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# ANALYSIS OF THE INFLUENCE OF CAPITAL, INCOME AND LIQUIDITY ON BANKING PERFORMANCE WITH FINTECH AS A MODERATION

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#### **Abstract**

This research examines the effects of Capital, Interest Income, and Liquidity on Financial Performance of the Bank during period of 2012-2022, taking into consideration the moderating role that FinTech plays in the relationship. Capital, as assessed via CAR which is Capital Adequacy Ratio, exhibits conflicting impacts on banking performance. It has a significant negative influence on profitability (ROA) and asset quality (NPL), but it has a good impact on efficiency (BOPO). Capital effects on different things ROA, NPL, and BOPO, however, becomes statistically negligible when FinTech is used moderately. The ratio that represents net interest income, known as the net interest margin, contributes considerably to an increase in profitability (ROA), but at the expense of the asset quality and operational efficiency. If FinTech is managed properly, its influence on ROA will be reduced, while the consequences it has on NPL and BOPO will become less significant. The Return on Assets (ROA) and Efficiency (BOPO) are both favorably affected by Liquidity, as assessed by the Loan to Deposit Ratio (LDR), while Asset Quality (NPL) is not significantly impacted. However, because of the moderation brought about by FinTech, the effect of liquidity on ROA, NPL, and BOPO becomes statistically irrelevant. Among our suggestions is the adoption of digital services for the purpose of boosting liquidity, the reduction of unproductive branch offices, the formation of collaborative partnerships with FinTech companies, and the improvement of regulatory control. This study reveals important insights into the rapidly changing world of banking and FinTech, which may influence strategies for achieving sustainable development.

**Keywords:** Capital, income, liquidity, banking performance, fintech

#### **INTRODUCTION**

Financial Institutions, especially Banking as a Financial Intermediary, contribute significantly to the economic development of a nation. First, banking as a service institution providing legal and efficient payment mechanisms and tools for the community. Second, banking as an institution accepting deposits from the public and lending them to parties in need of funds, thereby

increasing the flow of funds for investment and more productive use (Kholis, 2018). The banking industry is a subset of the financial services sector, with funding, funding distribution, financing/lending, and banking services constituting the primary banking activity. As an intermediary, banking must perform in order to acquire its clients' trust (as a "trust agent") (Kholis, 2018)

However, in line with business developments, banking does not only provide services in collecting and distributing funds, but also expands in other financial services, such as money transfer services, collection services, clearing services, and currency sales services. foreign money (money changer) and document storage services (safe deposit box), export-import services (bank draft, L/C), credit card services, guarantee services (bank guarantee) and other banking services. (Salmah and Murti, 2020). The many services offered by banking and the emergence of financial start-up companies known as FinTech. One form of development carried out by banks is implementing and utilizing digital technology in their business processes (Salmah & Murti, 2020).

One of the IT technologies that is developing rapidly is the presence of smartphones (Abdillah, 2019). In 2022, Indonesia will occupy the 4th position in the world for smartphone users, namely 187.14 million people with a penetration rate of 68.1% (5th place) after America (United States), Japan, Russia and China, where grew +8.51% from the previous penetration of 59.59% in 2017 or grew +17.16% from 50.94% in 2013 (Figure 1.2). The Internet has become one of the global communication standards for all aspects of life, (Abdillah, 2019).

Negara	Populasi	SP users	Pemetrasi
PR.C	1,438	974,69M	68,40%
India	1,428	659,0004	46,50%
United States	338,29M	276,14M	81,60%
Indonesia	275,50M	187,14M	68,10%
Brazil	215,31M	143,43M	66,60%
Russia	144,71M	106,4436	73,60%
Japan	123,95M	97,4436	78,60%
Nigeria	218,54M	83,3434	38,10%
Mexico	127,50M	78,37M	61,55%
Pakistan	235,82M	72,99M	31,00%

Figure 1. Top Rank Countries in 2022 by Smartphone (SP) and Users (Penetration Rate)

Source: Newzoo's Global Market Report 2022



Figure 2: Smartphone User Penetration Level in Indonesia Source: Processed from the Indonesian Central Statistics Agency

This represents 66 percent of the global population. In Indonesia, the estimated Internet users are 224.01 million people or an increase of +5.12% from 213.09 million people the previous year, representing around 81.23% of the population and 4.2% of the world's total Internet users.

As a result of developments in Information Technology, Telecommunications and the Internet (smartphones and Internet), the Bank has adopted digitalization and offers access to digital services to customers and the wider community. As a result, many banks around the world are closing/reducing offices/branches where banks no longer need a large number of physical office presence. In connection with intense competition in the banking sector (Wolf et al., 2022) In Figure 4 below shows the development of Commercial Bank offices or overall bank in Indonesia, where in the 2017-2022 period there has been a reduction of -10 banks (- 8.6%) and -7,353 offices (-22.5%).

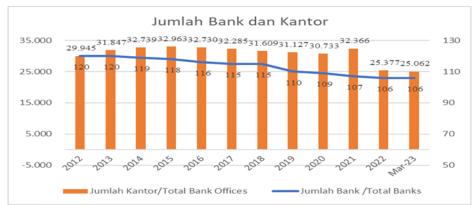


Figure 3: Number of Banks and Commercial Bank Offices in Indonesia Source: Indonesian Banking Statistics, Financial Services Authority

At the end of 2022, the number of Commercial Banks has decreased to 106 banks or -11.7% from 120 banks in 2012, where the decline occurred in the 2012-2016 period of -3.3% (4 Banks) and the 2017-2022 period of -8.6 % or (10 Bank).

Banks:	2016	2017	2018	2019	2020	2021	202220	012-2016 20	017-2022 20	12-2022
General /	116	115	115	110	109	107	106	-3.3%	-8.6%	-11.7%
Commercial										
BPR / Rural	1,633	1,619	1,597	1,542	1,506	1,468	1,441	-1.8%	-11.8%	-13.3%
Sub-Total	1,749	1,734	1,712	1652	1,615	1,575	1,547	-1.9%	-11.5%	-13.2%
Offices:										
General /	32,730	32,276	31,618	31,127	30,733	32,366	25,377	9.3%	-22.5%	-15.3%
Commercial										
BPR / Rural	6,075	6,192	6,273	5,964	5,913	5,871	6,044	37.3%	-0.5%	36.6%
Sub-Total	38,805	38,468	37,891	37,091	36,646	38,237	31,421	12.9%	-19.0%	-8.6%

Figure 4. Number of Banks and Offices of Commercial Banks and BPRs Source: Indonesian Banking Statistics, Financial Services Authorit

The closure/reduction of Commercial Bank branch offices occurred during the 2017-2022 period as many as -7,353 offices or -22.5%; where based on the Bank group (Table 1.2) a significant reduction occurred in the Pesero Bank group with 5,083 offices (-28.1%); National Private Banks with 2,188 offices (-20.9%); then Foreign Banks have offices in Indonesia with 68 offices (-74.7%) and BPRs with -14 offices (-0.3%)

**Table 1 Number of Banks and Bank Offices by Bank Group** 

							-	-	
Group of Banks	Fintech Era 4.0 %Chg %					Chg % Cl	<u></u> ng		
	2016	2017	2018	2019	2020	2021	2022201	2-2016 2	017-2022
State Owned Banks									
Total Banks	4	4	4	4	4	4	4	0.0%	0.0%
Total Offices	18,106	18,262	17,853	17,621	17,307	18,182	13,023	15.8%	-28.1%
Regional Dev. Bank	(								
Total Banks	27	27	27	27	27	27	27	3.8%	0.0%
<b>Total Bank Offices</b>	4,052	4,130	4,288	4,396	4,421	5.127	4,038	44.6%	-0.3%
Commercial Bank									
Total Banks	75	75	75	71	70	68	68	-6.3%	-9.3%
Total Offices	10,481	9,845	9,430	9,074	8,969	9030	8,293	-8.0%	-20.9%
Foreign Banks									
Total Banks	10	9	9	8	8	8	7	0.0%	-30.0%
Total Offices	91	48	38	36	36	27	23	-23.5%	-74.7%
Total Banks	116	115	115	110	109	107	106	-3.3%	-8.6%
Total Bank Offices	32,730	32,285	31,609	31,127	30,733	32,366	25,377	9.3%	-22.5%

**Source: Indonesian Banking Statistics, Financial Services Authority** 

Apart from the widespread adoption of digital technology, the Covid-19 pandemic in 2020, and other factors that forced banks to consolidate branch locations, include high employee burdens and office rental costs caused by decreasing transaction volumes. When branch or bank

operational costs increase, and interest loan costs tend to fall, they are advised to cut office expenses, including reducing/closing branch offices (Liu et al., 2021). One other technological development that is currently being studied in Indonesia is Financial Technology (FinTech), where its presence can be said to be a competitor for the banking sub-sector for financial penetration. According to data from Indonesia's FinTech Association (IFA) in a daily social.id report entitled Indonesia's FinTech Report 2016, it was found that 2015-2016 fintech players increased to 78 percent. In the first quarter of 2016, there were around 51 companies, then in the fourth quarter of 2016 it increased to 135 companies. According to OJK data, up to the third quarter, there were 4.7 million lender accounts (Wahyuni et al., 2022).

In line with Kennedy, (2019) who say that the banking sub-sector could be damaged by FinTech and there is a possibility that banks could be disrupted by the presence of community-supported FinTech, where financial transactions are easier compared to the rigid administrative processes in banking. and complicated (Muia, 2017).



Figure 5 P2P Lending in Indonesia (in Billions of Rupiah)

#### Source: Indonesian FinTech Statistics, Financial Services Authority 2017-2022

Figure 4 shows the growth of FinTech from 2017-2022, where the presence of P2P Lending will directly result in competition in the banking business world, especially credit provided to borrowers. This competition will have an impact on bank operations and Financial Performance of the Bank, including bank business risks. Yuniarti, (2019) said that convenience, service quality and suitability factors influence people's interest in using FinTech P2P Lending (W. M. Daryanto et al., 2020; Yuniarti, 2019).

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Figure 6 Growth of Credit and Third-party Funds for Commercial Banks Source: Indonesian Banking Statistics, Financial Services Authority

It is for public interest in for making the most of the banking credit services, which is reflected in the slowing growth in banking credit distribution for the 2017-2022 period with an average growth of +0.9% compared to the 2012-2016 period of

+14.5% so the LDRin 2022 falls to 78.98% from 90.04% in 2017. In contrast to surging the third-party funds, in Figure 1.6 the 2017-2022 period experienced greater growth in third-party funds, namely +8.9% compared to the 2012-2016 period, namely +5.8%.

Valencek Deak / Crown of Danks		Fintech Era 4.0					Average	Average	%Chg
Kelompok Bank / Group of Banks	2017 2018 2019 2020 2021				2022 2	012-2016	2017-2022		
Total Bank Performance									
CAR	23,18	21,28	23,40	23,89	25,66	25,62	19,89	23,84	3,95
ROA	2,45	2,08	2,47	1,59	1,85	2,45	2,72		-0,57
BOPO	78,64	81,12	79,39	86,58	83,55	78,70	77,64	81,33	3,69
NPL (Risk)	2,59	2,37	2,53	3,06	3,00	2,44	2,24	2,66	0,42
NIM	5,32	4,55	4,91	4,45	4,63	4,80	5,13	4,78	-0,35
LDR	90,04	94,78	94,43	82,54	77,49	78,98	89,10	86,38	-2,72

Sumber (Source): Statistik Perbankan Indonesia, Otoritas Jasa Keuangan

### Figure 7 Performance of Commercial Banks 2017-2022

In general, the performance of Commercial Banks in 2017-2022 can be seen in Table 1.3 above, showing a strengthening of CAR (2022) to the level of 25.62% vs 23.18% (2017); ROA (2021) weakened to 1.98% vs 2.45% (2017) before strengthening to 2.45 (2022); NPL (2021) increased to 3.00% vs 2.59% (2017); NIM (2022) weakened by 4.80% vs 5.32% (2017); LDR (2022) falls to 78.98% (if + P2P Lending becomes 85.80% or affected - 6.82%) vs 90.04 (2017). Figure 1.7 shows the performance trend of Commercial Banks for the period 2012-2016 vs. 2017-2022, where the period is before the presence of FinTech vs after the presence of FinTech.

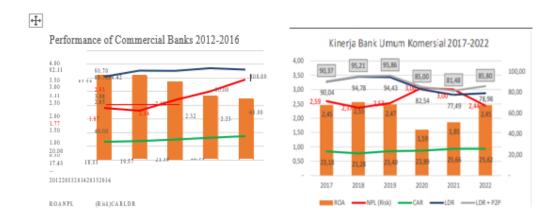


Figure 8 Performance of Commercial Banks for the 2012-2022 Period

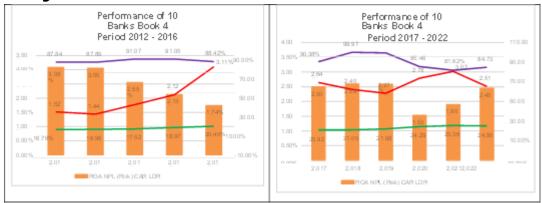


Figure 9 Performance of 10 Book 4 Banks for the 2012 - 2022 Period

Meanwhile, Figure 1.8 shows the performance trend of 10 Book 4 Banks for the period 2012-2016 vs 2017-2022 which is said to represent or be the same as Commercial Banks performance in Indonesia where the Total Assets of 10 Book 4 Banks in 2022 represent 68.59% of Commercial Banks. According to (Naushad & Malik, 2015) and Alex and Ngaba (2018) prove how bank size and Financial Performance of the Bank are positively related to each other. Mwangi (2018) also found that bank size has great impact of Financial Performance of the Bank. Then again, Tharu and Shrestha (2019) prove that bank size generate no impact on the Financial Performance of the Bank.

Bank liquidity refers to the bank's ability to maintain sufficient cash to fit as per the obligations. According to Hapsari (2018), Desiko (2020), and Size et al. (2022) prove that liquidity is great impact; Rosandy et al. (2022) and Yua et al. (2020) added that liquidity has a positive influence on profitability. Trisnawati Dewi et al. (2018) and Pricilla Febryanti Widyastuti et al. (2021) found the opposite that liquidity did not affect profitability, as did Cahyani et al. (2022). Ratnawati (2020); Kristianti et al. (2021) and Agribusiness et al. (2021) have studied the impact of FinTech on Financial Performance of the Bank in Indonesia, as well as Rabe et al. (2022) on the banking sector in Egypt. The impact of Financial performance has also been studied by Phan et al. (2019) for Indonesia and by Wu and Yuan (2021) for China (Wulandari and Ryandono, 2020). Efficiency

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Analysis was studied by Sulaeman et al. (2019) and Hasibuan et al. (2019). Several previous research results used similar independent variables (Daryanto et al., 2020), as follows:

No.	Variables	Name and Year of Research	Research Results
1	Loan to Deposit Ratio	Khalifaturofi'ah and Nasution (2016)	Significant (-)
	(LDR)	Lukitasari and Kartika (2015)	Significant (+)
		Yudiartini and Dharmadiaksa	Not Significant (-)
		1.	Not Significant (-)
		Perdana (2020)	
2	Non-Performing Loans	Lukitasari and Kartika (2015)	Not Significant (-)
	(NPL)	Yudiartini and Dharmadiaksa (2016)	Not Significant (-)
		Khalifaturofi'ah and Nasution (2016)	Significant (-)
		Daryanto; Akbar and Perdana (2020	Significant (-)
3	Net Interest Margin	Mahardian (2008)	Significant (+)
	(NIM)		Insignificant (-)
		Daryanto; Akbar and Perdana (2020)	Significant (+)
4	Capital Adequacy Ratio	· /	Insignificant (-)
		Khalifaturofi'ah and Nasution (2016)	
	(CAR)	Yudiartini and Dharmadiaksa (2016)	
		Daryanto; Akbar and Perdana (2020)	Significant (-)

**Figure 10. Previous Empirical Results** 

Previous researchers Size et al. (2022) have studied the Impact of Bank Size, Liquidity on Financial Performance with FinTech Variables as moderating, a case study of Sharia Banks in Indonesia. Likewise (Nugroho and Sugiyanto, 2022) have studied the impact of FinTech on Bank Profitability in 2012-2017. Therefore, the author is interested in continuing the development of Size et research. al (2022). The difference in previous research lies in the research period of 5 years (2016-2021) versus 10 years (2012-2022). The independent variables previously used were bank size and liquidity versus capital, income and liquidity. The previous dependent variable was only ROA versus ROA, NPL and BOPO. The object of previous research was Sharia Commercial Banks versus Book IV Commercial Banks listed on the Indonesian Stock Exchange.

#### **METHODS**

A research design is a plan or blueprint created by researchers as a guide for future activities (Arikunto, 2010). Research design is a strategy for achieving predetermined research objectives and serves as a guide or map for researchers during the research process Nursalam, (2014) The same was stated by Sarwono, (2016) research design serves as a road map for researchers, directing and determining the trajectory of the research process in accordance with the stated objectives.

According to specialists, the following describes research design: According to Silaen (2018), a research design is a plan for the complete research planning and implementation process. According to Umar, (2013) research design can be interpreted as a comprehensive, structured

work plan regarding the relationships between variables, so that the research results can provide answers to the research questions. The research design used in this research is a quantitative descriptive method approach carried out in the 2012-2016 period and the 2017-2022 period using secondary data sourced from financial reports and financial ratios of several sample banks, on the official OJK website.www.ojk.go.id. According to Meleong, 2007, quantitative methods are research methods that can be translated as methods that describe data in the form of numbers which are easy to understand at a glance and compare with each other to test based on the hypothesis that is built.

An associative strategy is a research strategy used to determine the relationship between two or more variables. The purpose of using this form of research is to determine the influence of the independent variables, namely Capital (X1), Net Interest Income (X2) and Liquidity (X3) on the dependent variables, namely ROA (Y1), NPL (Y2) and BOPO (Y3) through variables moderation that is FinTech.

#### **RESULTS AND DISCUSSION**

# The Effect of NIM Net Income (X2) on Banking Performance Testing the Second Hypothesis (H2) that Interest Income is Berish

(NIM) has a positive and significant influence on Banking Performance. The higher the Net Interest Income (NIM), the better the Banking Performance. NIM is a risk that grows due to market conditions, this can cause the bank to experience losses. The large NIM will increase net interest income and channel profits to the bank. This is in line with Taylor (2005) who explains that NIM is a factor that needs to be considered to determine the profitability of a bank. Based on the NIM being in line with ROA, if loan interest increases, this will have an impact on profitability which will also increase Wakil et al., (2022).

Based on the results of the descriptive statistics in Table 4.2; Table 4.3; Table 4.4 and data processing using SmartPLS3.0 as shown in Table 4.9, the path coefficient results above show that: NIM (X2) in the 2012-2022 period has a positive and significant influence on Banking Performance in Indonesia, both ROA Profitability Performance, and negatively on Quality Performance NPL Assets and BOPO Efficiency. Thus the second hypothesis (H2) which states "Net Interest Income (NIM) has a significant and sound influence on Banking Performance is accepted".

High net interest income (NIM) explains high profitability, high asset quality / low NPL ratio and high efficiency / low BOPO ratio. The results of this research data processing are by Sudiyatno & Setiyowati, (2012) supported by W. M. Daryanto et al., (2020) and Wakil et al., (2022) which explains that NIM shows a positive and significant influence on the ROA of Commercial Banks in Indonesia. Furthermore, NIM has a negative and significant influence on Asset Quality Performance / NPL supported by research Putri & Pohan, (2022) and also has a negative and significant influence on Efficiency Performance, which is supported by research results (Zuchroh, 2022).

#### Effect of Liquidity / LDR (X3) on Banking Performance

Testing the Third Hypothesis (H3) that "Liquidity/LDR has significant and significant influence on Banking Performance". LDR is a ratio that measures a bank's ability to issue credit from third-party funds collected at the bank. The higher the LDR, the profit earned by the bank will increase, assuming the bank can channel its credit effectively so it is hoped that the number of bad loans will be low, thus having an impact on increasing profitability (ROA) (Widyastuti & Aini, 2021).

Based on the results of descriptive statistics in Table 4.2; Table 4.3; Table 4.4 and data processing using SmartPLS 3.0 shown in Table 4.9, the path coefficient results above show that: Liquidity / LDR (X3) has a positive and significant influence on Banking Performance in Indonesia in the 2012-2022 period, both ROA Profitability Performance (Sanur, 2020).

Likewise, Liquidity / LDR also has a positive and significant influence on BOPO Efficiency Performance (Sari et al., 2022) while LDR does not have a significant negative influence on Asset Quality / NPL Performance (Wardani & Haryanto, 2021).

#### The Effect of Capital / CAR on Banking Performance with FinTech as a moderating variable

The results of this research can show that the role of FinTech is as a moderating variable, meaning that FinTech adoption can strengthen/weaken both capital and banking performance. This illustrates how strong capital can improve banking performance through digital services since the birth of FinTech where customers can create new accounts,

save money in banks without losing their money due to bankruptcy, in banks that perform better financially. FinTech also includes the use of online payment technology, which can help communities provide convenience and efficiency regarding technology-based financial management. Wulandari & Fahrozi, (2021) stated that Internet banking has a positive influence on banking performance (S. Daryanto et al., 2020).

The results of the research above conclude that "Capital with FinTech moderation has a positive and insignificant influence on Banking Performance in terms of ROA Profitability, while in terms of NPL Asset Quality Performance and BOPO Efficiency Performance, Capital with FinTech moderation has a negative and insignificant effect. The fourth hypothesis which states that capital has a positive and significant influence on banking performance is rejected.

# The Effect of Net Interest Income (NIM) on Banking Performance with FinTech as a moderating variable

The results of this research can show that the role of FinTech is as a moderating variable, meaning that FinTech adoption can strengthen/weaken Net Interest Income (NIM) on Financial Performance of the Bank (Astuti & Husna, 2020). This illustrates how strong Net Interest Income (NIM) can improve Financial Performance of the Bank through digital services since the birth of

FinTech where customers can create new accounts, save money more easily in banks through digital services without losing their money due to bankruptcy, at banks that perform better finances.

FinTech also includes the use of online payment technology, which can help communities provide convenience and efficiency regarding technology-based financial management.

The results of the research above conclude that "Net Interest Income (NIM) has no influence on Banking Performance with FinTech as a Moderating variable" in terms of ROA Profitability, in terms of NPL Asset Quality Performance and BOPO Efficiency Performance, the fifth hypothesis which states

"Net Interest Income (NIM) has a significant and sound influence on banking performance. It is rejected."

#### The Effect of Liquidity (LDR) on Banking Performance with FinTech as a moderating variable

The results of this research can show that the role of FinTech is as a moderating variable, meaning that the adoption of FinTech can strengthen/weaken the impact of liquidity on banking performance (Panglipursari et al., 2022). This illustrates how FinTech can improve banking performance through high liquidity through digital services since the birth of FinTech where customers can easily create new accounts, save money in the bank with the Fintech services offered and increase the bank's ability to fulfil its short-term obligations. Fintech solutions simplify asset management, reduce transaction time and speed up the transfer of funds between customers.

Based on the results of data processing using SmartPLS3.0 shown in Table 4.9 the path coefficient results above show that the Effect of Liquidity with Moderation of FinTech (X6) is not significant on Banking Performance. Thus FinTech is an expensive investment for Banking, so if it is not done carefully it can be a cause of increasing costs without the effectiveness of FinTech to increase Profitability Performance, Asset Quality and Banking Efficiency.

The results of the research above conclude that "Liquidity has no significant influence on Banking Performance with FinTech as a Moderating variable" in terms of ROA Profitability, in terms of NPL Asset Quality Performance and BOPO Efficiency Performance. The sixth hypothesis which states that Liquidity has a significant and significant influence on Banking Performance is rejected

#### **CONCLUSION**

According to research results, capital, as assessed by the Capital Adequacy Ratio (CAR), has a complicated connection with banking performance. Surprisingly, a greater CAR is related with worse profitability (ROA) and declining asset quality (NPL) between 2012 and 2022. However, it has a small but favourable influence on banking efficiency (BOPO). The effect of capital on banking performance becomes less important as FinTech matures, implying that FinTech may disrupt the conventional link between capital and banking results.

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The Nett Interest Margin (NIM) ratio, which measures nett interest income, shows a more obvious trend. Within the study period, a rise in NIM has a favourable influence on profitability (ROA) but has a negative impact on asset quality (NPL) and efficiency (BOPO). However, the emergence of FinTech poses difficulties. Under FinTech moderation, NIM's influence on ROA becomes minor, but NPL and BOPO remain somewhat favourable. This shows that the emergence of FinTech, together with variables such as lowering banks interest rates and rising non-performing loans, may have had an impact on the link between NIM and banking profitability.

Liquidity, as measured by the Loan to Deposit Ratio (LDR), has had a significant impact on several elements of banking performance. A greater LDR is connected with increased profitability (ROA) and efficiency (BOPO), but has no effect on asset quality (NPL) over the study period. However, when FinTech is taken into account, LDR's effect becomes less obvious. LDR has a negative and minimal impact on both NPL and BOPO under FinTech moderation, with the exception of a negligible positive effect on ROA. This implies that a growth in LDR between 2017 and 2022 does not always result in increased profitability, but rather in poor asset quality and lower efficiency.

Despite the use of digital services, Bank Buku IV's financial performance, including profitability, asset quality, and efficiency, has not improved much. The closure of branch offices in the previous five years has not improved financial efficiency, and the existence of FinTech presents a substantial risk to the bank's financial performance

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