

The Effect of the Emergence of Fintech on the Financial Performance of the Banking Sector: A Case Study Using ROA, LDR, and CAR Ratios

Arief Hidayat¹, Budi Rustandi Kartawinata²

Telkom University, Bandung, Indonesia^{1,2}

Abstract. The future business model of the Indonesian banking sector is determined by the development of information technology in the course of the digital revolutions. Recognizing the importance of this matter, this study aims to analyze the financial performance of the banking sector before and after the emergence of financial technology (fintech) companies. The study uses financial ratios, including return on assets (ROA), loan to deposit ratio (LDR), and capital adequacy ratio (CAR), to measure the performance of banks. Overall, the study suggests that the emergence of fintech has brought both challenges and opportunities for the banking sector.

Keywords: finance, banking, financial management

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Corresponding Author: Arief Hidayat. Telkom University, Bandung, Indonesia

INTRODUCTION

Due to its population's lack of bank accounts and high cellphone penetration rates, Indonesia is a market with significant amounts of digital banking transactions. In Indonesia, there are 177.9 million smartphone users and 143.26 million internet users, representing 54.8% of the country's total population. between 19 and 34 years old Indonesian internet users. The millennial generation made up 33.75% of the population in 2017. (The Financial Service Authority, 2018). As a result of the growing public demand for the availability, access, and control of digital banking services, traditional banks with outdated business models face the urgent task of digitally converting their services (Pradana et al., 2019).

According to the majority of researchers, the future business model of the Indonesian banking sector will be impacted by the development of information technology in the course of the digital revolutions (McKinsey, 2020). Due to changes in consumer behavior brought on by the digital revolution, banks had to be able to provide quicker and easier access. This in turn required banks to keep innovating when it came to offering digital goods. Physical branch offices may become less necessary as a result of the digital revolution, making them obsolete in the long run (Andrews, 2020).

Emerging and operating financial technology (Fintech) companies can disrupt incumbent companies in the banking sector (Junviani et al., 2021). This can be seen in their low prices and ability to expand quickly if banks do not adapt or act. With virtual banking or the lack of physical bank institutions, the activities, objectives, and labor performed by bank institutions can be replaced by fintech (Junviani et al., 2021). Nurhaida in (cnbcindonesia.com, 2020) explained the findings of a Bank for International Settlements (BIS) study, which identified five possible fates for banking in the face of technological and digital advances. First, better banks will emerge as a result of transformation, allowing them to provide digital services. Second, traditional banks do not engage in transformation, whereas developing new digital banks do. Third, banks will perform extensive procedures, but the things that are mainly done by digital companies will be referred to as "bank degeneration." Banks are only involved in general business operations. While digital

companies handle interactions with customers, they handle relationships with future coaching. Fourth, banks will be degraded; banks will only be able to provide certain services, while fintechs will provide specialized services.

Shahchera (2012) identifies two categories of factors that might uniformly affect bank financial performance: internal factors that predominantly affect bank performance and external factors related to macroeconomics, such as inflation rate, GDP growth rate, and foreign currency exchange rate. This study is focused on the internal factors, such as profitability, liquidity, and capitalization, that have the greatest impact on the financial performance of banks.

The first internal factor, according to Sari & Saraswati (2017), is the variable measurement of return on assets to measure bank profitability because Bank Indonesia, which is a banking supervisor, prioritizes the profitability value of a bank as measured by assets where the majority of the funds are raised from the public and later by the bank must also be channeled back to the public. Additionally, the Bank Indonesia Regulation stipulates that the LDR (Loan to Deposit Ratio), which is the ratio between loans and Third Party Funds, can be used as a proxy for the bank's liquidity capability (DPK). The loan to deposit ratio displays the proportion of loans to deposits that the bank has on hand. As a result of the owned funding sources (deposits) being depleted to finance the financing of the credit portfolio, it can be seen that the level of liquidity is decreasing and vice versa. The likelihood of a bank being in a bad situation will increase as this ratio increases because the higher it is, the weaker the bank's ability to handle liquidity will be.

The capital adequacy ratio is a measurement variable for other aspects of capital since it relates to the bank's capital component and assesses how much capital the bank has to sustain risky assets. Currently, the minimum CAR is 8% of ATMR, or 8% of ATMR plus market risk and operational risk, depending on the state of the bank in question. A bank's capital level will determine whether or not it can conduct its business effectively. The bank can manage all of its operations effectively if its capital can absorb unavoidable losses, and as a result, bank wealth (shareholder wealth) is anticipated to rise.

In order to determine whether there are any differences in profitability, liquidity, and capitalization in the banking sector before and after the existence of financial technology companies, we would like to conduct a study titled "Financial Performance Analysis of the Banking Sector Before and After the Existence of Financial Technology Companies."

METHOD

Population and Sample

This quantitative study employs an object, namely the Banking Sector, which had 45 banking companies listed on the Indonesia Stock Exchange (IDX) between 2013 and 2017. Purposive sampling was used by the researchers in this study. The purposive sampling strategy was used to choose samples as needed by considering and limiting certain criteria based on study objectives. In order to do research, the following criteria must be met:

- A. Banking firms listed on the Indonesia Stock Exchange in 2013-2014 (before the existence of financial technology companies) and 2016-2017. (after the existence of financial technology companies).
- B. Maintain the financial report data throughout the research period, namely 2013-2017.

Method of data collecting

The secondary data used in the research is the banking annual report from the website www.idx.co.id or the official banking sample website. The documentation procedure for gathering research data, and a Paired Sample T-Test analysis for normally distributed data and a Wilcoxon Signed Rank Test analysis for non-normally distributed data is done (Ghozali, 2016).

RESULTS

Statistics Descriptive

In this descriptive statistical analysis, there is a description of the minimum value, maximum value, average (mean) and standard deviation of each research variable. The following data processing output is obtained from the Excel 2016 application.

Table 1. Output Statistic Deskriptif

	Count	Minimum	Maximum	Mean	Std. Deviation
ROA Before	38	-0.88	4.88	1.8150	1.25576
ROA After	38	-7.27	10.10	0.9321	2.86232
LDR Before	38	49.86	121.92	87.2976	13.93327
LDR After	38	52.30	110.76	84.1832	12.21812
CAR Before	38	12.26	67.94	19.8982	10.21103
CAR After	38	5.12	38.57	20.5487	5.37120
Valid Count (listwise)	38				

Sources: Data is processed with Excel 2016 software

The description of Table 1 shows, of the 38 number of bank samples studied, the average profitability before the existence of financial technology companies was 1.8150 with a standard deviation value of 1.25576. Then for the average profitability results after the existence of financial technology companies is 0.9321 with a standard deviation of 2.86232. This ensures that the average profitability of banks has decreased after the existence of financial technology companies.

The description of Table 1 shows, of the 38 number of bank samples studied, the average liquidity before the existence of financial technology companies was 87.2976 or through a standard deviation value of 13.93327. Then for the output of average liquidity after the existence of financial technology companies is 84.1832 with a standard deviation of 12.21812. This confirms that the average liquidity of banks has decreased after the existence of financial technology companies.

The description of Table 1 shows that, of the 38 total bank samples studied, the average capital before the existence of financial technology companies was 19.8982 with a standard deviation value of 10.21103. Then the average result of capital after the existence of financial technology companies found a decrease through a value of 20.5487 with a standard deviation of 5.37120. This confirms that bank capital has increased after the existence of financial technology companies.

Normality Test

The data normality test ensures the type of statistics to be used, whether parametric statistics or non-parametric statistics, before checking the hypothesis (Sugiyono, 2017). Below is the output of the Kolmogorov-Smirnov (K-S) SPSS 25 normality test.

Kolmogorov Smirnov		
	Statistic	Sig
ROA Before	0.156	0.020
ROA After	0.231	0.000
LDR Before	0.122	0.162
LDR After	0.127	0.127
CAR Before	0.299	0.000
CAR After	0.114	0.200

Description of Table 2, where the results of the normality test output from SPSS 25, nan profitability proxied through the variable Return on Assets (ROA) before the existence of financial technology companies obtained a significance value of $0.020 < 0.05$ therefore the data distribution is not normal and the variable Return on Assets (ROA) after the existence of financial technology companies obtained a significance value of $0.000 < 0.05$ therefore the data distribution is not normal. To test the profitability hypothesis represented by the variable return on assets (ROA), a different test was carried out utilizing the Wilcoxon signed rank test.

The description of Table 2, where the output results of liquidity represented through the loan to deposit ratio (LDR) variable before and after the existence of financial technology companies obtained a significance value of 0.162 and significance $0.127 > 0.05$ therefore the data distribution is normal. To test the liquidity hypothesis represented by the loan to deposit ratio (LDR) variable, a different test is carried out utilizing the t test (Paired Sample t-test).

Another case of capital in the output of Table 2 which is represented by the capital adequacy ratio (CAR) variable before the existence of financial technology companies obtains a significant value of $0.000 < 0.05$ therefore the data is not normally distributed, while the CAR variable after the existence of financial technology companies obtains a significance value. $0.200 > 0.05$ therefore the data is normally distributed. To test the capital hypothesis represented by the capital adequacy ratio (CAR) variable, a different test was carried out using the Wilcoxon signed rank test.

Hypothesis Test

Testing the profitability hypothesis

The output of the Wilcoxon Signed Ranks Test of initial and subsequent ROA of financial technology companies is below:

Test Statistics	
Model	ROA After - ROA Before
Z	-2.879 ^b
Asymp sig. (w-tailed)	0.04

Output Table 3, where the Wilcoxon Signed Ranks Test output for the Return of Assets variable determines the acquisition value of $0.04 < 0.05$ that H1 is accepted. Therefore, the first conjecture containing "There is a difference in banking sector profitability between before and after the existence of Financial Technology Companies" is supported or accepted. The conclusion is that there are differences in banking profitability before and after the existence of Financial Technology Companies (Willayat et al., 2022).

Liquidity Hypothesis Testing

The output of the Paired Sample T Test Loan to Deposit Ratio before and after there are financial technology companies is below:

Paired Samples Test									
Paired Differences									
95% Confidence Interval of the Difference									
Model		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig.(2-tailed)
Pair 1	LDR	3,11	9.4424	1.5317	0.0108	6.2181	2.03	37	0.049
	Sebelum	447	7	7	1	4	3		
	LDR								
	Susudah								

Output Table 4, where the Paired Sample T Test output for the Loan to Deposit Ratio variable determines the acquisition value of 0.049. Therefore, the acquisition value of $0.049 < 0.05$ that H2 is accepted. Then the second conjecture containing "There is a difference in the liquidity of the banking sector between before and after the existence of Financial Technology Companies" is supported or accepted. The conclusion is that there are differences in banking liquidity before and after the existence of financial technology companies.

Capital Hypothesis Testing

The output of the Wilcoxon Signed Ranks Test Capital Adequacy Ratio at the beginning and after there are financial technology companies is below:

Test Statistics	
Model	CAR After - CAR Before
Z	-2.110 ^b
Asymp sig. (2-tailed)	0.0035

Output Table 5, where the Wilcoxon Signed Ranks Test output for the Capital Adequacy Ratio variable determines the acquisition value of $0.035 < 0.05$, so H3 is accepted. So the third hypothesis which reads "There are differences in banking sector capital between before and after the existence of Financial Technology Companies" is supported or accepted. The conclusion is that there are differences in banking capital before and after the existence of Financial Technology Companies.

Research Interpretation

Comparison of Banking Profitability

The value of Asymptotic was taken from Table 3's result above. Significance. The Return on Assets (ROA) variable's (2-tailed) value is 0.04, which is less than 0.05. To put it another way, profitability before and after the rise of financial technology companies differs. Prior to the emergence of financial technology businesses, the average Return on Assets (ROA) for all banks was 1.81%; following the emergence of these companies, the average ROA for all banks was 0.93%. Thus, there is a difference in profitability between before and after the presence of financial technology companies, which has fallen by 0.88%. Even though the profitability number doesn't drop considerably, the bank's asset management in this situation is subpar. Another reason is that rising operating costs may result in a decline in corporate profit, which will lower the profitability value. Bank earnings typically suffer from declining banking rivalry, which has become more intense with the advent of new players in the financial services sector, such as the financial technology industry. To remain competitive with financial technology companies, banks must develop a financial technology system.

Similar research was conducted by Christensen, Raynor, & McDonald (2015), Qinannar (2018), Octaviani (2019) and Aldy (2020) where in their research found that there were differences in profitability after the existence of financial technology companies. However, contrary to the findings by (Holau, 2019), (Puspita, 2019) and (Prastika, 2019) there is no difference in profitability before and after the existence of financial technology companies.

Banking Liquidity Comparison

Based on Table 4 above, the Asymptotic value is obtained. Significance. (2-tailed) for the loan to deposit ratio (LDR) variable is 0.049, which is smaller than 0.05. In other words, there is a difference between the initial loan to deposit ratio (LDR) and after the existence of financial technology companies. The overall banking average loan to deposit ratio (LDR) before the existence of financial technology companies was 87.30%, while the overall banking average loan to deposit ratio (LDR) after the existence of financial technology companies was 84.18%. From these data, it can be seen that after the existence of financial technology companies there is a difference in liquidity characterized by LDR which decreased by 3.12%. From the data above, LDR is within the limits set by BI, namely the upper limit of LDR, which is 92%, the other basic limit is 78%, However, this bank remains within safe limits because it has not yet crossed the officially established lower limit.

The trigger for low liquidity is the bank's ineffectiveness in distributing loans to the public. This effectiveness will result in the efficiency of the bank, because most of the bank's operational income is from loan interest income or funds credited to the public (spread based income). A declining LDR can also be caused by the relatively small demand for credit that fulfills technical bank liquidity compared to credit supply. With the existence of financial technology companies engaged in peer to peer lending, it provides ease of credit application requirements for business actors. Therefore, business actors choose to apply for credit to financial technology companies so that bank liquidity decreases but is still within safe limits. To increase liquidity so that it does not continue to decline even though it is still within safe limits, banks can increase lending but must be accompanied by adequate liquidity growth.

Another external factor that can cause low liquidity is inflation. Inflation can reduce the value of money and people's purchasing power, causing demand for goods and services to decline. As a result, economic actors will cut production and investment levels, resulting in reduced lending by financial institutions. This will affect the economic growth of a country whose investment capital depends on financial institutions. Based on (Nandadipa & Prasetyono, 2010) the value of money will decrease due to rising inflation and then have an impact on people who feel disadvantaged when keeping their money in the bank, more so through people's expectations of earning interest amid soaring inflation, then these people are reluctant to save, resulting in funds that save the bank will make it smaller. Then the matter makes the bank's expertise in channeling credit based on third party funds down so that the Loan to Deposit Ratio (LDR) becomes even lower.

This finding is in line with the findings conducted by Aldy (2020), Octaviani (2019), Holau (2019) and Haadini (2016) where their research found that there were differences in banking liquidity between before and after the existence of financial technology companies. However, the opposite phenomenon with research by Restadila, Tristiarto, & Pangestuti (2020) and Guercini & Milanese (2016) states that the relationship between the presence of startup companies through the obligations that must be realized by the banking industry that has long existed as a result of the presence of startup companies does not always have a negative impact and is not always relevant to the financial performance and

liquidity level of the banking industry which has decreased.

Banking Capital Comparison

Based on Table 5 above, it is determined that the Capital Adequacy Ratio (CAR) variable's Asymptotic Significance (2-tailed) value is 0.035, which is less than 0.05. In other words, there is a difference between the funding provided to financial technology startups at the beginning and later. Prior to the emergence of financial technology businesses, the average capital adequacy ratio (CAR) for all banks was 19.90%; with the emergence of financial technology companies, the average CAR rose to 20.55%. Based on the statistics, it can be concluded that there is a difference in capital following the existence of financial technology companies, as shown by the Capital Adequacy Ratio (CAR) rising by 0.65%. This could be as a result of Bank Indonesia regulations, which mandate that each bank safeguard CAR with a minimum requirement of 8%. Bank owners then increase bank capital by providing funds (fresh money) to estimate the scale of business in the form of credit expansion or loans allocated so that the bank's capital adequacy ratio (CAR) can satisfy Bank Indonesia requirements. However, at the time of the research, the condition of banks listed on the IDX was not favorable and was characterized by a low degree of public confidence. Because of the incident, banks were less likely to make loans, while capital owners and banks were more likely to buy Bank Indonesia Certificates. As a result, despite having substantial capital, the banks' profits would not increase because of the low level of public confidence. Alternative explanations include the fact that banks often invest their money more cautiously and place more emphasis on the institution's survival.

Research by Nusantara (2009), Daryanto, Akbar, and Perdana (2020), Mar'atushsholihah & Karyani (2021), and Holau (2019) that indicated an average difference in CAR between before and after the ratification of fintech legislation in banking is consistent with this study. The reverse is true, according to the research of Lukitasari & Kartika (2015), which explains why CAR has no appreciable impact. At the time of the survey (research), the banks listed on the IDX were in poor condition, which decreased public trust. Due to this occurrence, banks are less likely to offer bank loans, whilst investors are more likely to purchase Bank Indonesia Certificates.

CONCLUSION

The research findings demonstrate a significant difference in the level of profitability represented by the Return On Asset (ROA) ratio between the initial and post-presence of financial technology companies. This is confirmed by supporting data.

The liquidity output results prove that the Loan to Deposit Ratio (LDR) ratio lies in the disparity between the beginning and after the existence of financial technology companies. This indicates that the second hypothesis (H2) is accepted because there is evidence of a difference.

This research demonstrates that capital representation as represented by the Capital Adequacy Ratio (CAR) exhibits disparities between the pre- and post-presence of financial technology companies, as evidenced by data showing differences between the two periods.

Limitations and further studies

This research has limitations as well. The limitations found by the authors during the research process are the lack of inclusion of external factors of financial performance of banks, thus the scope of analysis is limited because it only focuses on internal factors. In addition, because the authors compare the financial statements of the bank starting from 9 years before the writing, it is difficult for the authors to find complete and consecutive financial statements of the bank.

In the future, it is recommended that the next research topic or study should consider external factors of banks in order to provide a more comprehensive and clear analysis. Additionally, incumbent industries that have long applied traditional business practices and have a deeper understanding of the market should consider embracing the shift towards digital business due to the rapid growth of technology. One way to optimize the use of financial technology is by exploring the emergence of Digital Bank. By adopting this digital banking platform, the banking industry can effectively collaborate with the continuously evolving financial technology.

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