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# The Influence of FinTech and Banks Collaboration towards Banks Performance: Indonesian Banks Listed

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**ABSTRACT**

**Objective –** The rapid growth of the technology industry has created opportunities to expand businesses such as financial technology. The number of financial technologies is continuously increasing, and this has a variety of consequences for similar businesses. Fintech is claimed to be causing disruption or providing new opportunities for banks to expand their operations. As a result, this study will investigate the influence of fintech and bank collaboration because they both provide financial services.
**Methodology –** This study will examine 36 banks in Indonesia consisting of 72 samples for the 2019-2020 period.
**Findings –** According to the findings of this study, there is no significant influence of bank and fintech collaboration on bank performance.
**Novelty –** This research will contribute to examining the role of digital financial innovation in the banking sector. Furthermore, banks can use it as a guide to understand the risks and possibilities associated with fintech.
***Keywords:*** *financial technology, banks, ROA, ROE*

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## I. INTRODUCTION

As the business industry has evolved rapidly, companies need to have their own strategies to be able to compete and sustain in the industry (Hermundsdottir & Aspelund, 2021). In this digital era, people create new businesses, and conventional businesses tend to switch to selling online (Sewpersadh, 2023). Technology has become one of the key successes of doing business. Therefore, the technology industry has been in great demand by entrepreneurs, such as financial technology (fintech).

In general, fintech is a technology-based platform that provides financial services and products to consumers in every segment, such as banking, investment, and insurance (Barroso & Laborda, 2022). Another study identifies fintech as an innovative business model that aims to improve the performance of financial services by helping people obtain funds for various purposes through advanced technology (Leong & Sung, 2018). Fintech can generate new opportunities and challenges to the existing industry, such as the banking industry. As the current business environment changes rapidly with the existence of technology, the banking industry has changed because of the emerging of fintech. According to the Statista Research Department (2021), the global investments in fintech companies worldwide increased by 45.6% in 2019

compared to 2018 and reached 215.4 billion U.S. dollars. It indicates that fintech has evolved significantly in recent years, including Indonesia (Hidayat et al., 2020).

The number of fintech companies spread across the globe is expected to continue to grow. Moreover, with the rise of fintech, it is necessary to pay attention to the disruption that will be caused. The evolution of fintech has created innovation and disruption, such as digital payment systems, internet banking, crowdfunding, and peer-to-peer lending services (Schueffel, 2016). It can become a threat to banks because fintech provides solutions in the same industry, financial services, with advanced technology. The advantages of fintech have shifted consumer behavior. For example, if people want to transfer money to a different bank, they will be charged a certain fee. However, fintech offers lower fees when transferring money, which makes people attracted and then decided to use fintech. Another fintech innovation that attracts public interest is peer-to-peer lending. It allows small enterprises to raise funds, and it allows individuals or companies to invest without a bank intermediary as lenders and borrowers can decide directly on agreed terms. Therefore, banks need to find solutions to compete with fintech.

Fintech and banks can be considered partners or competitors because fintech startup offers technologies that can be used by banks to deliver financial services and transactions (Romānova & Kudinska, 2016). Thus, it can be the opportunity for banks to generate innovation that leads to profitability in the emerging of financial technology. Having collaboration with fintech can be one of the breakthroughs that help banks to create opportunities (Murinde et al., 2022). Romānova and Kudinska (2016) show that there are several banks' responses to the emergence of fintech, such as acquiring fintech companies or developing their fintech affiliates. It can increase the competitiveness of banks in the market.

Based on the discussion, the following research questions are addressed: (1) Is fintech involvement a determinant of ROA? (2) Is fintech involvement a determinant of ROE? The purpose of this research is to investigate the relationship between fintech and banks collaboration and banks performance. This study has two contributions. First, this study contributes to explore the role of digital financial innovation in the banking industry. Second, it can be used as a reference for banks to see the risks and opportunities associated with fintech.

## II. LITERATURE REVIEW

### Financial Technology

The evolution of digitalization has influenced several sectors, especially the financial industry, in the past few years. It is shown by the emerging of fintech. As defined by the Financial Stability Board (FSB), fintech is an integration of digital financial innovation that is capable of generating new business models, products, or services with substantial implications for financial institutions and financial service providers (Thakor, 2020). On the other hand, Dorfleitner et al. (2017) describe fintech as an enterprise that integrates financial services with sophisticated and innovative technology. Fintech products are Internet-based and application-oriented with the goal of attracting customers by providing products and services that are easier to use, transparent, and effective.

There are three groups of fintech products which are white-label, direct, and gold label (Mohamed & Ali, 2019): (1) white label products are those that are purchased from fintech providers and then delivered to customers through financial institutions, such as Bill Pay from CheckFree; (2) the second is direct, which is supplied to consumers and businesses directly through the financial platform, such as Stripe; and (3) the third product is the gold label, which is a branded solution that solves customer issues while also offering unique features, such as ApplePay.

Fintech offers products and services in the banking sector such as credit, deposit, payment services, and capital raising services. In addition, fintech also provides insurance, investment, and other financial instruments. Therefore, it can be concluded that fintech provides software-based solutions in the field of

financial services that meet customers' needs and can be easily used by customers. According to Tanda and Schena (2019), there are some areas of fintech activities. The first area is financing solutions. Fintech leverages digital platforms as a direct funding market that can be accessed by users as borrowers or lenders. Borrowers are individuals or small businesses (SMEs) who are interested in finding capital for a new venture through equity or loans. While the lenders can be institutions and/or qualified investors that have an online loan transaction system. There are two types of financing solutions, which are crowdfunding and peer-to-peer lending. Hossain and Oparaocha (2017) define crowdfunding as an online funding method aimed at raising funds for a business or activity. Funders can donate, lend, or invest based on their interest and belief in the idea and/or expectation of return from the business or activity offered. Meanwhile, peer-to-peer (P2P) lending allows individuals or borrowers to loan money directly from the lenders through an online platform (Feng et al., 2015). Borrowers and lenders can carry out the credit process by determining several agreements, for example, an agreement on how much funds will be lent and how much interest can be paid by the borrower within a specified period (Bachmann et al., 2011).

The second area is investment services and activities. Tanda and Schena (2019) highlight three areas of fintech operation in investment activities which are trading, financial management, and financial advisory services. First, trading services allow investors to negotiate and discuss strategies in buying and selling transactions. Second, financial management services target retail investors to allow them to view their transaction history and personalize their spending plans. Third, financial advisory services offer investors to invest in the Fintech company's products or products from third parties.

The third area is payment services and insurance services (InsurTech). Payment services include money transfer services and payment solutions, such as fiat money and cryptocurrencies, that allow users to make cross-border transactions quickly and affordably without having a bank account. This payment system uses applications, such as digital banking, that are linked to a virtual wallet or credit card that can be accessed through various devices, including smartphones. While Insurance Technology (InsurTech) is a digital platform providing insurance and pension services and products virtually.

**Research Framework**

In the financial services sector, fintech offers a variety of business models that consider efficiency, security, and innovation. Fintech signifies a disruption to the financial sector due to the advancement of information communication technology (ICT) (Suryono et al., 2020). Fintech can be considered the key to collapse for conventional banks. On the other hand, fintech's presence in the financial services sector can bring potential profitability to banks if they collaborate effectively. The development of fintech in Indonesia is supported by banks and governments (Prawirasasra, 2018). Therefore, it becomes a positive step for Indonesian banks to collaborate with fintech or adapt to fintech innovation. To address the research objectives, this study has the conceptual framework as depicted in Figure 1.

The independent variables (X) are the fintech involvements including financial solutions and payment services. Meanwhile, the dependent variable (Y) is banks' performance based on their profitability that is measured by two profitability ratios which are Return on Asset (ROA) and Return on Equity (ROE).

**Hypothesis Development**

Fintech that continues to grow rapidly can pose a significant threat to banks. The new technology-based business model provided by fintech is particularly effective in providing the services needed and is accepted by the market. It can affect the level of profitability of a bank. According to some studies, the emergence of fintech causes a decrease in ROA in the US and China (Dermine, 2017; Guo & Liang, 2016). It shows that fintech has succeeded in meeting the needs of the community and has succeeded in attracting customers to use its services instead of banks.

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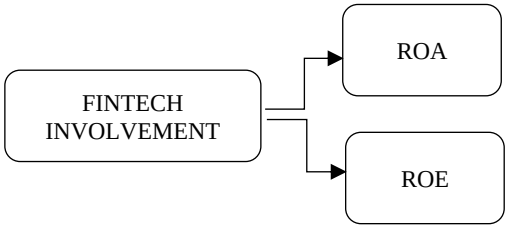


Figure 1. Conceptual Framework.

In addition, banks have faced big challenges in implementing technology successfully to improve performance since several years ago. Ernst and Young (2017) report that in 2016, 200 biggest international banks' average return on equity (ROE) was just above 7.1%. To reach a standard ROE of 12%, these banks need to raise revenue by 15% and cut expenditures by 13.7%. Ernst and Young (2017) also explained that implementing fintech innovation or partnering with fintech startups will help banks develop, reduce costs, and improve customer service. Thus, it can help banks increase ROE to reach or exceed the specified standard ROE.

The main objective of this study is to measure the banks' financial performance by using the ratio of banks when it is integrating or collaborating with fintech. Brealey et al. (2012) state that the profitability ratio's objective is to measure and compute banks' profit, analyze the net profit after taxes with own capital, evaluate a cumulative profit over time, and estimate the banks' productivity (Putri et al., 2019). Based on the discussion, the hypotheses for this study are as follows.

The aspect of a bank's profitability can be measured through ROA, which is the ratio of net income to total assets. The corporation assesses its efficiency in making profits by utilizing its assets. It has a favorable influence on financial institutions since collaboration with fintech can generate profits that leads to an increase in the banks' ROA (Hermuningsih et al., 2023). Hence, the first hypothesis of this study:

*H1: The use of fintech influences the ROA.*

The ability of banks to use their capital from the landlord's deposit and retained earnings is measured by its ROE (Brealey et al., 2012; Gitman & Zutter, 2012). As a result, ROE is an indicator of the bank's profitability when there is no debt. Banks can increase their ROE by adopting fintech innovations. It will be accomplished by collaboration with fintech firms or the application of fintech advances in service delivery with the goal of better serving customers (Ernst & Young, 2017). Hence, the second hypothesis of this study:

*H2: The use of fintech influences the ROE.*

## III. METHODOLOGY

This study focuses on the banks listed in Indonesia, including state-owned banks, regional government banks, and national private banks. The banks chosen will be banks that collaborate with fintech firms or have fintech products. This study uses descriptive analysis with a quantitative approach method to know the banks' financial performance when it collaborates with fintech. The data used in this study is secondary data.

For the dependent variable, this study will use banks' financial profitability ratio data (ROA and ROE) from the period 2019 to 2020. Data for each bank will be collected from several sources, such as the Indonesia Stock Exchange (IDX), the Financial Services Authority (OJK), and banks' annual financial

reports published by the banks. Meanwhile, for the independent variable, it will use the number of fintech used by each bank from the period 2019 to 2020. The data will be gathered from several sources, such as banks' annual reports, journals, and articles.

The independent variables for this study are the number of fintech financial solutions and payment services used by each bank from the period 2019 to 2020. Fintech financial solutions in this study mean the number of fintech startups collaborating with the banks. The categories of fintech startups used in this study are fintech lending firms. Moreover, fintech payment services in this study mean the number of products the banks' have to support digital payment, such as mobile banking and internet banking.

Fintech lending firms are companies that allow individuals or small businesses to request loans through the peer to peer (P2P) lending or crowdfunding platform (PwC, 2019). Meanwhile, fintech payment services provide a platform for the users to do comprehensive payment transactions, even without having a bank account (Tanda & Schena, 2019). The data of the independent variable will be gained from banks' annual reports, journals, and articles.

In addition, the dependent variable for this study is 36 banks' financial profitability ratio data from the period 2019 to 2020. Profitability is a bank's ability to show the effectiveness of its operations by comparing profits to assets or capital (Harfiah et al., 2016). To measure the banks' performances, this study will use profitability of ROA and ROE.

ROA is net income represented as a proportion of total assets, and it indicates how effectively the bank leveraged its assets to generate revenue (Rahman et al., 2015). According to Bank Indonesia Regulation Number 13/1/PBI/2011 dated January 5, 2011, regarding the Rating of Commercial Bank Soundness, the best standard of ROA is more than 1.5%. It reflects the overall health of the bank. It indicates that the bank is very capable of dealing with the significant negative impacts of changes in business circumstances and other external issues.

On the other hand, Dietrich and Wanzenried (2011) mentioned that ROE is the ratio of the percentage of net income to the equity capital. Moreover, it is also defined as the return to shareholders on their capital investment (Rahman et al., 2015). Based on Bank Indonesia Circular Letter No. 13/24/DPNP dated October 25, 2011, regarding the Assessment of the Soundness of Commercial Banks, the ROE standard is 12%. Hence, the greater the ROE, the greater the return obtained for investors on the capital that has been invested. The ratio data for each bank will be collected from IDX, OJK, and banks' annual reports.

## IV. RESULTS AND DISCUSSION

The correlation between each variable's total score and its Pearson product moment is used in the validity test. If the correlation coefficient is more than *r* table with a significance level of 5%, the research finding can be deemed legitimate. For 71 samples (n), the table's *r* value was 0.2333. based on an analysis using SPSS. This study's validity demonstrated that each and every item on each variable is reliable. The consistency of a test to measure or observe something that becomes a measuring object is known as reliability. If the Cronbach's Alpha is more than 0.6, the research finding can be regarded as credible. This study's dependability revealed the validity of every questionnaire item. The variable of this study is described by the descriptive analysis. The descriptive result (see Table 2) shows that there are 72 sample data observed, which includes state-owned banks, regional government banks, and national private banks. Based on the result, the mean of the independent variable, the number of fintech as financial solutions collaborated with banks in 2019-2020, is 2.306. It indicates that not many banks collaborated with fintech peer-to-peer lending firms or not many banks have a platform like peer-to-peer lending platform. Moreover, the mean of the number of fintech as payment services is 2.833. It shows that some banks have a few payment services such as mobile banking, internet banking, and phone banking.

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Table 1. Variable Operationalization

| Variable | Definition | Indicator |
|---|---|---|
| Fintech involvement | Fintech involvement as a financial solution is a platform or product that delivers loans for individuals or businesses. | Fintech lending firms |
| ROA | ROA measures the bank's potential to leverage its assets to generate earnings. | $= \frac{\text{Net Income After Tax}}{\text{Total Asset}}$ |
| ROE | ROE measures the bank's ability to generate profits using invested capital. | $= \frac{\text{Net Income After Tax}}{\text{Total Equity}}$ |

The average for ROA in 2019-2020 is 1.220%, which is below the standard of 1.5%. It reflects the fact that certain banks are ill-equipped to deal with the significant negative consequences of changing business conditions and other internal variables. Meanwhile, the average ROE is 6.631% which is still below the industry standard of 12%. It can be assumed that the return gained by investors on the capital invested in banks is fairly low.

Table 2. Descriptive Statistics

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Fintech Involvement | 72 | 1.000 | 7.000 | 2.306 | 1.633 |
| ROA | 72 | -4.610 | 4.000 | 1.220 | 1.397 |
| ROE | 72 | -48.670 | 20.720 | 6.630 | 10.559 |

The minimum ROA is -4.610%, which belongs to Bukopin bank in 2020. Meanwhile, the maximum ROA is 4.000 that belongs to BCA in 2019. Moreover, the minimum ROE is -48.670%, which also belongs to Bukopin bank in 2020. The maximum ROE is 20.720% which belongs to BPD Sulawesi Selatan and Sulawesi Barat in 2019. From the minimum and maximum value of financial performance, Bukopin bank shows a low financial performance in 2020. The minimum number of fintech financial solutions is 1.000, which belongs to several banks, such as Neo Commerce and CIMB Niaga in 2019. Meanwhile, the maximum number of fintech financial solutions is 7.000, which belongs to several banks, such as Mandiri in 2020.

## Correlation Analysis

In order to examine the objective of this research, there are two models for the regression. The independent variables will be the same for both models, the number of fintech as financial solutions and the number of fintech as payment services. However, the dependent variables are different, which are ROA and ROE. Therefore, the models will be ROA = $\beta 0 + \beta 1$ fintech involvement + error, and ROE = $\beta 0 + \beta 1$ fintech involvement + error.

Before doing regression, the independent variables must be tested with the correlation statistic. It aims to know the correlation between two variables whether they can be put in the same model. The correlation value for both independent variables is 0.030, which indicates a low correlation. Hence, both variables can be put in the same model.

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**Regression Analysis**

The regression for both models, ROA and ROE, consists of *R* square value. The *R* square value for the ROA model is 0.004 or 0.4%. It shows that only 0.4% of the variation in banking financial performance in the 2019-2020 period is explained by the fintech involvement variable. Meanwhile, the remaining 99.6% is explained by other variables or other aspects outside of this research model. Moreover, the *R* Square value for the ROE model is 0.009 or 0.9%. It indicates that only 0.9% of the variation in banking financial performance in the 2019-2020 period is explained by the fintech involvement variable. Meanwhile, the remaining 99.1% is explained by other aspects outside of this research model.

**Hypothesis Testing**

This study uses the *t* test to test the hypothesis. To know whether the independent variable influence the dependent variable, it needs to be compared with the value of the *t* table. The *t* table value can be found with the equation:

*T table = t (α/2 ; n-k-1) = t (0.025; 69) = 1.994*

From the equation, we can see that the value of the *t* table for this analysis is 1.994. The regression result for ROA can be seen in Table 3. The table shows that the significant value of fintech solution is 0.823 which means greater than 0.050, and the *t* value is -0.225 which means lower than 1.994. While the significant value of payment service is 0.636 which means greater than 0.050, and the *t* value is -0.476 which means lower than 1.994. From the result, it indicates that fintech involvement as a financial solution does not influence ROA. Therefore, H1 of this study is rejected because the use of fintech does not influence ROA.

Table 3. t-Test

| Path | Coefficients Std. Error | t | Sig. |
|---|---|---|---|
| *Constant* | *0.532* | *2.798* | *0.007* |
| Financial Involvement → ROA | 0.103 | -0.225 | 0.823 |
| Financial Solution → ROE | 0.776 | -0.317 | 0.752 |

Moreover, the regression result for ROE can be seen in Table 3. The table shows that the significant value of fintech solution is 0.752 which is greater than 0.050, and the *t* value is -0.317 which is lower than 1.994. While the significant value of payment service is 0.490 which is greater than 0.050, and the *t* value is -0.695 which is lower than 1.994. It shows that fintech financial solution and payment service do not influence ROE. As a result, H2 of this study is rejected because the use of fintech does not influence ROE.

## V. CONCLUSION

Fintech has been rapidly expanding over the world, and this trend is expected to continue. Fintech's emergence has been a source of debate among researchers since it has the ability to disrupt or create opportunities for other financial intermediaries, particularly banks. As a result, the goal of this research is to examine whether or not fintech-bank collaboration affects bank performance, as measured by profitability. However, this study cannot prove that the collaboration between fintech and banks affects banks' performance. This study found that the use of fintech does not influence banks' profitability of ROA and ROE. In other words, there is no significant impact of fintech and bank collaboration on banks' performance.

According to the conclusions reached, despite the rapid growth of fintech, Indonesian banks must examine other measures to improve performance. Other factors, such as NPL and BOPO, can have an

impact on a bank's performance. Perhaps the bank should pay more attention to this in order to boost performance. Moreover, it is expected that future research can include different variables and a longer research timeframe to ensure that the results are more accurate.

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