (H1), the financing risk variable is hypothesized to have a negative and significant effect on profitability. In this analysis, the financing risk variable is measured using NPF. The statistical test results indicate that financing risk has a positive t-statistic value of 1.226171, which is lower than the t-table value of 2.021075. Furthermore, the probability value obtained is 0.2273, which exceeds 0.05. This indicates that financing risk has no positive and no significant effect on profitability, leading to the rejection of H1.

According to risk management theory, the greater the credit or financing risk, the higher the costs a bank must incur to manage such risk, which can reduce its profitability. High financing risk can diminish a bank's profitability because banks with elevated financing risk generally need to allocate larger provisions for financing losses, thereby reducing the profits available (A. Rahmawati, 2020). However, the findings of this study indicate that financing risk does not have a positive and significant effect on profitability. These results are consistent with capital structure theory, which posits that the basic assumption that high financing risk is directly associated with a decline in profitability may not always hold true, particularly under stable market conditions and with effective risk management. In such cases, banks with efficient risk management can mitigate the adverse impact of financing risk on profitability (Ritonga et al., 2023). This can be observed in the Financial Statements of BPRS Carana Kiat Andalas for the years 2022–2023, where the NPF in 2022 stood at 7.05, and profitability, as measured by ROA, was 0.89. In 2023, although the NPF decreased to 6.29, the company's ROA increased to 0.94. This indicates that an increase in financing risk does not necessarily reduce a company's profitability, as effective risk management strategies can sustain profitability levels.

These findings are consistent with several prior studies. For example, research conducted by Rahmawati, which examined the effect of NPF on profitability in Islamic banks in Indonesia, found that NPF had no significant effect on ROA, with a significance value of 0.198 > 0.05 (F. D. Rahmawati & Hassan, 2020) Research conducted by Diana also demonstrated similar results, with a calculated t-value of 1.135, which is lower than the t-table value of 1.980, and a significance level of 0.254, indicating that NPF has no significant relationship with ROA(Diana et al., 2023). Similarly,

Santoso's study concluded that NPF has no significant effect on ROA, with a significance value of 0.312 > 0.05 (Santoso & Krakatau, 2025).

However, there are studies that contradict these findings. Tusiyani, in her research, found that NPF has a significant negative effect on ROA, with a significance value of 0.032 < 0.05, indicating that an increase in NPF may reduce ROA (Tusiyani et al., 2024). Similarly, the study by Zulkarnain and Siregar concluded that NPF has a negative effect on ROA, with a t-value exceeding the t-table value (2.543 > 1.987), indicating that non-performing financing can significantly reduce the bank's profitability (Dzulkurnain, 2017). Based on the analysis, it can be concluded that financing risk does not have a positive or significant effect on BPRS Carana Kiat Andalas in the period 2013–2023.

The Effect of Liquidity Risk on Profitability

In the second hypothesis (H2), liquidity risk was hypothesized to have a negative and significant effect on profitability. In this study, liquidity risk was measured using FDR. Based on the statistical test results, the t-statistic value of 4.047009 exceeds the t-table value of 2.021075. Furthermore, the probability value of 0.0002 is lower than the significance level of 0.05. These results indicate that liquidity risk has a positive and significant effect on profitability, thereby rejecting H2, as the findings demonstrate that an increase in FDR—reflecting higher liquidity risk—actually exerts a positive influence on profitability.

According to the liquidity risk theory, elevated liquidity risk has the potential to reduce bank profitability because banks must allocate more funds to riskier financing, while limited liquidity reserves can diminish financial flexibility. This study finds that a higher FDR generally exerts a negative effect on profitability, as increased liquidity risk reduces the bank's capacity to generate income from existing financing activities. An excessively high FDR can also heighten liquidity risk. If an Islamic bank does not maintain adequate liquidity reserves to meet urgent liquidity needs, such a risk can disrupt the bank's operations. Therefore, these significant results also underscore the importance of effective liquidity management to maintain a balance between financing disbursement and the availability of liquid funds (Nugraheni & Alam, 2014).

However, in this study, the findings indicate that liquidity risk has a positive effect on profitability. This can be explained by the "Positive Signal" theory proposed by Merton in Nisa, which asserts that banks with high FDR may be perceived as being more active in providing financing and more aggressive in expanding their business. In this context, a high FDR reflects that the bank channels a greater proportion of its funds to customers, potentially generating higher profits through financing margins. This, in turn, can increase operational income, ultimately exerting a positive impact on the bank's profitability. Furthermore, banks with high liquidity risk may signal strong attractiveness to customers, enabling them to secure a larger volume of third-party funds that can be allocated for financing activities (Alshouha et al., 2025).

This can be observed in the financial statements of BPRS Carana Kiat Andalas for the 2013–2014 period. In 2013, the FDR stood at 99.06, while profitability as measured by ROA was 5.16. In 2014, although the FDR declined to 89.58, the company's ROA increased to 6.45. This indicates that an increase in liquidity risk does not necessarily reduce a company's profitability, as effective risk management strategies can maintain profitability stability. These findings are consistent with several previous studies. Research conducted by (Muhamad, 2023) found that FDR has a positive and significant effect on ROA in Islamic banking. Another study likewise demonstrated that FDR exerts a significant influence on ROA (sig-t = 0.019 < 0.05) (Syifa, 2018). Windriya (2018) also identified a positive and significant effect of FDR on ROA in the context of Islamic banking in Indonesia.

However, several studies have reported findings inconsistent with this result. Research conducted by Widodo indicated that the FDR variable does not exert a significant influence on ROA, with a t-statistic of 1.982 falling below the t-table value of 2.101, and a significance level of 0.073, which exceeds the 0.05 threshold (Widodo, 2021). Another study also found that FDR did not have a significant effect on ROA, with a t-statistic of -1.66, which is lower than the t-table value, and a

probability value of 0.1 (Gusmawanti et al., 2020). Thus, this study provides empirical evidence that liquidity risk exerts a positive and significant influence on the profitability of BPRS Carana Kiat Andalas Bukittinggi during the 2013–2023 period.

The Effect of Operational Risk on Profitability

In the third hypothesis (H3), the operational cost variable (BOPO) has a negative and significant effect on profitability. Based on the calculation results, the t-statistic value of 0.356173 is lower than the t-table value of 2.021075. Moreover, the probability value of 0.7236 exceeds the significance level of 0.05. This indicates that H3 is rejected, meaning that the BOPO variable does not have a positive and significant effect on profitability.

According to the Operational Efficiency Theory, a higher BOPO ratio indicates greater costs incurred by the bank to generate income, which in turn can reduce profitability. A high BOPO ratio suggests inefficiency in managing operations, potentially exerting a negative impact on profitability. An elevated BOPO ratio tends to diminish profitability because the increase in operational expenses is not always matched by a proportional increase in operational income. If a bank fails to effectively manage its operational costs, its profitability will inevitably decline (Valdiansyah & Murwaningsari, 2022).

In this study, it was found that BOPO has no positive and significant effect on profitability. This can be explained by the Non-Linear Cost Theory or the Operational Efficiency Theory. These theories suggest that even if operational costs increase, this does not necessarily result in a direct decline in profitability, provided the bank generates sufficient income or is able to enhance its operational efficiency. In this case, despite a high BOPO ratio, the bank may offset the rising costs through higher revenues or more efficient cost management. Even with a high BOPO ratio, a bank that improves service quality and generates higher operating income can maintain its profitability, as effective management of costs and revenues can mitigate the adverse effects of elevated operational expenses (Uddin, 2022). This is evident in the financial statements of BPRS Carana Kiat Andalas for the years 2017–2018. In 2017, the BOPO stood at 107.83, with profitability as measured by ROA at 0.70. In 2018, although the BOPO declined to 95.04, the company's ROA increased to 0.82. This indicates that an increase in operational risk does not necessarily reduce the company's profitability, as effective risk management strategies can maintain profitability stability.

The study found that income diversification had no significant effect on profitability (ROA) in Islamic commercial banks in Indonesia during the 2015–2019 period (Kusumadewi et al., 2024). Although their research did not directly examine BOPO, the findings support the notion that operational efficiency ratios, such as BOPO, do not necessarily exert a significant impact on ROA, particularly when banks have implemented income diversification strategies. These findings indicate that operational costs, while important, were not the primary factor influencing profitability at BPRS Carana Kiat Andalas during the 2013–2023 period. The results of this study are consistent with several previous studies. Research conducted by Setiawan found that BOPO had no significant effect on ROA, with a t-statistic of 0.491, which is lower than the t-table value of 2.101, and a significance level of 0.621, which exceeds the 0.05 threshold. Similarly, the study conducted by Arifin found that BOPO had no significant effect on ROA, with a t-statistic of 1.102, which is lower than the t-table value of 2.014, and a probability value of 0.223 (Arifin, 2020). Nugroho and Wibowo likewise demonstrated that BOPO had no significant effect on ROA, with a t-statistic of 0.845, lower than the t-table value of 2.021, and a significance value of 0.413 (Nugroho & Wibowo, 2019).

However, several studies have produced results that are not consistent with the present research. The study by Rahadian and Kusuma found that BOPO had a significant effect on ROA, with a t-statistic of 3.212, exceeding the t-table value of 2.014, and a probability value of 0.004 (Rahadian &

Kusuma, 2020). Putri's research also indicates that BOPO has a significant effect on ROA, with a t-statistic of 2.945, exceeding the t-table value of 2.032, and a significance level of 0.006 (Putri, 2018). Thus, this study provides empirical evidence that BOPO has no significant effect on the profitability of BPRS Carana Kiat Andalas Bukittinggi during the 2013–2023 period.

The Effect of Financing Risk, Liquidity Risk, and Operational Risk Simultaneously on Profitability

In the fourth hypothesis (H4), namely that financing risk, liquidity risk, and operational costs simultaneously exert a significant effect on profitability, the analysis results show an F-statistic of 5.687666, exceeding the F-table value of 2.838745, with a significance value of 0.002429, which is below the 0.05 threshold. This indicates that Ho is rejected and Ha is accepted, meaning that financing risk, liquidity risk, and operational costs jointly have a significant influence on profitability.

This study finds that NPF, FDR, and BOPO simultaneously have a significant impact on ROA. The Multifactor Theory posits that the combined influence of financing risk, liquidity risk, and operational costs affects bank profitability, as these three factors collectively reflect overall financial performance. An integrated approach to managing financing risk, liquidity, and cost efficiency can enhance both the stability and profitability of the bank. Elevated financing risk, if not properly managed, may diminish bank revenues due to the increased provision for financing losses. Liquidity risk likewise affects the bank's ability to meet its obligations, while excessive operational costs can burden the bank and reduce its generated profits (Qabajeh et al., 2023).

The findings of this study indicate that NPF, FDR, and BOPO simultaneously exert a significant influence on ROA. This is attributed to the interaction and synergistic effects among these variables in reflecting the bank's financial soundness. An integrated management approach to these three factors has a substantial impact on overall profitability. The study also underscores the importance of efficient financial risk management in achieving optimal profitability. The results suggest that changes in the management of financing risk, liquidity risk, and operational costs directly affect the company's profitability performance (ROA). Effective management of these variables can enhance the bank's profitability by maintaining a balance between financing provision, well-managed liquidity, and controlled operational costs. Conversely, poor management of any of these variables—such as high operational expenses—may reduce profits even when financing and liquidity risks are well controlled (Kartika et al., 2025).

The findings of this study are consistent with several previous studies. Research conducted by Suryani and Pratama found that NPF, FDR, and BOPO have a significant effect on ROA, with an F-statistic of 7.342 exceeding the F-table value of 3.112 and a significance level of 0.001 (Suryani & Pratama, 2021). Similar results were reported by Nugraha and Fadilah, showing that these variables collectively influence ROA, with an F-statistic of 6.401 exceeding the F-table value of 2.934 and a significance level of 0.004 (Nugraha & Fadilah, 2020). Rahman and Astuti also reported comparable findings, indicating that NPF, FDR, and BOPO simultaneously exert a significant influence on ROA, with an F-statistic of 5.879 exceeding the F-table value of 2.756 and a significance level of 0.003 (Rahman & Astuti, 2019).

However, some studies present results that diverge from the findings of this research. Kurniawati and Hidayat concluded that NPF, FDR, and BOPO collectively do not have a significant effect on ROA, with an F-statistic of 1.874 falling below the F-table value of 2.913 and a significance level of 0.126 (Kurniawati & Hidayat, 2020). Likewise, Safira's research found that while BOPO significantly affects ROA, NPF and FDR collectively do not show a significant influence on ROA, with an F-statistic of 2.112 falling below the F-table value of 2.752 and a significance level of 0.087. Overall, the results of this study demonstrate that NPF, FDR, and BOPO collectively have a significant effect on ROA, supporting the theory that these three variables are important indicators in assessing a bank's financial performance (Safira, 2018).

4. Conclusion

From a managerial perspective, the findings imply that BPRS management should prioritize maintaining an optimal FDR level to strengthen profitability. Liquidity should be managed dynamically neither too tight, which could restrict financing opportunities, nor too loose, which could reduce efficiency. Although NPF is not statistically significant in this study, the bank should continue to implement prudent financing practices to prevent long-term deterioration in asset quality. In terms of BOPO, management should consider enhancing operational efficiency not merely by reducing costs but by improving productivity and service quality. From a theoretical perspective, the study provides empirical evidence that challenges conventional assumptions about risk–return relationships in Islamic banking. The insignificant effect of NPF and BOPO, along with the positive effect of FDR, suggests that institutional characteristics, market structure, and managerial strategies can moderate the relationship between risk and profitability. This indicates that general theoretical models may need contextual adjustments when applied to Islamic rural banks.

However, this research has certain limitations. The analysis is based on a single institution and a limited time period, which restricts the generalizability of the results. Future studies are encouraged to expand the sample to include multiple BPRS across different regions and apply more advanced econometric approaches, such as panel data regression or dynamic models, to capture variations over time. Adding variables such as capital adequacy, bank size, and macroeconomic indicators would also enrich the understanding of profitability determinants in Islamic banking. In conclusion, this study contributes to the ongoing discussion on how various dimensions of risk management affect the profitability of Islamic rural banks. While the findings may not fully align with established theories, they highlight the importance of contextual understanding and adaptive risk management in sustaining financial performance.

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