

The moderating role of bank size: influence of fintech, liquidity on financial performance

Sri Hermuningsih*, Pristin Prima Sari, Anisya Dewi Rahmawati

Faculty of Economics, Universitas Sarjanawaiyata Tamansiswa, Yogyakarta, Indonesia

*Correspondents e-mail: hermun_feust@yahoo.co.id

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Author's email:

pristin.primas@ustjogja.ac.id

anisyardewi16@gmail.com

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Abstract

Purpose – This study aims to examine the impact of fintech, liquidity, and bank size on financial performance in Indonesia's conventional commercial banks registered with the Financial Services Authority.

Design/methodology/approach – This study's population consists of Conventional Commercial Banks registered with OJK from 2012 to 2021. The research sample comprises conventional commercial banks using fintech between 2012 and 2021. Purposive sampling was used as a sampling technique. The data from 20 banks with 200 financial statement data show the hypothesis testing using SmartPLS software (PLS-SEM method).

Findings– The findings of this study show that fintech has a positive effect on financial performance, bank size is a moderating variable for the repercussions of fintech on financial performance, liquidity also has a positive impact on financial performance, and bank size is a moderating variable for the effectiveness of liquidity on financial performance.

Research limitations/implications- The theoretical implication of this research is that a large bank size follows a large liquidity ratio and that the bank's financial performance will tend to be large because the bank can cover its debts easily, which will have an impact on increasing the bank's profit. The greater the growth of Fintech, the better the bank's financial performance. This demonstrates that fintech benefits banks. Banks can increase their profits by implementing fintech. The implications of signaling theory for the effect of bank size on the influence of fintech and liquidity on financial performance. This is due to the public's perception that the information developed by Conventional Commercial Banks and published on the official website is reliable. As a result, people are interested in saving money in conventional commercial banks to improve the bank's financial performance.

Practical implications– Provide information and input to investors as a basis for making investment decisions related to variables that affect financial performance, especially in Conventional Commercial Banks.

Originality/value – This study fills the gap from previous research that is still inconclusive on the factors that affect financial performance. The novelty in this study is that bank size is used as a moderating variable to analyze whether bank size strengthens or weakens the relationship between financial technology, liquidity, and financial performance at Conventional Commercial Banks.

Keywords: fintech, liquidity, economic performance, bank size.

Introduction

Every company attempts to evaluate and measure each profit-generating success to understand the prospects, progress, and advances produced within the organization. A company will succeed if it meets its objectives and standards. Estimating potential changes in economic resources depends entirely on resource output capacity, including financial performance data. Financial performance evaluation reinforces a management system that fulfills obligations to funders while achieving the company's goals. This evaluation seeks to support economic performance by using Return on Assets (ROA), increasing the value of ROA, and improving the company's financial performance. Return on Assets measurement demonstrates that the capital's sustainability determines the investment in assets that can make profits.

Recently, the financial services industry has been open to historical transactions. Electronic development continues to accelerate in all financial markets and intermediation areas, including E-exchange, E-insurance, E-brokering, E-money, E-financing, E-supervision, and E-banking. New information technology is critical in supporting financial institutions to develop the banking industry. Another essential factor to consider is innovation, which is vital in improving service standards. Financial transactions can be completed anywhere or at home using an ATM card or the internet. Because of the tremendous growth of the mobile phone industry, most financial institutions are paving the way for seizing opportunities to collaborate with mobile phone network providers who provide banking systems to customers. Internal and external factors determine the bank's financial performance. The former affects the bank's performance because it relates to fundamentally influenced management decisions for the inner boards. The latter extends beyond sectors within a country or field about the ability to control a company. In turn, it can affect a bank's financial performance.

The results of previous studies link internet banking to bank performance (Bashayreh & Wadi, 2021; Bouri et al., 2020; Rega, 2017; Tunay et al., 2015; Wang et al., 2021) Mobile banking negatively affects ROA (Sudaryanti et al., 2018). Internet banking positively affects operational costs, bank income, customer deposits, and bookkeeping (Mateka et al., 2017). Mobile banking significantly affects commercial banks' financial performances (Daniyan-bagudu et al., 2017; Haddad & Hornuf, 2019; Hiyanti et al., 2020; Li et al., 2017; Mietzner & Molterer, 2018; Stewart & Jürjens, 2018). The new technologies closely relate to payment processing or smartphone transactions (Febryanti et al., 2021; Musabegovic et al., 2019). As Bashayreh & Wadi, (2021) put it, information technology positively impacts financial performance (Goswami et al., 2022; Gunawan & Serlyna, 2018; Rahadjeng et al., 2021; Siska, 2022).

Another thing that affects financial performance is liquidity involving the Loan to Deposit Ratio (LDR) – a commonly used liquidity measurement for a bank's ability to meet short-term obligations. Relevant studies show that liquidity positively affects banks' performances (Demirgünes, 2016; Haddad & Hornuf, 2019; Lucy et al., 2018; Pollari, 2016; Saksonova & Kuzmina-Merlino, 2017; Waswa et al., 2018; Yadi et al., 2019). Liquidity positively influences profitability (Jaworski & Czerwonka, 2021; Malik et al., 2016; Musyrifah, 2020; Paul et al., 2021). Bank liquidity is closely linked to profitability (Al-Qadi & Khanji, 2018; Saksonova & Kuzmina-Merlino, 2017). Reserves and cash ratio positively affect Return on Assets (Akenga, 2017). A liquidity risk positively impacts a bank's financial performance (Rudhani & Balaj, 2019).

Research needs to be done: Banks that adopt digital technology developments are critical for banks to survive in the face of competition from fintech companies, and the larger the size of the bank, the more liquid it is, resulting in increased profitability and financial performance.

Researchers chose objects: that correspond to traditional commercial banks due to the rapid development of the banking industry. This condition leads to intense competition, which can impact the level of profits or profits obtained by conventional commercial banks. Although the goal of a bank is not solely to make a profit, the ability of banks to make profits is an essential indicator of the long-term viability of traditional commercial banks.

Research gap: Several previous researchers have studied the impact of fintech, liquidity, and financial performance, but the results are inconsistent. According to research, liquidity has no effect on financial performance (Achmady et al., 2021; Iskandar & Zuhlilmi, 2021). Financial

performance is unaffected by fintech (Bach Phan *et al.*, 2020; Karsha & Abufara, 2020). Given the disparities in previous researchers' findings, the researchers used bank size as a moderating variable to determine whether bank size would strengthen or weaken the influence of fintech and liquidity on financial performance at traditional commercial banks. The use of bank size as a moderating variable is novel in this study because no previous researchers have used bank size as a moderating variable.

Literature Review

The Effect of Financial Technology on Financial Performance

Financial technology (fintech) is an innovation in financial services that adapt technological developments to make financial services and financial systems more efficient and effective. The Financial Services Authority (OJK) defines fintech as an innovative financial service that the industry uses to advance technologies. Fintech products can include a system for performing specific financial transactions and technical mechanisms. Fintech is the essence of a company that engages with financial service providers who primarily use technologies to advance and accelerate financial service platforms.

In essence, fintech technology innovations are positively related to either profitability or bank performance (Rega, 2017; Bashayreh & Wadi, 2021). Information technology positively influences financial performance (Goswami *et al.*, 2022; Gunawan & Serlyna, 2018; Rahadjeng *et al.*, 2021; Siska, 2022). Commercial banks can enhance established business models by lowering bank operating expenses, enhancing more effective services, bolstering risk management, and developing more customer-focused companies (Bouri *et al.*, 2020; Wang *et al.*, 2021).

A bank's financial performance describes its achievements in marketing, financing, technology, human resources, fund distribution, and collection aspects as measured by an indicator called liquidity, profitability, and capital adequacy. Profitability is the result of several company policies and decisions (Brigham & Houston, 2014). Profitability is a factor that significantly impacts the company's value because it is closely related to the ability to generate revenue in the future. High profitability indicates a good company's prospects, which compels investors to respond positively to the firm's increasing value. Based on this explanation, the following hypothesis arises: H1: Fintech positively affects financial performance.

Fintech Affecting Financial Performance and Bank Size due to a Moderating Variable

Financial technology (Fintech) is a company that combines financial services with technology. This means technological innovation and digitization of financial services. This allows various economic activities such as fund transfers, payments, to borrowing funds to be carried out faster. Bank growth can be seen from the increase in total assets. Using fintech can improve banks' financial performance (Lv *et al.*, 2022 ; Almulla & Aljughaiman, 2021). The bank size at moderating level links to profitability and digital investment (Chhaidar *et al.*, 2022). Therefore, a hypothesis emerges, as the following:

H2: The bank size moderates the influence of fintech on financial performance

The Effect of Liquidity on Financial Performance

Liquidity is an essential instrument for every bank. By this means, the Bank can convert liabilities into assets. Liquidity reflects a company's condition, indicating that it can pay all debts in the short or long term. Liquidity can impact performance because a liquid company is a healthy company, and thus the company's performance is usually good.

At the same time, bank liquidity depends on the bank's operational confidence. Customers place deposits in banks believing they can withdraw their money. Liquidity capability reflects the performance of banking institutions, and a decline in banking liquidity can affect the country's financial stability. Thus, banks need to manage sufficient liquidity to face any changes in financial and economic conditions. Liquidity positively affects the bank's profitability (Lucy *et al.*, 2018; Waswa *et al.*, 2018). Reserves and cash ratio positively impact Return on Assets (Akenga, 2017). A

liquidity risk positively influences financial performance (Rudhani & Balaj, 2019). Therefore, the hypothesis is proposed as follows:

H3: Liquidity affects positively financial performance

The Moderating Effect of a Bank Size on the Effect of Fintech and Liquidity on Performance

The size of the bank can moderate the impact of fintech on financial performance, which means that the more enormous the bank's total asset wealth when using fintech, the more excellent the opportunity for higher performance. Bank size is a ratio that determines the bank's wealth based on its total assets. Therefore, it can be assumed that the larger the bank, the more support it has and the better the bank control, making it easier to provide bank services and generate sales or income to encourage financial technology adoption.

The bank can attract customers and a good workforce by reiterating what Haddad & Hornuf, (2019) state: banks adopting fintech significantly impact good financial performance. The finding that a high GDP increases the ease of access to loans for companies that use fintech suggests that a high GDP encourages banks to improve their financial performance. Hence, the following hypothesis is proposed:

H4: The bank size moderates the influence between fintech and liquidity on financial performance

Figure 1 depicts the conceptual framework based on the relationship between variables.

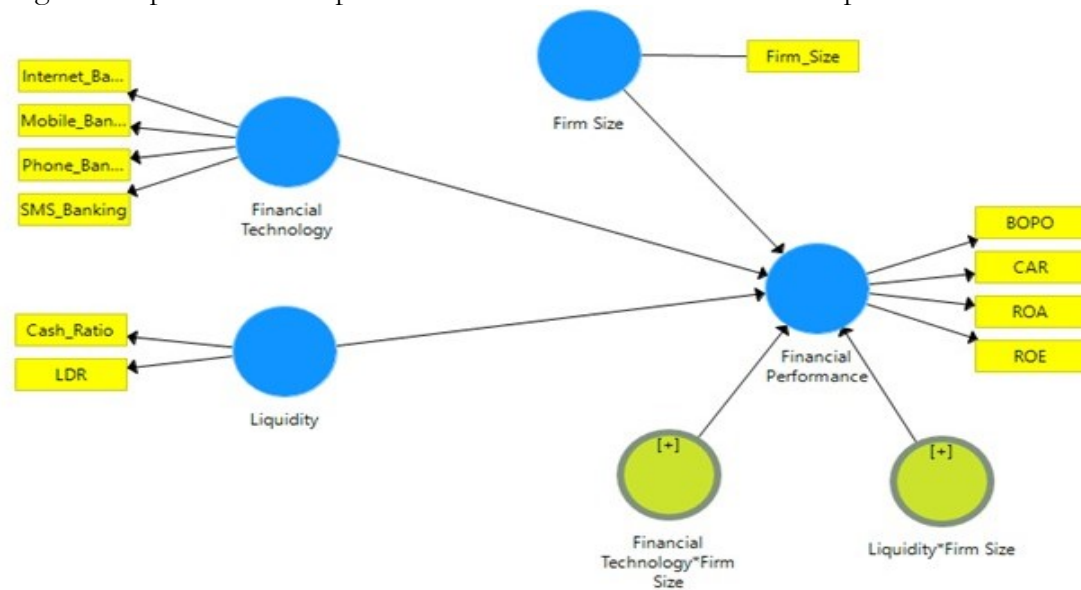


Figure 1. Conceptual Framework

Research Methods

This study's population consists of conventional commercial banks registered with the Financial Services Authority between 2012 and 2021. In addition, this study's sample consists of traditional commercial banks that used financial technology between 2012 and 2021. Purposive sampling was used as a data analysis technique with Smart-PLS 3.0 and Partial Least Squares-Structural Equation Modeling (PLS-SEM).

Table 1. Sample Selection Criteria

Criteria	Total
From 2012 to 2021, traditional commercial banks were authorized by the Financial Services Commission.	109
Conventional Commercial Banks with complete financial reports for 2012-2021	70
Conventional Commercial Banks that qualified for sample	20
The number of processed financial statements	200

Operational Definition

Financial performance

The financial performance demonstrates the company's success based on the outcomes of various activities. According to (Fahmi, 2017) economic performance is analyzed to determine the extent to which a company properly and correctly implements financial rules. In this study, financial performance is measured using Return on Assets, which is calculated using the formula below (Kasmir, 2019):

1. Return on Asset (ROA) = $\frac{\text{Net Income}}{\text{Total Asset}}$
2. Return On Equity (ROE) = $\frac{\text{Net Profit After Tax}}{\text{Equity}}$
3. Operational Expenditure to Operating Income = $\frac{\text{Operating Income}}{\text{Operating Cost}}$
4. Capital Adequacy Ratio (CAR) = $\frac{\text{Equity}}{\text{ATMR}} \times 100 \%$

Financial technology

The term "financial technology" refers to innovative solutions that show creativity in providing tech-enabled financial services applications, products, or business strategies. The financial technology sector uses technologies to improve the effectiveness of the financial system and the provision of financial services. The research uses various financial technology, including phone, SMS, mobile, and internet banking.

Liquidity

The capacity to meet all commitments that must be settled quickly within a short period is known as liquidity. If a corporation has a payment instrument in the form of current assets that exceed all its liabilities, it is considered liquid. This liquidity shows the company's ability to cover all overdue loans with its available cash. In this study, liquidity is determined by the current ratio using the formula below (Munawir, 2014) :

1. Cash Ratio = $\frac{\text{Current Asset}}{\text{Current Liability}}$
2. Loan to Deposits Ratio (LDR) = $\frac{\text{Credits Granted}}{\text{Total Funds Received}} \times 100 \%$

Bank Size

The bank's wealth size can be calculated using a ratio based on the sum of all of its assets. Total assets or log size are typically used to measure bank size. The ability of this financial institution to enhance the risk that the bank must assume grows with its expansion. For this study's bank size, log total assets are used.

Results and Discussion

Results

Descriptive statistical analysis

Table 3 shows the descriptive statistical results for the study's variables. Table 3 presents the findings of the descriptive statistics from 200 research samples, which include the following information: The Financial Performance variables have minimum and maximum values of 0,00 and 1,00, respectively. The mean value for Mobile Banking is 0,6650, and the standard deviation for Internet Banking is 0,46156. According to the statistical data, the standard error is greater than the mean. Variable liquidity has an average value of 39,8355 for Cash Ratio, 79,4576 for LDR, and a standard error of 15,68781 for cash ratio, 19,08772 for LDR with a range of 17,80 to 82,50 for Cash Ratio, 7,80 to 163,00 for LDR. The standard deviation is less than the mean. The Financial Performance variable's values range from 0,05 to 14,93 for ROA, 8,50 to 171,20 for BOPO, with

a mean of 1,6501 for ROA, 76,4817 for BOPO, and a standard error of 1,12973 for ROA, 24,56691 for BOPO. These data show that the standard error is less than the mean value. Firm Size ranges from 12,89 to 27,41, with a mean of 17,6520 and a standard error of 2,49127.

Table 3. Descriptive Statistics Test Result

	Financial Technology		Liquidity		Financial Performance		Firm Size	
	Mobile Banking	Internet banking	Cash Ratio	LDR	ROA	BOPO		
N	Valid Missing	200 0	200 0	200 0	200 0	200 0	200 0	
Mean		0,6650	0,6950	39,8355	79,4576	1,6501	76,4817	17,6520
Median		1,0000	1,0000	35,0600	80,7800	1,3450	82,5550	18,2811
Mode		1,00	1,00	25,78	62,00	4,00	25,70	13,31
Std. Deviation		0,47317	0,46156	15,68781	19,08772	1,12973	24,56691	2,49127
Minimum		0,00	0,00	17,80	7,80	0,05	8,50	12,89
Maximum		1,00	1,00	82,50	163,00	4,93	171,20	27,41

Source: Processed data, 2022

The table below shows the R-square value for the business performance variable.

Table 4. R-Square Value

	R Square	R Square Adjusted
Financial Performance	0,646	0,637

Source: Processed data, 2022

Table 4 shows that the financial performance variable of the R-square value is 0,646. This indicates that the factors of financial technology, liquidity, firm size, financial technology*firm size, and liquidity*firm size account for 64,6% of the variance in the financial performance variable.

Hypothesis Testing

Below is an image of a model produced by the Smart-PLS application following the bootstrapping test.

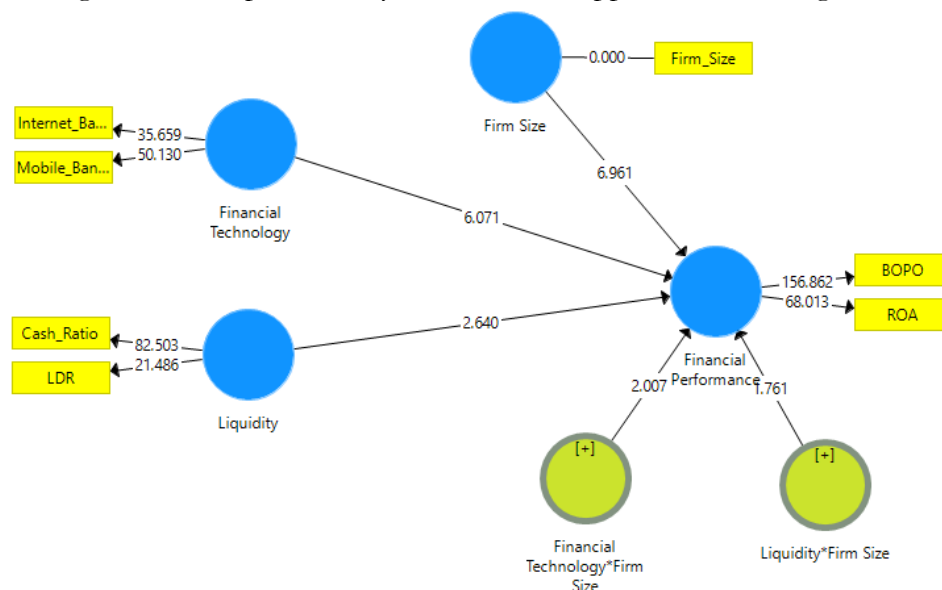


Figure 2. Research Model after the Bootstrapping Process

The magnitude of the t-statistic value can be seen to test the proposed hypothesis. If the value of the t statistic is greater than the value of the t table, the hypothesis is accepted. The t-statistic estimation results in the inner weight result, shown in Table 5.

Table 5. Results of P-Value (Bootstrapping)

	Original Sample	T Statistics	P Values	Results	Conclusion
Financial Technology → Financial Performance	0,396	6,071	0.000	Significant	H1 accepted
Financial Technology*Firm Size → Financial Performance	0,138	2,007	0,045	Significant	H2 accepted
Liquidity → Financial Performance	0,143	2,640	0,009	Significant	H3 accepted
Liquidity*Firm Size → Financial Performance	0,063	1,761	0,049	Significant	H4 accepted

Source: Processed data, 2022

Based on Table 5, hypothesis testing applies at the table of 1,972 94 ($N = 200$) and a significance level of 5 percent

H1: The Effect of Financial Technology on Financial Performance

The parametric coefficient test between liquidity and financial performance yielded coefficient values of 0,143; 2,640 for the t-count, and 0,009 for the p-value. The t-count value is higher than the t-table value at the significance level ($\alpha = 0,05$), the t-count value is greater than the t-table value (6,071 greater than 1,972), and the p-value is lower than 0,05 (smaller than 0,05). Because the positive coefficient value and p-value are less than 0,05, it can be stated that financial technology has a favorable impact on financial performance.

H2: The Firm Size as moderating influence of Financial Technology on Financial Performance

Financial Technology*Firm Size and Financial Performance's parameter coefficient test results indicate a coefficient value of 0,138 and a t-count value of 2,007 with a p-value of 0,045. At the significance level ($\alpha = 0,05$), the t-count value is greater than the t-table value (2,007 greater than 1,972) and the p-value is smaller than 0,05 (p smaller than 0,05). The firm size moderates the impact of financial technology on financial performance since the coefficient value is positive and the p-value is less than 0,05.

H3: The Effect of Liquidity on Financial Performance

The parameter coefficient test between liquidity and financial performance yielded results with coefficient values of 0,143, 2,640 for the t-count, and 0,009 for the p-value. At the significance level ($\alpha = 0,05$), the t-count value is greater than the t-table value (2.640 greater than 1,972) and the p-value is smaller than 0,05 (p smaller than 0,05). It can be concluded that liquidity positively impacts financial performance because the coefficient value is positive and the p-value is less than 0,05.

H4: The Firm Size as moderating influence of Liquidity on Financial Performance

Liquidity*Firm Size and Financial Performance parameter coefficient test results indicate a coefficient value of 0,063 and a t-count value of 1,761 with a p-value of 0,049. At the significance level ($\alpha = 0,05$), the t-count value is greater than the t-table value (2,001 > 1.972) and the p-value is greater than 0,05 (p greater than 0,05). As a result of the p-value being greater than 0,05, it can be said that Firm Size modifies the impact of liquidity on financial performance.

Discussion

The results of this study indicate that fintech improves financial performance. This demonstrates that implementing conventional commercial bank fintech would enhance financial performance, as clients are more likely to create savings accounts and deposit money in institutions that can satisfy their short-term requirements and those that offer fintech services. In addition, this fintech solution streamlines asset management, reduces transaction times, and speeds up fund transfers and other customer-facing functions. This study is backed up by (Utami & Sitanggang, 2021), who discovered that adopting fintech has a favorable and significant impact on SMEs' performance.

The findings of this study are in direct opposition to (Bach Phan et al., 2020), which emphasizes how fintech negatively affects banking performance. Technology does not involve financial performance (Karsha & Abufara, 2020).

The study's findings suggest that Bank Size is a moderating factor for the impact of fintech on financial performance, indicating that conventional commercial banks with larger bank sizes may be able to amplify this impact. Because of this, banks stand to gain more from investing in fintech to boost financial performance. Increased fintech investment enables banks to enhance financial performance, particularly when bank size is deemed large; this research has significant policy implications. The study's findings are corroborated by (Chhaidar et al., 2022), which found that bank size is a moderating factor in the relationship between digital investment and profitability.

Statistics tests' findings indicate that liquidity affects financial performance favorably. This demonstrates that the higher the liquidity value, the better the performance; specifically, when the bank has a high level of liquidity, there are more opportunities for it to receive help from other sources. Customers, suppliers, and creditors prefer to park their money in conventional commercial banks with strong liquidity. For the community to save money and for this traditional commercial bank to demonstrate its performance, its liquidity is crucial. Studies corroborate this study's findings by (Jaworski & Czerwonka, 2021; Lucy et al., 2018; Musyrafah, 2020; Paul et al., 2021; Waswa et al., 2018), which discovered that liquidity has a favorable impact on banks financial performance. On the other hand, research by (Achmady et al., 2021; Iskandar & Zuhlilmi, 2021) finds that liquidity has little impact on financial performance.

Painoli et al., (2021), the result shows that the development of fintech has a positive impact on the profitability Public and Private Sector Banks In India. (Hacini et al., 2021) found that liquidity risk harms Saudi Arabian banks' financial performance.

According to the study's findings, the effects of liquidity on financial performance are moderated by bank size, which means that conventional commercial banks with larger bank sizes might increase this effect. Therefore, the more liquid the bank, especially when the size of the bank is regarded as significant because large banks have more options to issue loans than small banks so that they may generate greater profits for the financial performance of conventional commercial banks (Sudaryanti et al., 2018). Isnaini, (2021) who found that the bank size variable can regulate the association between CAR and Financial Performance, supports this research.

Theoretical Implication and Managerial Implication

Theoretical Implication

Several previous researchers have studied the impact of fintech, liquidity, and financial performance, but the results are inconsistent. According to research, liquidity has no effect on financial performance (Achmady et al., 2021; Iskandar & Zuhlilmi, 2021). Financial performance is unaffected by fintech (Bach Phan *et al*, 2020; Karsha & Abufara, 2020). Given the disparities in previous researchers' findings, the researchers used bank size as a moderating variable to determine whether bank size would strengthen or weaken the influence of fintech and liquidity on financial performance at traditional commercial banks. The use of bank size as a moderating variable is novel in this study because no previous researchers have used bank size as a moderating variable.

Managerial Implication

Financial ratio measurement can assist conventional commercial banks in preserving bank liquidity, improving financial performance, and using fintech to enhance community services and encourage people to use fintech facilities. To fulfill the objectives of shareholder welfare, bank management must manage total assets, liquidity, profitability, and assistance with fintech facilities effectively. This study has important policy implications since it suggests that increasing bank investment in fintech could help banks perform better, particularly when bank size is regarded as enormous. If the shareholders are treated fairly, many other investors will put money into the related bank. This will benefit conventional commercial banks in several ways, one of which is that as more investors put their funds into the market, the bank will have more cash to expand. The percentage of revenue

that is saved must be taken into consideration by managers. The operation and growth of conventional commercial banks are its intended uses.

Conclusion and Future Direction

Conclusion

The findings of this study suggest that fintech improves financial performance. This demonstrates that implementing conventional commercial bank fintech would enhance financial performance, as clients are more likely to create savings accounts and deposit money in institutions that can satisfy their short-term requirements and those that offer fintech services. In addition, with the help of fintech, clients can now make payments more quickly, receive funds more efficiently, manage assets more easily, and do various other things.

The influence of fintech on financial performance is moderated by bank size, which means that traditional commercial banks with larger bank sizes can increase the impact of fintech on financial performance. Therefore, investing in fintech to enhance financial performance is more advantageous for banks. Therefore, this study has important policy implications since it shows that increasing fintech investment helps banks improve their financial performance, especially when those institutions are large.

Liquidity has a positive effect on financial performance. This demonstrates that the higher the liquidity value, the better the performance, and that when the bank has a high level of liquidity, the range of potential sources of support is likewise more excellent. Conventional Commercial Banks with strong liquidity are typically preferred by the general public, suppliers, and creditors to store their money. Therefore, the liquidity held by this conventional commercial bank is crucial to demonstrating its success and encouraging the community to save money.

Since the size of the bank is a moderating factor for the impact of fintech on financial performance, conventional commercial banks with larger bank sizes can have a more substantial effect on liquidity on financial performance. Therefore, the more liquid the bank, when the size of the bank is regarded as prominent, will increase the financial performance of conventional commercial banks, as large banks have more opportunities to issue loans than small banks, allowing them to generate greater profits.

Future Direction

Future studies can look at other factors known to impact financial performance, particularly those related to external banking, such as bank interest rates, inflation, and the value of the US dollar. It is also possible to do additional research in a more significant sector, including all Indonesian financial institutions, in addition to conventional commercial banks.

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