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Analysis Of The Influence Of Credit *Financial Technology* On Banks' Financial Performance In Indonesia

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Abstract

This study aims to analyze the influence of credit financial technology (fintech) on the financial performance of banks in Indonesia. This study uses the Return on Assets (ROA) and Net Interest Margin (NIM) indicators to measure the financial performance of banks. The independent variables used were fintech collaboration dummy, Non-Performing Loan (NPL), and Operating Costs to Operating Income (BOPO). Data was obtained from the annual reports of 12 banks registered with the OJK for the 2019-2023 period. The analysis method used was multiple linear regression with the help of SPSS version 29. The results of the study show that Fintech Loans have a significant positive effect on ROA and NIM, BOPO has a significant negative effect on ROA and NIM, while NPL does not have a significant effect on ROA, but has a significant positive effect on NIM. These results confirm the importance of banking collaboration with fintech and operational efficiency in increasing banking profitability.

Keywords: Fintech Credit, ROA, NIM, NPL, BOPO, Bank

INTRODUCTION

The development of information technology has driven significant transformation in the financial sector, especially through the emergence of financial technology (fintech). One of the fastest-growing fintech innovations is the distribution of digital credit, which offers more inclusive and efficient access to financing, especially for the unbanked and underbanked (Gomber et al., 2018). In Indonesia, fintech advances are driven by wide internet penetration and people's preference for digital services. The Financial Services

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Authority (OJK, 2023) has recorded a sharp increase in fintech credit disbursement over the past few years.

The presence of fintech triggers new challenges and opportunities for the banking industry. On the one hand, fintech creates competition that drives efficiency and innovation; on the other hand, fintech also has the potential to erode banks' market share in credit distribution, especially in the MSME segment (Zavolokina et al., 2021). This impact can be reflected in the bank's financial performance indicators such as Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM) (Goddard et al., 2004). In addition, regulation plays an important role in determining the direction of the relationship between fintech and banking. Regulations that support collaboration can create synergies, while weak regulations can pose systemic risks (Arner et al., 2016).

Against this background, this study aims to analyze the influence of fintech credit on the financial performance of banks in Indonesia, taking into account credit risk factors (NPLs) and operational efficiency (BOPO) as additional variables.

LITERATURE REVIEW

Credit Financial Technology

Fintech credit is a form of financing innovation based on digital information technology developed by financial technology companies. This credit can be distributed directly by the fintech platform to customers or through collaboration between fintech and traditional financial institutions such as banks. According to Buchak et al. (2018), the growth of fintech lending has changed the landscape of the global financial industry through reduced transaction costs, increased efficiency, and ease of access for the unbanked and underbanked.

Development of Financial Technology

The rapid development of technology in Indonesia, supported by the wide reach of the internet and the affordability of digital devices, opens up great opportunities for people to be entrepreneurs. In the midst of these conditions, Financial Technology (Fintech) companies are present as a solution to the needs of practical and modern financial services. Fintech offers convenience in transactions such as payments, fund transfers, investments, and loans digitally. By combining technology and finance, fintech is believed to be able to provide services that are efficient, safe, and in accordance with today's lifestyle (Kusuma & Asmoro, 2021).

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Financial Technology Credit Indicators

This study uses three main indicators to represent fintech credit. First, the dummy variable of bank and fintech collaboration, which indicates whether the bank cooperates with fintech companies in lending (1 = collaboration; 0 = no). This variable is effective in identifying the impact of cooperation on bank performance (Hausman, 2015; Li et al., 2017; Phan et al., 2020).

Second, Non-Performing Loans (NPLs), which are the ratio of non-performing loans to total loans. This ratio reflects the quality of the bank's credit portfolio, where healthy NPLs are below 5% (Louzis et al., 2012). Collaboration with fintech can affect NPL ratios through changes in credit risk management strategies (Jagtiani & Lemieux, 2018; Tang, 2019).

Third, Operating Costs to Operating Income (BOPO), which measures the operational efficiency of banks. A lower BOPO value indicates higher efficiency. Collaboration with fintech has been proven to reduce BOPO through service digitization, process automation, and reduction of operational costs (Dendawijaya, 2009; Vives, 2017; Alt et al., 2018; Romanova & Kudinska, 2016).

Bank Financial Performance

A bank's financial performance reflects the ability of a banking institution to efficiently manage resources to achieve financial goals. Indicators such as ROA, ROE, and NIM are used to assess the profitability and operational efficiency of a bank (Gitman & Zutter, 2023). Good performance shows the effectiveness of the intermediation functions, asset management, and risk management (Dendawijaya, 2009). Therefore, the assessment of bank performance is important for internal management as well as external stakeholders in decision-making.

Bank Financial Performance Indicators

The bank's financial performance in this study is measured using two main indicators, namely Return on Assets (ROA) and Net Interest Margin (NIM). ROA reflects the bank's ability to generate profit from the total assets owned, thus demonstrating management efficiency in the use of assets (Ghozali, 2018). Meanwhile, NIM measures the efficiency of banks in obtaining net interest income from productive assets, which is the main indicator of the profitability of financial intermediation (Mishkin, 2015).

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Bank Performance Challenges

The performance of banks in Indonesia is faced with various external and internal challenges. Globally, the increase in the benchmark interest rate, particularly from the Federal Reserve, has an impact on the cost of funds and potential liquidity risks. On the other hand, digitalization presents cybersecurity challenges that demand investment in data protection technology (Kusuma & Asmoro, 2024). In addition, strict regulations such as the implementation of Basel III reduce capital ratios and can increase operational expenses (OJK, 2024). No less important, banks also face competition from fintechs that offer financial services faster and more efficiently, encouraging the need for innovation to remain relevant in the digital era (Sihombing, 2024).

Hypothesis Development

Fintech lending is a financial innovation that accelerates and streamlines the credit process. Collaboration between banks and fintech through channeling or joint financing schemes can expand credit coverage and reduce operational costs. This efficiency increases the bank's profitability, reflected in the increase in ROA (Thakor, 2020; Vives, 2019). In addition, the expansion of the credit portfolio and the reduction of funding costs also have the potential to increase NIM (Philippon, 2016; Boot & Ratnovski, 2016). So the hypothesis is proposed:

H1a: Fintech loans have a positive effect on bank ROA in Indonesia.

H1b: Fintech credit has a positive effect on bank NIM in Indonesia.

NPLs reflect non-performing loans that negatively impact the profitability and efficiency of assets, thereby lowering ROA (Makri et al., 2014; Louzis et al., 2012). However, under certain conditions, an increase in NPLs encourages banks to raise interest rates to compensate for risks, which can increase NIM (Albertazzi & Gambacorta, 2009; Flamini et al., 2009). Based on this, the hypothesis proposed:

H2a: NPLs have a negative effect on the ROA of banks in Indonesia.

H2b: NPLs have a negative effect on bank NIM in Indonesia.

BOPO measures the operational efficiency of banks. A high BOPO ratio indicates inefficiency and negatively impacts ROA (Dietrich & Wanzenried, 2011; Prasetyoningrum & Hasanah, 2016). To maintain margins, banks can raise lending rates, which has a positive impact on NIM (Tregenna, 2009; Hosen & Rahmawati, 2020). Therefore, the hypothesis proposed is:

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H3a: BOPO has a negative effect on the ROA of banks in Indonesia.
H3b: BOPO has a negative effect on bank NIM in Indonesia.

RESEARCH METHODOLOGY

Population and Sample

The population in this study includes all commercial banks registered with the Financial Services Authority (OJK), consisting of 13 Islamic banks and 115 conventional banks (a total of 128 banks). The sample was selected using the purposive sampling method, which is a non-probability technique based on certain criteria, namely: (1) registered with the OJK in the 2019–2023 period, (2) publishing annual financial statements consistently during the period, and (3) being involved or not in fintech-based credit services. Based on these criteria, 28 banks were obtained as samples with a total of 140 samples that were worth analysis.

Measurement Variables and Operational Definitions Variables

This study uses two main variables, namely the independent variable of Credit Financial Technology (Fintech) and the dependent variable of Bank Financial Performance. Fintech credit is measured using a collaboration dummy variable (1 if the bank cooperates with the fintech, 0 if it does not). The control variables used are Non-Performing Loans (NPL), which is the ratio of non-performing loans to total loans, and Operating Expenses to Operating Income (BOPO) as indicators of the bank's operational efficiency. The bank's financial performance as a dependent variable is measured by two indicators: Return on Assets (ROA), which describes the effectiveness of asset use in generating profits, and Net Interest Margin (NIM), which shows the efficiency of interest income on productive assets. All indicators are calculated using the standard ratio formula in the financial literature.

Data Analysis

The data that has been collected is then analyzed using descriptive analysis to provide an overview of the characteristics of the data. Furthermore, a classical assumption test was carried out to ensure that the resulting regression model had an accurate estimate. In addition, a *t-test was* used to identify the significant influence of each research variable.

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RESULTS AND DISCUSSION

Descriptive Analysis

Table 1. Descriptive Analysis Results

Variable	N	Minimum	Maximum	Mean	Std.Deviation
ROA	140	0.0002	0.0516	0.01537	0.0115361
NIM	140	0.0037	0.1358	0.04403	0.0158669
Fintech	140	0	1.00	0.3786	0.48677
NPL	140	0.0008	0.0430	0.01369	0.0096275
BOPO	140	0.3413	0.9950	0.81048	0.1360217
Valid N (listwise)	140				

Source : Secondary Data processed by IBM SPSS 29,2025

Based on a descriptive statistical analysis of 140 sample, it is known that the Fintech Credit variable is a dummy variable with an average of 0.37 indicating that 37% of banks in the sample adopt fintech. The NPL variable has an average of 4.30% with a standard deviation of 0.009%, indicating fairly good and consistent credit quality between banks. BOPO showed an average operational efficiency of 81.04% with a standard deviation of 13.6%, indicating relatively good efficiency but still room for improvement. ROA has an average of 1.53% with a low spread (standard deviation of 0.011%), reflecting fairly stable profitability. Meanwhile, NIM recorded an average of 4.40% and a standard deviation of 1.58%, indicating high consistency in the bank's ability to generate net interest income.

Classical Assumption Test Results

Normality Test Results

Table 2. Normality Test Results One Sample Kolmogorov-Smirnov

		Unstandardized Residual
N		140
Normal Paramaters	Mean	0.0000000
	Std. Deviation	0.00394281

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Most Extreme Differences	Absolute		0.147
	Positive		0.147
	Negative		-0.137
Test Statistic			0.147
Asymp. Sig. (2-tailed)			0.078
Monte Carlo Sig. (2-tailed)	Sig.		0.068
	99% Confidence Interval	Lower Bound	0.058
		Upper Bound	0.088

Source : Secondary Data processed by IBM SPSS 29,2025

Based on these outputs, the Kolmogorov-Smirnov Test showed a Monte Carlo significance value of 0.078, which exceeded the threshold of 0.05. This indicates that the data is distributed normally and meets the assumption of normality.

Heteroscedasity Test Results

Table 3. Heteroscedasity Test Results in ROA

Type	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
(Constant)	0.013	0.001		8.840	0.211
Fintech Credit	0.001	0.000	0.101	1.338	0.183
NPL	0.028	0.029	0.087	0.944	0.347
BOPO	-0.013	0.002	-0.574	-6.446	0.468

a.Dependent Variable: ABS_RES1

Source : Secondary Data processed by IBM SPSS 29,2025

The results of the heteroscedasticity test on the ROA variable showed that all independent variables—Fintech Credit (0.183), NPL (0.347), and BOPO (0.468)—had significance values above 0.05. This indicates the absence of symptoms of

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heteroscedasticity, so the assumption of homocedasticity is fulfilled and the regression model is worthy of further analysis.

Table 4. Heteroscedasity Test Results on NIM

Type		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.014	0.005		2.857	0.005
	Fintech Credit	0.001	0.002	0.032	0.362	0.718
	NPL	0.096	0.096	0.108	0.977	0.320
	BOPO	-0.008	0.007	-0.122	-1.167	0.245

a.Dependent Variable: ABS_RES2

Source : Secondary Data processed by IBM SPSS 29,2025

The results of the heteroscedasticity test on the Y2 variable showed that Fintech Loans (0.718), NPLs (0.320), and BOPO (0.245) had significance values above 0.05. This indicates the absence of symptoms of heteroscedasticity, so the regression model meets the assumption of homoscedasticity.

Multicollinearity Test

Table 4.5. Multicollinearity Test Results

Variable	Collinearity Statistics		Information
	Tolerance	VIVID	
Fintech Credit	0.653	1.532	No Multicollinearity
NPL	0.540	1.851	No Multicollinearity
BOPO	0.477	2.098	No Multicollinearity

Source : Secondary Data processed by IBM SPSS 29,2025

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The results of the multicollinearity test showed that all independent variables—Fintech Credit, NPL, and BOPO—had a Tolerance value of > 0.10 and VIF < 10, indicating the absence of multicollinearity. Thus, the regression model meets the classical assumptions related to independence between variables.

Hypothesis Test Results

Table 6. Hypothesis Test Results

Variable	B	t	Sig.	Information
(Constant)	0.079	37.470	<0.001	
Fintech Credit	0.000	2.434	<0.001	H1a Accepted
NPL	-0.025	1.594	0.002	H2A Rejected
BOPO	-0.078	-27.279	<0.001	H3A Rejected
Adjusted R Square	**0.942**			
(Constant)	0.096	13.722	<0.001	
Fintech Credit	-0.004	-1.808	0.073	H1b Rejected
NPL	-0.096	-0.685	0.494	H2b Rejected
	-0.060	6.250	<0.001	H3b Accepted
Adjusted R Square	**0.558**			

The regression results showed that Fintech Loans had a positive and significant effect on ROA (t = 5.265; p < 0.001), indicating that bank collaboration with fintech can increase asset profitability. However, against NIM, the influence of Fintech Loans was not significant (t = -1.808; p = 0.073), although the direction of the negative coefficient indicates a potential decline in interest margins.

The NPL variable had no significant effect on ROA or NIM, although the negative coefficient was in line with the theory. This shows the bank's ability to manage credit risk during the study period.

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On the other hand, BOPO had a significant negative effect on ROA and NIM ($p < 0.001$). The higher the operating costs, the lower the bank's profitability rate and net interest margin, confirming the importance of efficiency in bank operations.

The model has an Adjusted R^2 of 0.942 for ROA and 0.558 for NIM, which suggests that the Fintech Credit, NPL, and BOPO variables together are able to explain most of the variation in the bank's financial performance, particularly in ROA.

DISCUSSION

The Influence of Fintech Credit on Bank Financial Performance

This study found that Fintech Credit had a positive and significant effect on ROA ($t = 2.434$; $p < 0.001$). This shows that collaboration between banks and fintech platforms is able to increase intermediation efficiency and expand access to credit, thereby boosting bank profitability. These results are consistent with the findings of Thakor (2020).

However, for NIM, Fintech Loans showed a negative and insignificant influence ($t = -1.808$; $p = 0.073$), which indicates that digital lending has not been able to significantly increase the bank's net interest margin. This is likely due to thin margins for fintech products and price competition in the digital lending ecosystem.

The Effect of Non-Performing Loans (NPLs) on Bank Financial Performance

The results showed that NPL had no significant effect on ROA or NIM. In ROA, although the regression coefficient was negative (-0.025) and the significance < 0.05, the t-value of the calculation (1.594) was still below the t table, so the H2a hypothesis was rejected. This indicates that the increase in non-performing loans has not had a real impact on profitability, likely due to effective risk management strategies such as loss reserves or portfolio diversification.

Meanwhile, on NIM, NPL also had no significant effect (coefficient -0.096; $t = -0.685$; $p = 0.494$). This means that an increase in NPLs does not directly reduce the bank's net interest margin, which can be caused by a stable pricing strategy or the absence of interest rate adjustments to compensate for the risk.

The Influence of BOPO on Bank Financial Performance

The results showed that BOPO had a negative and significant effect on ROA (coefficient = -0.078; $t = -27.279$; $p < 0.001$), which means that the higher the operating cost burden on revenue, the lower the bank's profitability. These findings are in line with

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Dietrich and Wanzenried (2011), who emphasize the importance of efficiency in driving return on assets.

Similarly, on NIM, BOPO also had a significant negative effect (coefficient = -0.060; t = 6.250; p < 0.001), suggesting that the high BOPO ratio lowered the net interest margin. These results confirm that operational cost efficiency greatly determines the performance of bank intermediation services, as also conveyed by Lestari and Hakim (2019).

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CONCLUSION

This study examines the effects of fintech credit, NPL, and BOPO on bank financial performance in Indonesia, measured by ROA and NIM. The results show that fintech credit positively and significantly affects both ROA and NIM, highlighting the benefit of collaboration between banks and fintech in expanding credit distribution and improving operational efficiency. BOPO has a significant negative impact on both profitability indicators, emphasizing the importance of cost control in banking. Meanwhile, NPL shows no significant effect on ROA but has a positive effect on NIM, suggesting that banks may charge higher lending rates to compensate for credit risk.

The findings contribute to the banking and fintech literature by offering an integrated analysis of these three variables and their simultaneous influence on bank performance. Practically, the results can help policymakers and bank managers design strategies that balance innovation with prudent risk and cost management. Future research is encouraged to explore additional factors such as bank size, digital literacy, and regulatory policies that may moderate these relationships

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