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# Integrating Banking Fundamental Factors with Financial Technologies in Increasing Banking Performance

Adrianna Syariefur Rakhmat<sup>1</sup>, Mohammad Hatta Fahamsyah<sup>2</sup>, Preatmi Nurastuti<sup>3</sup>, Muhammad Hamdan Ainulyaqin<sup>4</sup>

1234Universitas Pelita Bangsa, Indonesia

Correspondent: adriannasyariefur@pelitabangsa.ac.id1

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**ABSTRACT:** The existence of innovation involving the adoption of technology in banking has boosted financial performance, where banks get sizable benefits. The use of technology in financial services or known as fintech not only produces new products and models in financial services, but has created solutions. This research is a quantitative research with secondary data sourced from the Financial Services Authority and Bank Indonesia from April 2020 to April 2023. The object of this research is all banks in Indonesia whose data has been aggregated. The variables used in the research are fintech as the independent variable, and banking profitability as the dependent variable, then adding banking fundamentals as a control variable . Meanwhile the analysis technique to be used is Ordinary Least Square (OLS). Fintech can optimize its role in supervising customers which can have an impact on minimizing non-performing loans so that it can increase profitability. The next thing is that even though costs increase it can actually increase profitability. The role of fintech in this case is that although the adoption of fintech will increase costs, profitability will also increase. The level of financing represented by LDR can be maximized in percentage in order to increase profitability.

**Keywords:** Financial, Technology, Fintech, Banking Performance



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#### INTRODUCTION

Fintech is an acronym for Financial Technology which combines the capabilities of banks and other financial institutions in managing their assets through a technological approach. Activities in financial institutions supported by Fintech are financing, payments, asset management, transfers, blockchain, capital market investment, fund raising, and financial service security (Milian et al., 2019; Shino et al., 2022).

The digital era has encouraged various revolutionary innovations, including in terms of the digital economy. Recognition of digital assets as intangible assets greatly increases the efficiency and market value of companies (Spence, 2021; A.-C. Wu & Kao, 2022; Yang et al., 2021). Market efficiency has been achieved through changes in how markets connect consumers with producers which has drastically reduced costs in transportation and production (Chen, 2020). Apart from that, digitalization has also given rise to a new economic system called "The Sharing Economy", where

existing resources can be accessed as widely as possible (Pouri & Hilty, 2021). Therefore, overall digitalization can create several real implications such as reducing social problems, increasing welfare, creating competition and opportunities, encouraging sustainability of production and consumption, and facilitating innovation (Hassan et al., 2023; Lim, 2020; Merello et al., 2023).

Digitalization has helped countries increase their economic growth, even digital technology is the main driver of the economy(Myovella et al., 2020). Growth will be stronger if it is supported by a quality workforce and policies that support digitalization (Solomon & van Klyton, 2020). Therefore, infrastructure that can increase the capacity of Human Resources (HR) needs to be integrated to support the emergence of new innovations (Kollu et al., 2023; Rjoub et al., 2023; Tan et al., 2023; Yeo & Lee, 2020).

One of the sectors that drives economic growth is the financial services sector, including banking. Banking performance can be assessed from its level of profitability. There are several profitability indicators, including Return on Assets (ROA) and Return on Equity (ROE). However, because the size of an industry, including banking, is judged by how large its assets are, the profitability indicator chosen is ROA. Indonesian banking ROA experienced a decline as a result of Covid-19, but in the end Indonesian banking was able to recover, where ROA in 2023 was higher than ROA in 2015 to 2022.



Figure 1. Return on Asset of Indonesian Banking Source: Financial Services Authority (2023)

The existence of innovation involving the adoption of technology in banking has boosted financial performance (Mustapha, 2018), where banks get quite large benefits (Lisin et al., 2021). Apart from getting benefits, adoption of technology can also reduce the risk of company default (Nie et al., 2023). ut of course not all banks can adopt technology easily. Banks that have large asset sizes can drive market value through technology adoption (Takeda et al., 2021). In fact, if technological development is greater, banking liquidity performance will also be better (Guo & Zhang, 2023). However, there are different results where technology actually has a negative effect on banking performance(Phan et al., 2020).

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The use of technology in the financial services sector is often called Financial Technology (Fintech). Fintech is another way for banks to increase profits besides increasing interest rates (Hermuningsih & Rahmawati, 2022). Fintech not only produces new products and models in financial services, but has created solutions (Gomber et al., 2017). Fintech has succeeded in increasing public access to the financial services sector, opening up new opportunities for several projects, increasing the number of new investors (Bollaert et al., 2021), reducing operational and commercial costs, increasing efficiency in communication (Lisin et al., 2021).

Fintech has a positive impact on financial inclusion through easy access to financial services. This ease of access helps people increase their income through entrepreneurship and investment in financial assets (Lian et al., 2023). In the macro aspect, Fintech has succeeded in complementing the influence of financial inclusion on economic growth (Daud & Ahmad, 2023). In fact, fintech can bring financial inclusion to a wider scope, thereby encouraging sustainable economic growth (Sun & Tang, 2022).

Research on Fintech has been carried out by many experts. The most dominant fintech sector discussed is investment and financing (Milian et al., 2019). The fintech indicators used in research are very diverse. Some use the number of fintech companies as an indicator of fintech development (Phan et al., 2020). Apart from that, the amount of investment in the Information Technology (IT) sector is also a proxy for fintech (Takeda et al., 2021). Investment in the Technology sector is also a reflection of Fintech (H. Wu, 2021).

This research aims to analyze how Fintech financing carried out by banking can moderate banking fundamental factors in improving its financial performance.

The fundamental factors studied are Credit Risk, Capital, Efficiency and liquidity. Credit Risk uses the Non Performing Loan (NPL) Ratio indicator. NPL is measured by the percentage of total non-performing loans to total loans issued by the bank. The higher the NPL ratio of a bank, the greater the consequences that the bank must bear (Setiyaningsih et al., 2015). Capital uses the Capital Adequacy Ratio (CAR) indicator. CAR is a bank's capital adequacy ratio which acts as an aspect of assessing the bank's health level in terms of bank capital (Fauzi et al., 2020). Efficiency uses the Operational Expenses to Operational Income (OEOI) indicator. OEOI is a ratio that describes banking efficiency in carrying out its activities. Operational costs are interest costs given to customers, while operating income is interest earned from customers. Liquidity uses the Loan to Deposit Ratio (LDR) indicator. LDR is measured by the percentage of total loans or credits to total Third Party Funds. LDR is also included in one of the Liquidity Ratio measurements. Different from other industries, banking adds LDR to liquidity ratios other than Current Ratio, Quick Ratio and Cash Ratio (Kaaba et al., 2022).

Based on the explanation above, the researcher created the following hypothesis: (1) NPL has a negative effect on ROA, (2) CAR has a positive effect on ROA, (3) OEOI has a negative effect on ROA, (4) LDR has a positive effect on ROA, and (5) FINTECH has a positive effect on ROA. If fintech is developed as a moderating variable, a hypothesis can be made that (6) Fintech can moderate the negative influence of NPL on ROA, (7) Fintech can moderate the positive influence

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of CAR on ROA, (8) Fintech can moderate the negative influence of OEOI on ROA, and (9) Fintech can moderate the positive influence of LDR on ROA.

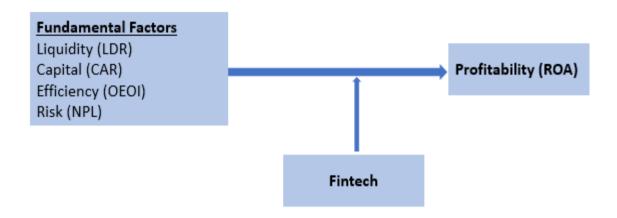


Figure 2. Conceptual Framework

#### **METHOD**

This research is quantitative research that measures how Fintech can moderate fundamental banking factors in improving banking performance. This research uses secondary data from the Financial Services Authority and Bank Indonesia from April 2020 to April 2023. The object of this research is all banks in Indonesia whose data has been aggregated. Thus, this research uses population data.

This research uses fintech as the independent variable, and banking profitability as the dependent variable, then adding banking fundamental variables as the control variable. Meanwhile, the analysis technique that will be used is Ordinary Least Square (OLS) to determine the magnitude and significance of the influence of the independent variable on the dependent variable which is shown in the following equation below;

ROA =  $\alpha$ +  $\beta$ 1NPL +  $\beta$ 2CAR +  $\beta$ 3OEOI +  $\beta$ 4LDR +  $\beta$ 5FINTECH +  $\beta$ 6FINTECH\*BOPO +  $\beta$ 7FINTECH\*LDR +  $\beta$ 8FINTECH\*CAR +  $\beta$ 9FINTECH\*NPL

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Based on this equation, the operational definition of the variable is as follows:

Table 1. Operational Variables

Variables	Definition	$\frac{\text{Profit}}{\text{Average Asset}} \times 100\%$	
ROA	Return on Asset (%) or Profit to Average Assets Ratio		
NPL	Non Performing Loan (%) or Non Performing Loan Net to Total Financing to Non Bank Ratio	Non Performing Loan Net Total Financing to Non Bank x 100%	
CAR	Capital Adequacy Ratio (%) or Capital to Risk Weighted Asset Ratio	$\frac{\text{Capital}}{\text{Risk Weighted Asset}} \times 100\%$	
OEOI	Operating Expenses to Operating Income Ratio (%)or Operating Expenses to Operational Income Ratio	$\frac{\text{Operating Expenses}}{\text{Operating Income}} x 100\%$	
LDR	Loan to Deposit Ratio (%) Total Credit to Third Party to total third party funds ratio	Total Credit Third Party Funds $x$ 100%	
FINTECH	Fintech Lending by Banking (%) or Fintech Lending by Banking to Total Fintech Lending Ratio	Fintech Lending by Banking Total Fintech Lending x 100%	

#### **RESULT AND DISCUSSION**

Based on the results of research using the OLS, the model can explain the efficiency has negative effect on profitability, the LDR has positive effect on profitability, the integration of Fintech with OEOI have a positive effect on profitability. The integration of Fintech with NPL have a negative effect on profitability.

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Table 2. OLS Output

	Coefficients	P-value	Significance	Hypothesis
Intercept	1.296	0.896	Not Significant	Rejected
NPL	0.346	0.267	Not Significant	Rejected
CAR	0.250	0.138	Not Significant	Rejected
OEOI	-0.157	0.001*	Significant (1%)	Accepted
LDR	0.079	0.098***	Significant (10%)	Accepted
FINTECH	-0.170	0.606	Not Significant	Rejected
FINTECH*OEOI	0.005	0.000*	Significant (1%)	Accepted
FINTECH*LDR	0.000	0.913	Not Significant	Rejected
FINTECH*CAR	-0.007	0.240	Not Significant	Rejected
FINTECH*NPL	-0.023	0.089***	Significant (10%)	Accepted

<sup>\*</sup>Significant at 1%, \*\*Significant at 5%, \*\*\*Significant at 10%

#### The Influence of NPL on ROA and How Fintech Moderates NPL in influencing ROA

NPL does not have a significant effect on ROA, where the p value of NPL is more than 0.05. Meanwhile Fintech can moderate NPL in influencing ROA. This research is not in line with research (Putrianingsih & Yulianto, 2016) (Sulastrini et al., 2023) (Wulandari & Purbawangsa, 2019) (Nurdiwaty & Muninggar, 2019) where NPL has a significant negative effect on ROA. Meanwhile, Fintech has succeeded in optimizing how decreasing NPL can affect increasing ROA.

#### The Influence of CAR on ROA and How Fintech Moderates CAR in influencing ROA

CAR does not have a significant effect on ROA, where the p value of NPL is more than 0.05. Meanwhile Fintech can't moderate CAR in influencing ROA. This research is not in line with research (Putrianingsih & Yulianto, 2016) where CAR has a significant negative effect on ROA. However, according to other research, CAR has a positive effect on ROA (Sulastrini et al., 2023) (Wulandari & Purbawangsa, 2019) Meanwhile, Fintech has not succeeded in optimizing how decreasing CAR can affect increasing ROA.

#### The Influence of OEOI on ROA and How Fintech Moderates OEOI in influencing ROA

OEOI has a negative effect significantly on ROA, where the p value of OEOI is less than 0.05. Meanwhile Fintech can moderate OEOI in influencing ROA. This research is not in line with

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research (Nurdiwaty & Muninggar, 2019) where OEOI has a significant negative effect on ROA. Meanwhile, Fintech has succeeded in optimizing how increasing OEOI can affect increasing ROA.

#### The Influence of LDR on ROA and How Fintech Moderates LDR in influencing ROA

LDR has a positive effect significantly on ROA, where the p value of LDR is more than 0.05. Meanwhile Fintech can moderate LDR in influencing ROA. This research is in line with research (Wulandari & Purbawangsa, 2019) where LDR has a significant positive effect on ROA. Meanwhile, Fintech has not succeeded in optimizing how increasing LDR can affect increasing ROA.

#### The Influence of Fintech on ROA

Fintech does not significant effect on ROA, where the p value of fintech is more than 0.05. This research is not in line with research while fintech can improve banking profitability. It was cause that one of the advantages of adopting technology in financial services is that it will certainly result in efficiency because it can reduce operational costs (Lisin et al., 2021). Through Fintech, banks have also succeeded in improving the quality of credit financing (Junarsin et al., 2023) and reduce the risk of customer default (Cheng & Qu, 2020). Thus, of course, all of these things can improve banking performance through profitability (Hermuningsih & Rahmawati, 2022) (Mustapha, 2018).

#### **CONCLUSION**

Through technology-based financial services, banks can reduce several costs such as operational and commercial costs. Reducing costs is certainly a positive thing for banks in their efforts to increase their profit levels. Fintech can optimize its role in supervising customers which can have an impact on minimizing non-performing loans so that it can increase profitability. Fintech cannot possibly stand alone in influencing bank performance, therefore the policy implication is that fintech must be used as a supporting system for existing variables.

Apart from that, the level of financing represented by LDR can be maximized in percentage in order to increase profitability and the challenge is that banks must be able to measure with certainty the maximum level of LDR in increasing profitability. The next thing is that even though costs increase it can actually increase profitability. Which means that increasing profitability is a consequence of increasing costs. The role of fintech in this case is that although the adoption of fintech will increase costs, profitability will also increase. Banks need to monitor this and ensure that profitability growth is greater than cost growth.

For future researchers to increase the number of variables regarding banking fundamental factors. Besides that, future researchers can also use other indicators of profitability such as net profit margin, return on equity, and other profitability indicators. Apart from Indonesian banking, researchers can also focus on researching Islamic banking as an object and/or comparing them. Furthermore, you can also choose a micro scale in the form of a bank or certain other financial institution as the research object.

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