

# DIFFERENCES IN INDONESIAN BANKING FINANCIAL PERFORMANCE BEFORE AND AFTER OJK REGULATION IMPLEMENTATION CONCERNING FINANCIAL TECHNOLOGY

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## ABSTRACT

This study aims to analyse differences in banking financial performance in Indonesia before and after the issuance of OJK regulations on financial technology. This research is a quantitative study using a sample of 37 banking companies listed on the Indonesia Stock Exchange. The data used is secondary data obtained from annual reports for the period 2014-2017 before the issuance of OJK regulations and 2018-2021 after the issuance of OJK regulations. The analytical method used is the Wilcoxon Signed Rank Test on the variables ROA, ROE, BOPO, CAR and LDR. The results of this study indicate that the ROA, ROE, and CAR variables have a greater value after the regulation on financial technology, the BOPO variable has a smaller value after the regulation on financial technology and the LDR variable has a smaller value after the regulation on financial technology.

## INTRODUCTION

The development of the times followed by technological developments, has always experienced changes to this day. These changes can be utilized by the community in aspects of daily life which can simplify and shorten the time in use. The emergence of the latest innovations in the digital field occurs when there is very rapid technological development in people's lives (Sholica, 2020). There is one new innovation that has emerged in the field of digital technology, one of which is financial technology. According to the National Digital Research Center (NDRC) explains that fintech is a modern technology or an innovation that is developing in the field of financial services. Financial technology can be used as a means of payment, interbank fund transactions, lending and other financial activities. Based on information obtained from the Financial Services Authority (OJK), fintech itself can help and facilitate users in accessing services from a financial service.

Reporting from ocbcnisp.com, fintech has started to develop in Indonesia since 2006, then people began to believe in the existence of fintech after the establishment of the Indonesian Fintech Association (AFTECH) in 2015. In 2017, Bank Indonesia stipulated regulation number 19/12/PBI/2017 concerning the implementation of financial technology or fintech. The regulation considers that developments in technology and information systems continue to produce various innovations, especially those related to financial technology to meet various community needs, including access to financial services and transaction processes. Bank Indonesia stipulates this regulation to maintain the stability of the financial system in Indonesia because the development of fintech is growing so fast that it is feared that it will have a negative impact on its organizers (Parsaulian, 2021).

Financial technology also has a legal umbrella stipulated by the Financial Services Authority Regulation (POJK) number 13/POJK.02/2018 concerning digital financial innovation in the financial services sector. The regulations contain provisions that have oversight and regulations for the financial technology industry. The

regulation aims to direct fintech to produce digital financial innovations that are safe, responsible, prioritize consumer protection and have risks that can be managed properly. These regulations are also used to increase investment financial inclusion, financing and other financial services and to support financial services that are fast, easy, innovative, inexpensive and broad (Sholica, 2020).

Technological developments are used by banks to compete by utilizing electronic services in corporate activities (Margaretha, 2017). The trend of payments using fintech can increase the efficiency of operational activities and the quality of bank services to its customers. Fintech services that are often used in banking include ATMs, e-money, mobile payments, and e-banking (Kristianti & Tulenan, 2021). Ramadan (2021) said that fintech that cooperates with banks can increase the existence of banks in competing in financial markets. Financial technology used in the banking industry can help increase the speed of processes in business operations and marketing. The use of financial technology related to the banking industry has benefits in the use of financial services because it makes it easier for customers to process financial transactions.

Fintech is increasingly becoming an important part of the structure of the banking and financial services ecosystem. Access to financial services and products is easier to manage than usual, especially for customers who currently live in rural areas without a financial system. Financial technology can not only make services more accessible, it can also make services cheaper by reducing transaction costs for banks (Pramana, 2022). After the existence of fintech, it has a significant influence on financial performance, one of which is profitability, which has increased company profits. The use of financial technology services by banks is expected to have an impact which can affect the company's income level which is shown in the company's financial performance. If the use of financial technology can affect the income of banking companies, then the benefits obtained will be seen in the company's financial statements. According to Rahadi (2020), if financial technology is not managed properly related to risk, it can be disruptive system company finance.

Measurement of Return on Assets (ROA) for banks assesses bank profitability as measured by assets where some of the funds they get come from the community and then the bank will channel them back to the community. Fintech services in the form of financial technology innovation become a resource for existing assets in the company, so that they can increase bank profitability, especially in the ROA ratio if fintech services are often used by customers (Mayasari et al., 2021). This is consistent with the results of the study Prastika (2019) where the use of fintech can affect financial performance which is able to generate net profit by utilizing existing assets.

Return on Equity (ROE) a company has a high value then the company has a good investment opportunity. This ratio has increased which indicates that an increase in the net profit of the bank will affect the increase in the bank's stock price (Rahmani, 2017). Fintech services used by banks when used by many customers and attract shareholders and potential investors can increase company profitability. It is aligned with Alsmadi et al. (2019) where the use of e-banking has a positive relationship to ROE in commercial banks in Jordan. In addition, fintech is used by banks as a company operational tool that is useful for customers to carry out their financial activities.

Operational Costs and Operating Income (BOPO) have a major influence in measuring the level of efficiency and ability of a bank to carry out its operational activities. Banking can minimize administrative costs because with fintech transactions made by customers can be resolved and minimize the company's BOPO. The BOPO value of a bank if it has a small value indicates a better level of efficiency for the bank because it is able to reduce banking operational costs thereby increasing bank profitability. It is aligned with Margaretha (2017) where BOPO positively and significantly makes a difference to the efficiency of banks using e-banking.

Capital Adequacy Ratio (CAR) is one of the ratios that shows the level of capital adequacy which shows the ability of a bank to provide their funds which are useful for overcoming the risk of loss. This ratio can affect changes in the profitability of a company, where when the CAR value is higher it will have an impact on increasing the sense of public trust which will increase the profitability of a company. It is aligned with Mar'atushsholihah & Karyani (2021) where CAR has increased after the use of fintech and experienced fairly stable capital conditions.

Loan to Deposit Ratio (LDR) is one of the ratios used as a determinant of the amount of credit given compared to the amount of funds used which comes from the public and their own capital (Darmawan, 2020). Customers can make credit using services provided by banks such as internet banking or m-banking and can

affect banking LDR. It is aligned with Ally (2020) where after the existence of fintech LDR has increased where there are differences in LDR after the existence of fintech companies.

**METHODS**

**Population, Sample and Data Collection Techniques**

The population in this study is the banking sector listed on the Indonesia Stock Exchange (IDX) for the period 2014-2017 (before using financial technology) and 2018-2021 (after using financial technology) with a size of 37 banking companies. The sample used in this study selected using purposive sampling technique. This research is a type of quantitative research using secondary data obtained from annual reports of banks listed on the IDX taken on the IDX website ([www.idx.co.id](http://www.idx.co.id)).

**Research variable**

There are two variables in this study, namely the dependent variable and the independent variable. The independent variable in this study is the use of financial technology before and after fintech. The dependent variable in this study is banking financial performance as measured by Return On Assets (ROA), Return On Equity (ROE), Operating Costs and Operating Income (BOPO), Capital Adequacy Ratio (CAR) and Loan Deposit Ratio (LDR). The research variables used in this study can be seen in Table 1 below:

**Table 1. Variable Indicators**

Variable	Indicator
Financial Technology	The use of fintech services that have been implemented by banks by comparing before and after the existence of financial technology.
Return on Assets (ROA)	$ROA = \frac{\text{Net profit after tax}}{\text{Total assets}}$
Return on Equity (ROE)	$ROE = \frac{\text{Net profit after tax}}{\text{Shareholder equity}}$
Operating Costs and Operating Income (BOPO)	$BOPO = \frac{\text{Operating Expenses}}{\text{Operating Income}}$
Capital Adequacy Ratio (CAR)	$CAR = \frac{\text{Modal}}{\text{ATMR}}$
Loan to Deposit Ratio (LDR)	$LDR = \frac{\text{Total Credit to non bank third parties}}{\text{Total third party funds}} \times 100\%$

**RESULTS**

**Descriptive Statistics Test**

Descriptive statistical analysis is used to analyze data by describing the data that has been collected without intending to make general conclusions or generalizations (Sugiyono, 2015).

**Table 2. Results of Descriptive Statistical Analysis**

	N	Minimum	Maximum	Means	std. Deviation
ROA_Before	37	-3.64	4.11	1.0066	1.71448
ROA_After	37	-7.46	3.68	.4068	2.22148
BOPO_Before	37	61.15	133.59	91.8911	16.41200
BOPO_After	37	58.75	186.18	97.0864	25.26047
CAR_Before	37	11.87	112.69	23.0781	16.55307
CAR_After	37	13.99	107.05	27.9984	16.47923
LDR_Before	37	40.06	263.91	91.2649	36.62044
LDR_After	37	41.05	147.32	86.3544	18.81861
Valid N (listwise)	37				

Source: Data processed using SPSS 25, 2022

The description of the table above shows that of the 37 bank samples studied, the average ROA before the regulations regarding financial technology was 1.0066 with a standard deviation value of 1.71448. Then for the average yield of ROA after the regulation on financial technology was 0.4068 with a standard deviation value of 2.22148. This shows that the value of banking profitability in Indonesia has decreased after the existence regulations about financial technology.

The description of the table above shows that of the 37 bank samples studied, the average ROE before the regulation on financial technology was 5.232 with a standard deviation value of 12.4170. Then for the average ROE result after the regulation on financial technology was 1.0035 with a standard deviation value of 12.42126. This shows that the level of banking ability in Indonesia to control capital has decreased after this regulations about financial technology.

The description of the table above shows that of the 37 bank samples studied, the average BOPO before the existence of regulations on financial technology was 91.8911 with a standard deviation value as big 16,412. Meanwhile, the average yield after the regulation on financial technology was 97.0864 with a standard deviation value of 25.26047. This shows that the efficiency level of banking in Indonesia has increased after the existence regulations about financial technology.

The description of the table above shows that of the 37 bank samples studied, the average CAR before the introduction of regulations on financial technology was 23.0781 with a standard deviation value of 16.55307. Meanwhile, the average result after the regulation on financial technology was 27.9984 with a standard deviation value of 16.47923. This shows that the level of public trust in banks in Indonesia has increased after the introduction of regulations on financial technology.

The description of the table above shows that of the 37 bank samples studied, the average LDR before the existence of regulations on financial technology was 91.2649 with a standard deviation value as big 36.62044. Meanwhile, the average yield after the regulation on financial technology was 86.3544 with a standard deviation value as big 18.81861. This shows that level banking liquidity in Indonesia to cover obligations to customers has increased after this regulations about financial technology.

### Normality test

Normality test needs to be done for parametric statistical tests using the Kolmogorov-Smirnov test to find out whether the data is normally distributed or not (Hardani et al., 2020).

**Table 3. Normality Test Results**

Variable	Sig.	Kolmogorov-Smirnov	
		Assumption Normality	Information
ROA_Before	0.024	0.05	Not Normal Distribution
ROA_After	0.003	0.05	Not Normal Distribution
ROE_Before	0.005	0.05	Not Normal Distribution
ROE_After	0.001	0.05	Not Normal Distribution
BOPO_Before	0.038	0.05	Not Normal Distribution
BOPO_After	0.01	0.05	Not Normal Distribution
CAR_Before	0.000	0.05	Not Normal Distribution
CAR_After	0.000	0.05	Not Normal Distribution
LDR_Before	0.000	0.05	Not Normal Distribution
LDR_After	0.033	0.05	Not Normal Distribution

Source: Data processed using SPSS 25, 2022

The description of Table 4 shows that all the variables used in this study are not normally distributed. This is indicated by a significance level (Sig.) less than 0.05, so the Wilcoxon Signed Ranks Test will be carried out on all variables.

### Difference Test

#### **Return on Assets (ROA)**

The results of the Wilcoxon Signed Ranks ROA hypothesis test before and after the regulations regarding financial technology in banking in Indonesia are shown in the following table:

**Table 4. Wilcoxon Signed Ranks ROA Test Results**

ROA_After - ROA_Before	
Z	-2,203
asympt. Sig. (2-tailed)	.028

Source: Data processed using SPSS 25, 2022

The results of the Wilcoxon Signed Ranks Test on the Return on Assets variable show an acquisition value of 0.028 < 0.05 that H1 is accepted. The first hypothesis which reads "Return on Assets (ROA) after the

regulation on fintech has a significantly greater value than before the regulation on fintech" is supported or accepted. It is concluded that there is a difference in ROA where the profitability value as indicated by the ROA ratio is greater than before the regulations regarding financial technology in banking in Indonesia.

***Return on Equity (ROE)***

The results of the Wilcoxon Signed Ranks ROE hypothesis test before and after the regulations regarding financial technology in banking in Indonesia are shown in the following table:

**Table 5. Wilcoxon Signed Ranks ROE Test Results**

<b>ROE_After - ROE_Before</b>	
Z	-2,648
asympt. Sig. (2-tailed)	008

Source: Data processed using SPSS 25, 2022

The results of the Wilcoxon Signed Ranks Test on the Return on Equity variable show an acquisition value of 0.008 < 0.05 that H2 is accepted. The second hypothesis which reads "Return on Equity (ROE) after the regulation on fintech is significantly greater than before the regulation on fintech" is supported or accepted. It was concluded that after the regulation on fintech, the company's profitability as indicated by the ROE ratio was greater than before the regulation on fintech or there was a difference in ROE between before and after the regulation on financial technology.

***Operating Expenses and Operating Income (BOPO)***

The results of the Wilcoxon Signed Ranks Test BOPO before and after regulations regarding financial technology in banking in Indonesia are shown in the following table:

**Table 6. Results of the Wilcoxon Signed Ranks BOPO Test**

<b>BOPO_After - BOPO_Before</b>	
Z	-1,033
asympt. Sig. (2-tailed)	.301

Source: Data processed using SPSS 25, 2022

The results of the Wilcoxon Signed Ranks Test on the variable Operating Costs and Operating Income show an acquisition value of 0.301 > 0.05 that H3 is accepted. The third hypothesis which reads "Operating Costs and Operating Income after the regulation on fintech is significantly smaller than before the regulation on fintech" is supported or accepted. It was concluded that the profitability value indicated by the BOPO ratio after the regulation on fintech was smaller than before the regulation on fintech.

***Capital Adequacy Ratio (CAR)***

The results of the Wilcoxon Signed Ranks Test Capital Adequacy Ratio before and after the regulations regarding financial technology in banking in Indonesia are shown in the following table:

**Table 7. Wilcoxon Signed Ranks CAR Test Results**

<b>CAR_After – CAR_Before</b>	
Z	-3.674b
asympt. Sig. (2-tailed)	.000

Source: Data processed using SPSS 25, 2022

The results of the Wilcoxon Signed Ranks Test on the Capital Adequacy Ratio variable show an acquisition value of 0.000 < 0.05 that H4 is accepted. It was concluded that the solvency value indicated by the CAR ratio was greater after the regulations regarding fintech where there were differences in the CAR between before and after the regulations regarding financial technology in banking.

**Loan to Deposit Ratio (LDR)**

The results of the Wilcoxon Signed Ranks Test Loan to Deposit Ratio test before and after the regulations regarding financial technology in banking in Indonesia are shown in the following table:

**Table 8. Wilcoxon Signed Ranks LDR Test Results**

	<b>LDR After - LDR Before</b>
Z	-.822
asymp. Sig. (2-tailed)	.411

Source: Data processed using SPSS 25, 2022

The results of the Wilcoxon Signed Ranks Test on the Loan to Deposit Ratio variable show an acquisition value of 0.411 > 0.05 that H5 is rejected. The fifth hypothesis which reads "Loan to Deposit Ratio after the regulation on fintech is significantly greater than before the regulation on fintech" is not supported or rejected. It was concluded that the value of liquidity as indicated by the LDR ratio was not greater after the regulations regarding fintech where there was no difference in the LDR between before and after the regulations regarding financial technology in banking.

**DISCUSSION****The ROA of banking in Indonesia after the regulation on fintech is greater than before the regulation on fintech**

Banking is considered effective in using assets owned by looking at the ROA value generated. The use of fintech services in financial activities can make it easier for users to complete their transactions. The results of this study indicate that the profitability value as indicated by the ROA ratio is greater after fintech exists or there is a significant difference to the Return on Assets (ROA) between before and after the existence of financial technology in banks in Indonesia. This happens because fintech services are one of the digital innovations that are used as a company asset. Banks are expanding the scope of fintech services such as mobile banking in order to attract more customers or customers to use their services. Transactions made using fintech services can make it easier for customers to complete their financial activities such as transferring funds, checking balances, paying bills, transferring accounts and others. Transactions carried out by customers when using m-banking, in addition to providing convenience and speed, also provide fee income for banks originating from administration fees. The possible profit that can be obtained by a bank can be very large due to the use of m-banking which reaches thousands or millions every day. After the existence of fintech, many banks have launched loans based on fintech applications or peer to peer (P2P) lending. These loans provide convenience such as easier and more practical terms and conditions, the process of applying for funds is faster without the need to come directly to the bank and the process of disbursing funds is faster. Customers who make loans to fintech-based banks in addition to the perceived convenience also provide benefits for the bank, where the profit the bank gets comes from the credit extended and the bank gets interest that must be paid by the customer. This can increase the company's profitability from the benefits or costs obtained from using m-banking and can increase ROA. This is in line with research where the profit obtained by the bank comes from the credit extended and the bank gets the interest that must be paid by the customer. This can increase the company's profitability from the benefits or costs obtained from using m-banking and can increase ROA. This is in line with research where the profit obtained by the bank comes from the credit extended and the bank gets the interest that must be paid by the customer. This can increase the company's profitability from the benefits or costs obtained from using m-banking and can increase ROA. This is in line with research Margaretha (2015),Qinannar (2018), Alghusain et al. (2017).

**The ROE of banking in Indonesia after the regulation on fintech is greater than before the regulation on fintech**

ROE is used to measure a bank's ability to return the capital they have in order to generate profits. Fintech services offered by banks provide convenience and speed to customers. The research results show that the level of banking ability to control capital after the existence of fintech has increased and the ROE value is greater after the existence of fintech. The increase in ROE experienced by banks after the introduction

of fintech occurred because companies earned more profits. Digital technology that is increasingly developing makes banks to carry out digital innovations and have an impact on profitability or profitability has increased. Digital innovation, namely fintech which is used as a company asset, provides increased corporate profits or profits from transactions carried out by customers such as interbank fund transfer transactions and online loans based on fintech applications. The increase in profits after the existence of fintech was due to bank efficiency due to the use of m-banking where banks did not incur large costs so that the profits earned by banks were more. The profit obtained comes from transactions made by customers through fintech services. Peer to Peer (P2P) lending which was carried out after fintech developed, especially in banks listed on the IDX, had an effect on the movement of stock trading on the IDX. Increased profits also affect the bank's ROE value because it affects the value of retained earnings and the value of ROE has increased.

The amount of profit earned, the company can provide large dividends where these dividends can attract investors and dividends go into equity. The high ROE value of a company illustrates that the better the company's performance in earning profits, the higher the stock returns obtained by investors, so that the high ROE value can attract investors to invest because the company's performance is well managed. After the existence of fintech which is used by banks as one of the banking services, it can provide opportunities for companies to expand their corporate networks and product sales capabilities to customers. This can increase the company's profitability as indicated by the ROE ratio, which after the use of fintech has increased. The results of this study are in line with research conducted by the higher the stock return obtained by investors, so that the high value of ROE can attract investors to invest because the company's performance is well managed. After the existence of fintech which is used by banks as one of the banking services, it can provide opportunities for companies to expand their corporate networks and product sales capabilities to customers. The results of this study are in line with research conducted by Ratnawati (2020), Prastika (2019), Tasman et al. (2020).

#### **The BOPO of banking in Indonesia after the regulations regarding fintech was introduced was smaller than before the regulations regarding fintech were introduced**

BOPO is used to measure the level of efficiency and ability of a bank in carrying out its operational activities. Fintech services are services engaged in technology and digital. The process that is carried out tends to use technology so that it is easier and faster. The results of this study indicate that the BOPO value is smaller after fintech exists than before fintech exists. The use of fintech such as m-banking, internet banking, SMS banking and phone banking can minimize company costs such as labor salary costs because banks reduce tellers or employees. They incur less operational costs after fintech exists because companies tend to use technology where companies can reduce paper costs, printing costs, stationery costs and other costs. Fintech services offered by banks make more use of technology than labor. The results of this study are in line with research conducted by Sholica (2020), Thio & Yusniar (2021), Sisca (2022).

#### **The CAR of banking in Indonesia after the regulation on fintech is greater than before the regulation on fintech**

Capital Adequacy Ratio (CAR) is a ratio that shows the level of capital adequacy that shows the ability of a bank to provide their funds that are useful for overcoming the risk of loss, where total capital is needed to cover the risk of loss caused by investing in risky assets. The results of this study indicate that the CAR value of banking in Indonesia is greater after the existence of fintech than before the existence of fintech or there is a significant difference in the Capital Adequacy Ratio (CAR) between before and after the existence of financial technology in banks in Indonesia. This happens where the bank has the capital reserves needed to bear all risks and overcome all risks. After the emergence of financial technology, banks that carry out digital innovation, one of which is fintech where transactions made through fintech by customers have anticipated the risks that will occur. The use of fintech is vulnerable to fraud or unintentional errors by customers. The risks that occur have been considered by the company to avoid losses. Fintech services offered by banks have a security system that has been prepared to guarantee the security of customer data because it has been supervised by the OJK. Customers can easily and quickly make transactions or make deposits at the bank via fintech. The advantage that banks get with fintech is that banks get capital from deposits made

by customers, then the customer's money stored in the bank is played back in order to get a profit. This capital is put into capital reserves to anticipate or bear all the risks that are likely to occur. The results of this study are in line with research Putri et al., (2021), Wijaya, (2020).

### **The LDR of banking in Indonesia after the regulation on fintech was not greater than before the regulation on fintech**

The bank liquidity ratio is the ratio used to describe a company's ability to meet its short-term obligations. The results of this study indicate that the LDR value of banking in Indonesia after fintech is not greater than before fintech or there is no significant difference. It is possible that because banks are not able to provide socialization in remote areas or areas that are difficult to accept internet networks and the lack of public knowledge may be one of the reasons why banks do not provide literacy regarding the use of m-banking. Another possibility is also caused by the age factor which can affect how to use m-banking or internet banking such as parents who are not too familiar with technology or are often called clueless. Besides that, economic conditions may also affect the lack of demand for credit or loans. Economic conditions have been disrupted since the pandemic that has been going on for several years has forced many companies to lay off their employees, so that employees do not have a steady income. The results of this study are in line with research Mar'atushsholihah & Karyani, (2021), Daryanto et al (2020).

### **CONCLUSION**

The effect of financial technology on the financial performance of banks in Indonesia by measuring before and after the regulations regarding financial technology passed by the OJK. The test results show that the ROA, ROE and CAR of banks after the regulation on financial technology has increased. Meanwhile, the bank's BOPO after the introduction of regulations on financial technology has a smaller value because banks can reduce their operational costs so that they are more efficient. Furthermore, namely the bank's LDR value is not greater after the existence of regulations on financial technology where there are several influencing factors such as the possibility of a lack of socialization related to the use of m-banking in remote areas.

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