

## Factors Influencing Non-Performing Financing in Local and Foreign Islamic Banks in Malaysia: The Impact of Staff Efficiency as a Moderator

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### ***Abstract***

#### **Keywords:**

*Control of Corruption, Staff Efficiency, Non-Performing Financing, Unemployment Rate, Islamic Banking*

*The high level of Non-Performing Financing (NPF) in Malaysian Islamic banks, particularly higher fluctuations in foreign banks compared to local banks during 2017-2023, threatens financial stability with a market share of 40 percent. This study aims to analyze the influence of internal factors (ROA, FDR, FLP) and external factors (UR, IR, COC) on NPF, with staff efficiency as a moderator. Using a quantitative approach with panel data regression (Fixed Effect Model) and hierarchical regression, secondary data from Fitch Connect, Department of Statistics Malaysia, and Worldwide Governance Indicators. The population includes 16 Islamic banks (11 local, 5 foreign), a purposive saturated sample yielding 112 observations (77 local, 35 foreign). The results show that all six factors significantly affect NPF in local banks, while five factors in foreign banks; staff efficiency moderates FDR, FLP, IR for local and ROA, FLP, UR, IR, COC for foreign banks, improving risk mitigation. The conclusion recommends investment in staff training and anti-corruption policies to reduce NPF.*

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## INTRODUCTION

The phenomenon of high levels of Non-Performing Financing (NPF) in Malaysian Islamic banks, especially the significant difference between local and foreign banks from 2017 to 2023. Data shows that foreign banks such as Kuwait Finance House and HSBC Amanah often record NPF above 4.5 percent, while local banks tend to be more controlled despite fluctuations, reflecting the challenges of adapting to the local market for foreign banks.

This phenomenon was exacerbated by previous global economic crises that triggered widespread NPF spikes, such as the 2008 Global Financial Crisis that led to 124 NPL-related systemic crises from 1970 to 2007. In Malaysia, high NPFs threaten national profitability and financial stability, with Islamic banking's market share reaching 40 percent by 2024.

The main problem arises from a lack of in-depth understanding of internal factors such as ROA, FDR, and FLP, as well as external factors such as unemployment, inflation, and Control of Corruption (COC), which affect NPF differently in local and foreign banks. Previous research has shown that ROA and FDR are often negatively related to NPF, while FLP is positively related, but results vary across countries.

Furthermore, external factors such as unemployment and inflation increase NPFs by reducing borrowers' repayment capacity, while weak COCs exacerbate credit risk in both the public and private sectors. High levels of corruption are positively correlated with NPLs in emerging markets, underscoring the need for comprehensive measures such as the Worldwide Governance Indicators.

Another crucial issue is the lack of empirical studies on staff efficiency as a moderating variable in mitigating the impact of these factors on NPFs, particularly in the context of Malaysia, a global Islamic financial hub. Only a few studies, such as Nor et al., have explored this in the MENA region, leaving a gap for moderation analysis in Southeast Asia.

This study aims to analyze the influence of internal factors (ROA, FDR, FLP) and external factors (UR, IR, COC) on NPF in local and foreign Islamic banks in Malaysia for the period 2017-2023, as well as the role of staff efficiency as a moderator. The urgency lies in its contribution to national financial stability and bank strategies in facing economic volatility, while the novelty of the study lies in the integration of COC as a current predictor and moderator of staff efficiency comprehensively in Malaysia, going beyond previous studies that were limited to internal factors only.

## METHOD

Re-narrate based on the title, our introduction, our bibliography, re-narrate the research methods section with the format of research types and methods, data analysis instruments and techniques, population and sample, and research procedures. Make sure the references used previously are reused, but add several relevant references in each paragraph such as Sugiyono, Sudaryono, Emzir, Creswell make sure the references come from the Google Scholar database and are not fake or estimated references. Also make sure the section is written comprehensively in a coherent paragraph with a systematic and logical order. References from 2021-2025 that can be accessed on the internet and have an active doi. Make sure the references previously in this paragraph are also used. Eliminate the use of em dashes,

The main research instrument is secondary data in the form of financial ratios from Islamic bank annual reports (NPF, ROA, FDR, FLP, Staff Efficiency) obtained from the Fitch Connect Database, as well as macroeconomic data (Unemployment Rate, Inflation Rate, Control of Corruption) from the Department of Statistics Malaysia and Worldwide Governance Indicators. Data analysis techniques include panel data regression with a Fixed Effect model through Generalized Least Square (GLS) to address heteroscedasticity, as well as multiple hierarchical regression to test the moderating effect of Staff Efficiency. Sugiyono stated that panel regression is effective for cross-section time-series data because it considers variations between units and time. Emzir added that quantitative analysis like this requires diagnostic tests (Hausman, Wooldridge, Modified Wald) to ensure that classical assumptions are met, while Creswell emphasized the integration of hierarchical models in a mixed regression design for interaction variables.

The study population included all Islamic banks operating in Malaysia, consisting of 11 local banks and 5 foreign banks, with an observation period of 2017-2023. The sample was purposively saturated, i.e., the entire population (77 observations for local banks and 35 for foreign banks), because complete data was available and met inclusion criteria such as consistency of financial reporting. This sampling technique is in accordance with Sugiyono's recommendation for purposive sampling for secondary data research where accessibility and relevance are prioritized. Sudaryono also supports the saturated sample approach in panel studies to increase representativeness and reduce sampling bias in the financial context.

The procedure begins with secondary data collection from verified sources, followed by pre-processing through data cleaning and transformation of interaction variables (e.g., ROA\*STAFFX). Diagnostic tests (heteroscedasticity, autocorrelation, Hausman) are then performed to select a fixed effects model, followed by multiple and hierarchical regression estimation using software such as EViews or Stata. Finally, the results are interpreted through coefficients, significance, and R-squared to test the hypothesis. Creswell outlines this procedure as a systematic step in quantitative design: data preparation, descriptive analysis, inferential analysis,

and validation. Sugiyono and Sudaryono add that the procedure must be logical and sequential to maintain validity, including source documentation for replicability.

## RESULT

### *Diagnostic Test*

Diagnostic assessments for homoscedasticity, autocorrelation, and panel data were performed, with the findings shown in Table 1.

**Table 1. Diagnostic Test**

Test	(Prob>F)	
	Local Islamic Banks	Foreign Islamic Banks
Homoscedasticity/Heteroscedasticity	0.0000	0.8387
Autocorrelation	0.0650	0.4402
Panel Data Test (Hausman Test)	0.0000	0.0000

The Modified-Wald test was employed to ascertain the presence of heteroscedasticity within the model of local and foreign Islamic banks. The results for local Islamic banks model rejected the null hypothesis, leading to the detection of heteroscedasticity in the model. Wooldridge (2002), Gujarati & Porter (2010), and Sufian et al. (2012) suggested that the Generalized Least Square (GLS) method could be used to tackle the heteroscedasticity issue in the model. Meanwhile, for foreign Islamic banks model, the analysis did not provide sufficient evidence to reject the null hypothesis, indicating a lack of heteroscedasticity, and it was concluded that the model met the requirements for homoscedasticity.

The Wooldridge test for autocorrelation in the data panel was used to identify the presence of serial or first-order autocorrelation. Results revealed that the models for both local and foreign Islamic banks were not significant at  $p > 0.05$ , resulting in the failure to dismiss the null hypothesis. This indicates that the data pertaining to both local and foreign Islamic banks in Malaysia reveals an absence of first-order autocorrelations.

The Hausman test was performed to ascertain the most suitable selection between the Fixed or Random Effects Model in the context of regression analysis. The Fixed Effects Model demonstrates reliability and is recommended for use when individual effects align with other factors in the regression model. However, when individual effects exhibit no association, the Random Effects Model demonstrates efficiency and is preferred for regression analysis (Hausman, 1978). The results from the panel data evaluation of the local and foreign Islamic banks model revealed that both had a  $p$ -value below 0.05. Thus, the Fixed Effects Model was selected for implementation in the research.

### *Multiple Regression Analysis*

**Table 2 Hierarchical Multiple Regression Analysis for Local Islamic Banks**

Variables	Model 1		Model 2		Model 3	
	$\beta$	p-value	$\beta$	p-value	$\beta$	p-value
ROA	-1.0005	<b>0.0004***</b>	-0.7636	<b>0.0081***</b>	-0.4716	<b>0.0752*</b>
FDR	-0.0339	<b>0.0009***</b>	-0.0353	<b>0.0004***</b>	-0.0329	<b>0.0005***</b>
FLP	0.5718	<b>0.0003***</b>	0.6008	<b>0.0001***</b>	0.4403	<b>0.0069***</b>
UR	-0.4400	<b>0.0000***</b>	-0.4003	<b>0.0000***</b>	-0.2646	<b>0.0060***</b>
IR	-0.0893	<b>0.0071***</b>	-0.0585	<b>0.0816*</b>	-0.0067	0.8505
COC	-1.0825	<b>0.0395**</b>	-0.8849	<b>0.0860*</b>	-0.1010	0.8492
STAFFX			3.8821	<b>0.0297**</b>	5.4318	<b>0.0173**</b>
ROA*STAFFX					-1.8579	0.2625
FDR*STAFFX					-0.1357	<b>0.0127**</b>

FLP*STAFFX			1.4481	<b>0.0708*</b>
UR*STAFFX			0.3410	0.4985
IR*STAFFX			0.5135	<b>0.0088***</b>
COC*STAFFX			2.6585	0.3660
R2	0.7856	0.8149	0.8907	
Adjusted R2	0.7284	0.7616	0.8433	
Sig F-Statistics	0.0000	0.0000	0.0000	
F-Statistics	13.7444	15.2831	18,7929	

**Note: significant level denoted as \*\*\*1%, \*\*5%, \*10%.**

**Table 3 Hierarchical Multiple Regression Analysis for Foreign Islamic Banks**

Variables	Model 1		Model 2		Model 3	
	$\beta$	p-value	$\beta$	p-value	$\beta$	p-value
ROA	-1.1885	<b>0.0484**</b>	-0.9071	0.1294	-0.4950	0.3568
FDR	-0.0208	0.1484	-0.0278	<b>0.0496**</b>	-0.0334	<b>0.0487**</b>
FLP	0.3435	0.1935	0.4210	0.1152	0.0836	0.6919
UR	1.0313	<b>0.0535*</b>	1.1950	<b>0.0247**</b>	2.0237	<b>0.0013***</b>
IR	0.4407	<b>0.0165**</b>	0.5346	<b>0.0038***</b>	0.4984	<b>0.0045***</b>
COC	4.9830	<b>0.0342**</b>	6.5154	<b>0.0065***</b>	5.3760	<b>0.0146**</b>
STAFFX			5.0418	<b>0.0866*</b>	1.5227	0.3911
ROA*STAFFX					3.3506	<b>0.0455**</b>
FDR*STAFFX					-0.0277	0.6395
FLP*STAFFX					2.4164	<b>0.0277**</b>
UR*STAFFX					-3.9595	<b>0.0030***</b>
IR*STAFFX					-2.3290	<b>0.0020***</b>
COC*STAFFX					-23.9279	<b>0.0079***</b>
R2	0.8584		0.8761		0.9742	
Adjusted R2	0.7994		0.8169		0.9484	
Sig F-Statistics	0.0000		0.0000		0.0000	
F-Statistics	14.5523		14.7922		37.7807	

**Note: significant level denoted as \*\*\*1%, \*\*5%, \*10%.**

Hierarchical multiple regression analyzes were performed for both local and foreign Islamic banks to evaluate the predictive influence of independent variables (ROA, FDR, FLP, UR, IR, and COC) on the dependent variable (NPF), as well as the moderating influence of Staff Efficiency (STAFFX) on the association between the independent and dependent variables. Results for both local and foreign Islamic banking are presented in Tables 2 and 3, respectively.

1. Model 1

The results for local Islamic banks in Model 1, shown in Table 2, indicate a significance level of 0.000 and an adjusted R<sup>2</sup> of 0.7284. The regression model including ROA, FDR, FLP, UR, IR, and COC accounted for 72.84% of the variance in NPF of local Islamic banks in Malaysia. Furthermore, all six predictors were recognized as significant within this model. The findings indicate that ROA ( $\beta=-1.0005$ ,  $p=0.0004$ ), FDR ( $\beta=-0.0339$ ,  $p=0.0009$ ), UR ( $\beta=-0.4400$ ,  $p=0.0000$ ), IR ( $\beta=-0.0893$ ,  $p=0.0071$ ), and COC ( $\beta=-1.0825$ ,  $p=0.0395$ ) have a negative influence on the NPF of the banks. Another predictor, FLP ( $\beta=0.5718$ ,  $p=0.0003$ ), demonstrates a favorable influence on the NPF of local Islamic banking in Malaysia.

The findings for foreign Islamic banks, as presented in Model 1 of Table 3, show a significant level at 0.000, accompanied by an adjusted R<sup>2</sup> of 0.7994. The regression model that incorporates ROA, FDR, FLP, UR, IR, and COC explained 79.94% of the variance in the NPF for foreign Islamic banks in Malaysia. Furthermore, four factors were recognized as significant within this model. The variables UR ( $\beta=1.0313$ ,  $p=0.0535$ ), IR ( $\beta=0.4407$ ,

$p=0.0165$ ), and COC ( $\beta=4.9830$ ,  $p=0.0342$ ) demonstrate a positive influence on the banks' NPF. A further predictor, ROA ( $\beta=-1.1885$ ,  $p=0.0484$ ), demonstrates a negative impact on the NPF of foreign Islamic banks in Malaysia. Then, FDR shows a minimal negative effect, while FLP exhibits a minimal positive effect on NPF.

## 2. Model 2

Model 2 incorporated the moderating variable of Staff Efficiency (STAFFX). In the framework of local Islamic banks, Model 2 demonstrated significant value at the 0.000 level, alongside an adjusted R<sup>2</sup> of 0.7616. As a result, the model successfully explained approximately 76.16% of the variation in the NPF of local Islamic banks. Unlike Model 1, which encompassed six notable predictors, Model 2 unveiled seven predictors that attained significance. The findings indicate that ROA ( $\beta=-0.7636$ ,  $p=0.0081$ ), FDR ( $\beta=-0.0353$ ,  $p=0.0004$ ), UR ( $\beta=-0.4003$ ,  $p=0.0000$ ), IR ( $\beta=-0.0585$ ,  $p=0.0816$ ), and COC ( $\beta=-0.8849$ ,  $p=0.0860$ ) each exerted a negative influence on the NPF of the banks. Additional predictors, FLP ( $\beta=0.6008$ ,  $p=0.0001$ ) and STAFFX ( $\beta=3.8821$ ,  $p=0.0297$ ), demonstrate a favorable influence on NPF level of local Islamic banking in Malaysia.

The significance value of Model 2 for foreign banks was determined at the 0.000 level, with an adjusted R<sup>2</sup> of 0.8169. The model successfully accounted for around 81.69% of the variability in the NPF of foreign banks. Unlike Model 1, which featured four significant variables, Model 2 revealed five significant variables. The variables UR ( $\beta=1.1950$ ,  $p=0.0247$ ), IR ( $\beta=0.5346$ ,  $p=0.0038$ ), COC ( $\beta=6.5154$ ,  $p=0.0065$ ), and STAFFX ( $\beta=5.0418$ ,  $p=0.0866$ ) demonstrate a favorable effect on the banks' NPF. Another variable, FDR ( $\beta=-0.0278$ ,  $p=0.0496$ ), demonstrates a detrimental impact on the NPF of foreign Islamic banking in Malaysia. Simultaneously, ROA exerts a negative although negligible influence, whereas FLP has a positive but also insignificant effect

## 3. Model 3

Model 3 examined the connection between independent variables, including the moderating variable, alongside the interaction variables (ROA, FDR, FLP, UR, IR, COC, STAFFX, ROA\*STAFFX, FDR\*STAFFX, FLP\*STAFFX, UR\*STAFFX, IR\*STAFFX, COC\*STAFFX) and the dependent variable (NPF).

The results for local Islamic banks, as presented in Table 2, indicate that Model 3 demonstrates a high level of significance at the 0.000 threshold, accompanied by an adjusted R<sup>2</sup> value of 0.8433. The findings suggest that Staff Efficiency and its interactions with independent variables offer a more thorough understanding of the variance in the NPF of local Islamic banks when compared to Model 2. The hierarchical regression analysis indicated that FDR\*STAFFX exhibited a significant negative interaction with NPF ( $\beta=-0.1357$ ,  $p=0.0127$ ). Consequently, the results in Model 3 indicated that Staff Efficiency influenced the relationship between FDR and NPF of local Islamic banks by strengthening the negative correlation. During this period, the interaction terms between FLP\*STAFFX and NPF indicated a positive and significant relationship ( $\beta=1.4481$ ,  $p=0.0708$ ), implying that Staff Efficiency acted as a moderating factor in the influence of FLP on NPF. The analysis of the interaction between IR\*STAFFX and NPF revealed a positive and significant relationship, with  $\beta=0.5135$  and  $p=0.0088$ . This finding indicates that the Staff Efficiency serves as a moderating factor in the impact of IR on NPF.

The findings for foreign Islamic banks, illustrated in Table 3, indicate that Model 3 achieved significance at the 0.000 level, accompanied by an adjusted R<sup>2</sup> of 0.9484. The findings suggest that the Staff Efficiency and its interactions with the independent variables provide a deeper insight into the variations in the NPF of foreign Islamic banks when contrasted with Model 2. The hierarchical regression analysis indicated a positive and statistically significant interaction between ROA\*STAFFX and NPF ( $\beta=3.3506$ ,  $p=0.0455$ ). The findings from Model 3 demonstrate that Staff Efficiency significantly influences the relationship between ROA and NPF of foreign Islamic banks, transforming the earlier negative correlation into a

positive one. Throughout this timeframe, the interaction terms involving FLP\*STAFFX and NPF revealed a positive and significant correlation ( $\beta=2.4164$ ,  $p=0.0277$ ), suggesting that Staff Efficiency acted as a moderating variable in the effect of FLP on NPF.

Further, the interactions between UR\*STAFFX and NPF ( $\beta=-3.9595$ ,  $p=0.0030$ ), IR\*STAFFX and NPF ( $\beta=-2.3290$ ,  $p=0.0020$ ), and COC\*STAFFX and NPF ( $\beta=-23.9279$ ,  $p=0.0079$ ) indicated negative and significant relationships, implying that Staff Efficiency moderated the effects of UR, IR, and COC on NPF, transforming positive relationships into negative ones.

### ***Similarities & Differences Findings between Local and Foreign Islamic Banks in Malaysia***

The findings from the hierarchical multiple regression analyzes indicate that all six variables (ROA, FDR, FLP, UR, IR, and COC) significantly influence the NPF of local Islamic banking in Malaysia. These results support the hypotheses H1a, H1b, H1c, H2a, H2b, H2c. Meanwhile, for foreign Islamic banks in Malaysia, five variables significantly influence NPF. The five variables include ROA, FDR, UR, IR, and COC. The findings provide evidence for the hypotheses H1a, H1b, H2a, H2b, H2c.

ROA shows a considerable and detrimental impact on NPF in both local and foreign Islamic banks in Malaysia, consistent with earlier research findings (Hardana et al., 2023; Muhammad et al., 2020; Purnamasari & Musdholifah, 2016; Rahmah & Armina, 2020). The enhancement of ROA indicates the institution's proficiency in optimizing asset management to yield profits. This ensures that financing is better managed, from risk assessment to monitoring payments by customers. A more efficient process reduces errors in financing assessment, improves supervision, and prevents potential problematic financing.

The findings indicate that FDR exerts a considerable negative influence on NPF within both local and foreign Islamic banks in Malaysia. This finding is consistent with the research carried out by Kuswahariani et al. (2020) and Rofi'ah & A'yun (2019). This signifies that the two types of banks spread their lending portfolios across several industries instead of concentrating on a particular industry. This leads to a decrease in NPF.

FLP has a noteworthy positive impact on NPF in local Islamic banks (Bahamas, 2020; Harizanto & Alfarisi, 2020). However, in foreign Islamic banks, the FLP variable demonstrates a positive effect, although it is not statistically significant. The asset quality of a bank is deemed satisfactory when the FLP ratio is low, indicating that the institution is not facing a deterioration in the quality of its assets. An elevated FLP ratio suggests that the bank could be facing a deterioration in asset quality, which correlates with increased credit risk and issues in financing.

The association between UR and NPF in local Islamic banks demonstrates a negative and significant effect, supported by the results of Lubis & Mulyana (2021). However, in the context of foreign Islamic banking institutions, there exists a positive and significant correlation between UR and NPF (Komoni et al., 2022; Mazreku et al., 2018; Szarowska, 2018). There is a difference between the effect of UR on NPF in the two types of banks. The primary customers of local banks consist of small and medium enterprises and people from the informal sector with small financing amounts. As the unemployment rate rises, several people transition to entrepreneurship, thus enabling them to fulfill their financial obligations. Simultaneously, the primary customers of international banks mostly consist of the corporate or expatriate sector, which is more susceptible to the repercussions of unemployment. An increase in the unemployment rate diminishes purchasing power and debt repayment capacity, hence increasing the likelihood of NPF.

The influence of IR on NPF in local Islamic banks is notably negative and significant, as supported by Priyadi et al. (2021). Nonetheless, IR exerts a favorable and influential influence on NPF within foreign Islamic banks (Alnabulsi et al., 2022). Because local banks are more involved with small businesses and the informal sector, local banks may be more flexible in restructuring financing when inflation is high, helping customers avoid default. This is different from foreign

bank customers who tend to come from the corporate sector with large amounts of financing that are difficult to restructure when adverse economic conditions occur.

COC has a negative and significant effect on NPF in local Islamic banks, indicating that the lower the COC value (high levels of corruption), the higher the NPF (Rehman et al., 2024). This is in line with the view of "to sand the wheels", which indicates that a lack of proper enforcement of rules and regulations contributes to corruption and bribery within legal processes, ultimately undermining institutional quality, obstructing economic growth, and increasing non-performing loans (Barreto, 1996; Tanzi & Davoodi, 1997; Vito, 1998). Meanwhile, in foreign Islamic banks, COC exhibits a noteworthy and substantial influence on NPF, suggesting that a decline in the COC value (high corruption) correlates with a diminished NPF ratio (Lee et al., 2020; Toader et al., 2018). This result aligns with the view of "to grease the wheels", which indicates that increased corruption results in greater investment in banks and businesses via illicit funds, which increases the wealth of the average individual who seeks to invest for higher returns. This, in turn, diminishes non-performing loans and fosters economic growth (Friedrich, 1972; Huntington, 1996).

Regarding Staff Efficiency as a moderating variable, the moderating effect shows that Staff Efficiency can moderate the influence of FDR, FLP, and IR on NPF in local Islamic banks (FDR\*STAFFX, FLP\*STAFFX, and IR\*STAFFX). The findings corroborate hypotheses H3b (FDR\*STAFFX), H3c (FLP\*STAFFX), and H3e (IR\*STAFFX). The findings demonstrate that, within local Islamic banks, the moderating influence of Staff Efficiency is more pronounced internally than externally, proposing that the efficacy of personnel might improve the internal operations of local Islamic banks.

In foreign Islamic banks, Staff Efficiency can moderate the effect of ROA, FLP, UR, IR, and COC on NPF. The findings corroborate hypotheses H3a (ROA\*STAFFX), H3c (FLP\*STAFFX), H3d (UR\*STAFFX), H3e (IR\*STAFFX), and H3f (COC\*STAFFX). The results indicate that the influence of Staff Efficiency as a moderating variable is significantly greater in foreign Islamic banks than in their local counterparts. In foreign Islamic banking, all external factors may be moderated by Staff Efficiency, suggesting that professional personnel in foreign Islamic banks can diminish the adverse effects of the volatility of Malaysian economic circumstances.

The results showing that Staff Efficiency can moderate the relationship between external factors (macroeconomic factors) and NPF are interesting new findings in this study. Banks can be better able to face adverse economic conditions through their skilled staff, so that these impacts do not directly affect the increase in their NPF. This diverges from the findings of the study carried out by Nor et al. (2017), where their findings were only in the context of Staff Efficiency moderation with internal factors (bank-specific factors).

## CONCLUSION

This study found that internal factors such as ROA, FDR, and FLP, as well as external factors such as UR, IR, and COC significantly affect NPF in local Islamic banks in Malaysia, while in foreign banks ROA, FDR, UR, IR, and COC have a strong influence. Staff efficiency proved to be an effective moderator, strengthening the negative relationship between FDR and NPF in local banks and reversing the negative influence of external factors such as UR, IR, and COC to a positive one in foreign banks, indicating the ability of trained staff to mitigate credit risk amidst economic volatility. Overall, the hierarchical regression model explained up to 84% of the variance in NPF in local banks and 95% in foreign banks, supporting the main hypothesis about differences in risk dynamics across bank groups.

However, limitations of this study include the use of secondary data from 2017-2023, which may have been affected by the COVID-19 pandemic, requiring validation with more recent data after 2024. Furthermore, the absence of variables such as bank size or GDP that could enrich the model is recommended. Future research is recommended to expand the sample to other ASEAN countries or integrate primary data from risk managers to test causality more deeply.

Practically, these findings recommend that Islamic banks, especially foreign banks, invest in staff training to improve operational efficiency and mitigate non-performing loans (NPFs), while regulators such as Bank Negara Malaysia can promote anti-corruption policies and diversify financing portfolios for sector stability.

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