



The Effect of Liquidity, Bank Capital, Profitability, and Operational Efficiency On Credit Risk (A Case Study On Banking Sub-Sector Companies Listed On The Indonesia Stock Exchange For The Period 2019-2023)

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Abstract, Banks serve as intermediary institutions that collect funds and channel them back into various forms of investment within society. A bank's primary activity of lending funds to the public carries the risk of default or nonpayment by borrowers, referred to as credit risk. Proper management of credit risk is crucial, as increasing proportions of non-performing loans can lead to poor banking health conditions. This study aims to examine, analyze, and explain the influence of liquidity, bank capital, profitability, and operational efficiency on credit risk. The sample for this research consists of 31 banking sector companies listed on the Indonesia Stock Exchange for the 2019-2023 period. Data were collected using a non-participant observation method. The data analysis technique employed is multiple linear regression analysis, conducted using IBM SPSS version 25 software. The results of the analysis indicate that profitability has a significant negative effect on credit risk, while operational efficiency has a significant positive effect on credit risk. The practical implications of this study provide valuable insights for bank management to maintain profitability levels and operational efficiency to minimize potential credit risks.

Keywords: Liquidity, Bank Capital, Profitability, Operational Efficiency, Credit Risk

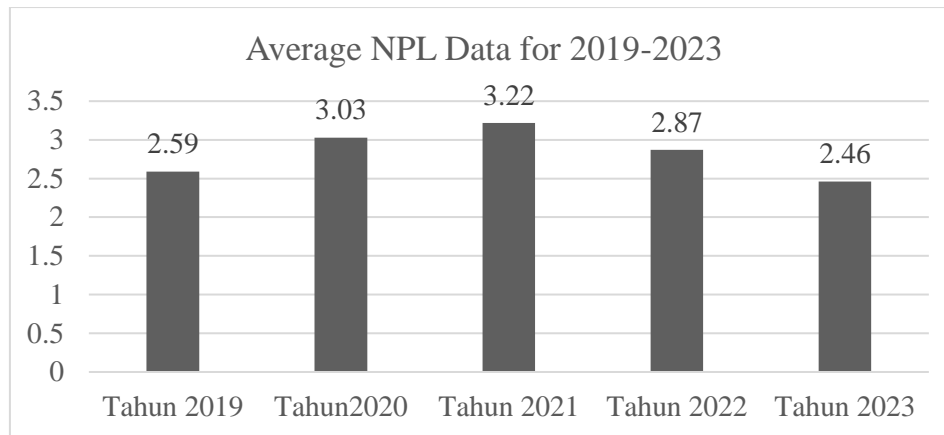
1. INTRODUCTION

Based on Bank Indonesia Regulation (PBI) No.13/1/PBI/2011 concerning the Assessment of the Health Level of Commercial Banks, which requires Commercial Banks. The assessment procedure is referred to as the RGEC Method. This study focuses on one aspect of the RGEC method, namely the Risk Profile. Credit risk in the risk profile is part of the Inherent Risk Assessment. Inherent Risk Assessment is an assessment of the risks inherent in the bank's business activities, both quantifiable and non-quantifiable, which have the potential to affect the Bank's financial position (Andrianto et al., 2019: 305). Banking activities in collecting and distributing funds have many risks. Based on the Financial Services Authority (OJK) Regulation Number 18/POJK.03.2016, there are eight types of risks in the banking sector, namely credit risk, market risk, liquidity risk, operational risk, compliance risk, legal risk, reputation risk, and strategic risk (Muniarty et al., 2020: 229). This study focuses on one type of bank risk, namely credit risk.

Credit risk is an estimate of the likelihood, or probability, that a prospective debtor/debtor will not be able to repay his/her loan, based on an estimate of his/her ability and tendency of character (Andrianto, 2019: 88). Credit risk is very important to be taken into account for

banking because it is related to the bank's main activity, namely distributing funds (Sari et al., 2020). Credit risk needs to be managed properly because it can result in an increasing proportion of non-performing loans, which will have an impact on poor banking health. High non-performing loans will affect the health and sustainability of the bank's business (Wangsawidjaja, 2020: 3). Credit risk can be measured using Non-Performing Loans, which is the comparison between non-performing loans and total loans (Mosey et al., 2018). Non-Performing Loans are a ratio that reflects the extent to which loans provided by banks to customers cannot be repaid or experience problems with payments. Lower credit risk indicates that banks have good ability to manage credit risk (Hidayah, 2019). Based on Bank Indonesia Regulation No. 23/2/PBI/2021 a healthy NPL ratio is below 5%. The higher the NPL, the worse the quality of bank credit, because many debtors are unable to pay off their debts. The high level of non-performing loans in banking will have a direct impact on inhibiting the formation of interest income and disrupting bank operational activities (Tresnawati and Nurisa, 2016). Banks that have an NPL ratio below 5% will provide trust to the public and will increase bank profits, because banks save reserves that should be reserved to cover non-performing credit losses (Stefanus et al., 2017).

The Covid-19 pandemic has had a very significant impact on the global economy. Banks as financial institutions face various risks that are the consequences of the pandemic. Non-Performing Loans have increased due to the Implementation of Large-Scale Social Restrictions (PSBB) which were implemented in mid-March 2020. According to Rafaella and Prabowo (2021), the Covid-19 pandemic has caused people's incomes to decline and many have lost their jobs due to the implementation of social restrictions by the government. The phenomenon of Coronavirus Disease 2019 or Covid 19 has had a significant impact on various economic sectors, including the financial sector. The first case of Covid-19 in Indonesia was confirmed on March 2, 2020, which triggered a slowdown in economic activity and had implications for the ability of debtors to meet their credit obligations. This has caused the credit risk measured using (Non-Performing Loan) NPL of banks in Indonesia to increase. The increase in NPL indicates that the quality of bad credit is greater than that of smooth credit. A high NPL ratio will also increase costs, both productive asset reserve costs and other costs and will disrupt bank performance (Andrianto, 2020:92). The following average data Non Performing Loan in the Banking Sub-sector for the 2019-2023 Period.



Source: Secondary Data Processed, 2024

Picture1. Average Data Non-Performing Loans in the Banking Sector for the Period 2019-2023

Based on Figure 1, the average value of Non-Performing Loans (NPL) of banks listed on the Indonesia Stock Exchange for the period 2019-2023 has fluctuated. The average NPL in 2019 was 2.59%, then for two consecutive years it increased significantly in 2020 and 2021 to 3.03% and 3.22%. The increase in the NPL value indicates the high number of defaults by debtors during the Covid-19 pandemic which was caused by many people losing their jobs and decreasing incomes obtained by companies and the community. The average NPL value in the following 2 years decreased consecutively from 2022 and 2023 to 2.87% and 2.46%. The decrease in the average NPL value indicates a recovery in economic conditions in Indonesia.

The government through the OJK is trying to overcome the impact of Covid-19 through the PEN (National Economic Recovery Program), interest subsidies, and credit restructuring have helped reduce NPLs (<https://www.ojk.go.id/>). Other external factors that can affect credit risk are bank size, credit growth size, inflation rate, GDP, and BI rate. Banks that have an NPL ratio below 5% will gain public trust. In addition, low NPLs will save loss reserve costs so that bank profits increase. Internal banking factors can also affect bank credit risk, so it is very important to pay attention to.

The high level of credit risk in banking is influenced by several factors. According to Bawa and Basu (2020) in their research on banking in India, credit risk can be influenced by the level of liquidity, bank capital, and profitability. Based on research by Andikaningtyas and Arifin (2019), Astrini et al. (2018), Kusuma and Harianto (2016), Kinanti (2017), Sarita and Zubadi (2018), and Asyadiah and Hasanuh (2023) in research on banking in Indonesia, credit risk can be influenced by the level of liquidity, bank capital, profitability, and operational

efficiency. Based on previous empirical results, this study aims to replicate the research conducted by Bawa and Basu (2020) by adding a new variable, namely operational efficiency.

The first factor that can affect credit risk is liquidity. Liquidity is a ratio that describes a company's ability to meet its short-term obligations (Kasmir, 2019: 128). Liquidity is very important because it is related to the stability of the bank's funds availability in ensuring the smooth running of its operational activities. Through good liquidity management, banks can repay the disbursement of depositors' funds when billed and meet the credit requests that have been submitted. Therefore, liquidity in the banking world is important because it reflects how well a bank manages customer funds so that it is closely related to customer trust (Hasibuan et al., 2016). Maintaining the level of liquidity can be done by regulating deposits from third parties to be distributed to debtor customers (Wangsawidjaja, 2020: 6). Bank liquidity can be measured using the Loan to Deposit Ratio (LDR), namely to measure the composition of the amount of credit given compared to the amount of public funds used (Kasmir, 2019: 365). The higher the LDR ratio indicates that more credit is distributed to customers. Based on Bank Indonesia Circular Letter No. 15/7/PBI/2013, the minimum LDR is 78%, the maximum LDR of the bank is 100%.

The higher the liquidity indicates that the bank has sufficient cash funds to meet its short-term obligations (liquid). Conversely, low liquidity indicates that the cash funds owned are unable to meet its short-term obligations (illiquid) (Kasmir, 2019: 129). The higher the liquidity proxied by the LDR ratio will increase credit risk. A high LDR ratio indicates that the amount of credit disbursed is greater than the amount of third-party funds received by the bank, which can lead to higher credit risk. The greater the credit disbursed can lead to a high probability of default or failure to pay by debtors. This condition causes an increase in problematic loans or Non-Performing Loans (NPL) which has a negative impact on the financial stability of banking (Astrini et al., 2018). Conversely, a low LDR ratio will reduce credit risk. The smaller the credit portfolio, the lower the possibility of default by debtors.

Research by Astrini et al. (2018), Choiriyah and Lisiantara (2021), Suryani and Africa (2021) and Nurani (2021) found that liquidity has a positive effect on credit risk. Research conducted by Sarita and Zubadi (2018), Kusumawati et al. (2021), Kartini and Nuranisa (2018), and Asyadiah and Hasanuh (2023), found that liquidity has a negative effect on credit risk. Other studies by Yuzevin and Sijabat (2020), Rasyiddin and Hirawati (2023), and Wulandari et al. (2021) stated that liquidity has no significant effect on credit risk.

The second factor that affects the level of credit risk is bank capital. Capital is funds originating from owners or shareholders plus share premium and business results originating from the bank's business activities (Jumhana et al., 2021: 136). Capital consists of two types, namely core capital and supplementary capital. Core capital is the capital itself listed in the equity position. The bank's core capital consists of paid-in capital, share premium, donated capital, general reserves, purpose reserves, retained earnings, and last year's profit. Supplemental capital is loan capital and asset revaluation reserves and reserves for write-offs of productive assets (Andrianto et al., 2019: 367). Bank capital can be influenced by factors such as interest rates, earnings stability, asset composition, asset risk levels, capital market conditions, management characteristics, and the size of a company (Lau, 2024).

Bank capital can be proxied by the Capital Adequacy Ratio, which is the comparison of total capital with RWA (Risk-Weighted Assets). RWA is a risk that comes from capital used to invest in risky assets. CAR is a ratio that describes the ability of capital to accommodate possible risks arising from bank operational activities. The ideal CAR ratio reflects that the bank has the ability to provide funds that will be used for various types of investments, so that the profits obtained will be greater. Based on Financial Services Authority Regulation Number 11 / POJK.03 / 2016, banks must have a minimum CAR value of 8% (Muniarty et al., 2021: 29). High bank capital can affect the decrease in credit risk value. The higher the capital indicates the amount of financial resources owned by the bank so that it is able to fulfill its obligation to provide capital of 8% of risk-weighted assets (RWA). In addition, high capital can increase general reserves for allowances for losses on productive assets and loans. The existence of these reserves can be used to accommodate risks and absorb risks that may arise from bank activities.

Research conducted by Agustiningtyas (2018), Chang (2020), and Sarita and Zubadi (2018) stated that bank capital has a positive and significant effect on credit risk. Research by Asyadiah and Hasanuh (2023), Suryani and Africa (2021), and Nuriani (2021) stated that bank capital has a significant effect on credit risk. This is different from research by Rasyiddin and Hirawati (2023), Yuzevin and Sijabat (2020), and Wulandari et al. (2021) which stated that bank capital does not have a significant effect on credit risk.

Profitability is the third factor that affects the level of credit risk. Profitability is a measure of a company's ability to make a profit (Kasmir, 2019: 198). Profitability is an important factor as a source of income to finance operational activities, capital reserves, increase public trust, and as a tool to cover potential losses due to banking activities (Pardosi

et al., 2024). Profitability can be proxied by Return on Assets (ROA). The ROA ratio is a comparison between the net profit obtained and the total assets used. Return on Assets is a ratio used to show the bank's ability to generate profit compared to the assets used (Jumhana, 2021: 69). The higher the ROA ratio indicates that the bank can generate high net profit from each asset used. Based on OJK Regulation No. 4/POJK.03/2016, a healthy ROA value is above 1.5%. A negative ROA value indicates that the bank is experiencing losses on the total assets used to operate (Wisaputri and Ramantha, 2021).

High profitability will reduce the level of credit risk. Increased profitability reflects effective management in managing assets to generate profits. Banks with high profits will have larger cash reserves to reduce overall credit risk. In addition, high profitability allows banks to diversify their credit portfolios into various sectors, thereby reducing the concentration of bad credit risk. Conversely, a decrease in profitability indicates poor management and suboptimal profits. Poor management will be less able to manage credit distribution properly, thereby increasing credit risk. In addition, low profits will allow banks to implement policies to increase credit interest rates to optimize profits. An increase in credit interest rates will affect the reduced ability of debtors to pay, thereby increasing credit risk.

Research by Andriani and Rahmawati (2021), Yuzevin and Sijabat (2020) and Wulandari and Susanti (2021) shows that profitability has a negative and significant effect on credit risk. Research by Rasyiddin and Hirawati (2023), and Nainggolan et al. (2019) states that profitability has a positive and significant effect on credit risk. This is different from research by Suryani and Africa (2021) and Kinanti (2017) which shows that profitability has no effect on credit risk.

The fourth factor that can affect credit risk is operational efficiency. Operational efficiency refers to an organization's ability to perform tasks as efficiently as possible, optimize the use of resources, and produce desired results in the shortest possible time (Darmawan et al., 2023: 1). High efficiency reflects the bank's ability to allocate its resources optimally so as to produce optimal output. Efficiency is important for banks to generate optimal profits by increasing revenue and reducing operational costs (Istinfarani and Azmi, 2020). Low bank efficiency will affect high credit interest rates and at the same time reduce competitiveness, thereby reducing the bank's profit level. Factors that can affect operational efficiency are capital levels, company size, market share, inflation rates, GDP and sales growth (Mulyana, 2024: 23).

Efficiency can be proxied using the BOPO ratio (Operating Expenses to Operating Income). BOPO is a comparison between operating costs and operating income in measuring

the level of efficiency and the bank's ability to carry out its operational activities (Muniarty et al., 2020: 207). The lower the BOPO value indicates the more efficient it is in carrying out its activities. A high BOPO ratio indicates that high operating costs so that the bank is less efficient in its operations have an impact on decreasing profits. Based on OJK circular letter No. 4 / POJK.03 / 2016, the minimum BOPO ratio is 85%, the maximum BOPO is 100%.

Operational efficiency proxied using the BOPO ratio increases will increase credit risk. Banks have an ideal BOPO value that reflects better capabilities when facing credit risk and minimizing the NPL ratio (Pardosi et al., 2024). A decreasing BOPO ratio indicates that the bank's operational costs are increasingly efficient. Banks that have good efficiency will have high profits, so they can accommodate losses from bad debts. Banks that operate efficiently will be able to maximize revenue, increase the amount of money disbursed, improve customer service, and strengthen overall banking health, all of which reduce the likelihood of non-performing loans.

Research by Asyadiah and Hasanuh (2023), Herlina et al. (2020), Agustiningtyas (2018), Amir et al. (2019), Yuliani et al. (2020), and Pratamawati (2018) found that operational efficiency has a positive and significant effect on credit risk. Research by Sarita and Zubadi (2018) and Pardosi et al. (2024) stated that operational efficiency has a negative and significant effect on credit risk. In contrast, research by Kinanti (2017) and Mamahit and Tulung (2022) found that operational efficiency did not have a simultaneous and partial effect on credit risk.

The research was conducted at the Indonesia Stock Exchange (IDX) on banking companies for the 2019-2023 period via the website www.idx.co.id. Indonesia Stock Exchange provides comprehensive information and data access related to the financial performance of listed companies. Research in the banking sector is very important because banks as intermediary institutions play a role in development, especially in supporting the country's economic growth. Based on the phenomenon of NPL fluctuations and research gaps, it is necessary to conduct research on banking credit risk. This study is used to test and analyze "The Effect of Liquidity, Bank Capital, Profitability, and Operational Efficiency on Credit Risk of Banking Companies on the Indonesia Stock Exchange in 2019-2023".

2. RESEARCH METHODS

The research design describes the appropriate approach used to obtain conclusions from the formulated hypothesis. The research design used is a quantitative associative approach. Quantitative research is research that uses data expressed in numbers to analyze a phenomenon.

The associative approach is research that aims to determine the relationship between two or more variables. This study aims to determine the effect of independent variables (liquidity, bank capital, profitability, and operational efficiency) on the dependent variable (credit risk) in banking companies on the Indonesia Stock Exchange for the 2019-2023 period.

The research was conducted on banking sector companies on the Indonesia Stock Exchange. Banking company data was accessed through the official website of the Indonesia Stock Exchange, namely www.idx.co.id. The Indonesia Stock Exchange through its website provides information on financial reports, annual reports, and company performance summaries. reliable and comprehensive to the public. This study is limited to a discussion of the effect of liquidity, bank capital, profitability, and operational efficiency on credit risk in banking sub-sector companies on the Indonesia Stock Exchange for the 2019-2023 period. The object used in this study is credit risk in banking on the Indonesia Stock Exchange for the 2019-2023 period.

The population in this study used 47 banking companies on the Indonesia Stock Exchange for the 2019-2023 period. This study uses a sampling technique using non-probability sampling with purposive sampling. This sampling technique does not provide the same opportunity or chance to be selected as a sample based on predetermined criteria. The sample in this study was obtained as many as 31 with a five-year period, so it can be seen that the number of observations in this study was 155 observations. The criteria for selecting samples were banks that experienced consecutive profits during the 2019-2023 period. This study did not use banking companies that experienced losses because this study used profitability variables to measure the company's ability to generate profits that affect credit risk. Companies that record losses cannot represent the level of profitability positively, so they are excluded to maintain the relevance and consistency of data in the analysis. Data collection used the non-participant observation method. The data analysis technique used was multiple linear regression analysis with the IBM SPSS version 25 program tool.

3. RESULTS AND DISCUSSION

Descriptive Statistical Analysis Results

Table1. Descriptive Statistical Test Results

	Minimu	Maximu		Std.
N	m	m	Mean	Deviation

Credit Risk	.01		7.99	2.63	1.37
Liquidity	155	12.35	527.91	87.93	51.04
Bank Capital	155	2.70	283.88	31.84	30.87
Profitability	155	.04	13.58	1.88	1.90
Operational Efficiency	155	34.13	119.43	80.36	14.15
Valid N (listwise)	155				

Source: Appendix 9, processed secondary data (2024)

Descriptive statistics in Table 1 show the minimum value, maximum value, average and standard deviation of each variable, where these values provide the following information.

- 1) The minimum value of credit risk proxied using the Non Performing Loan (NPL) ratio is 0.01 percent obtained by PT Bank Capital Indonesia Tbk in 2020 and 2021. The maximum NPL value is 7.99 percent obtained by PT Bank Sinarmas Tbk in 2022. The average (mean) NPL value in 2019-2023 is 2.63 percent. The standard deviation value shows the size of the spread of credit risk variable data of 1.37 percent. A standard deviation value that is lower than the average (mean) value indicates that the data variation is more uniform or homogeneous.
- 2) The minimum liquidity value proxied using the Loan to Deposit Ratio (LDR) is 12.35 percent obtained by PT Bank Capital Indonesia Tbk in 2021. The maximum LDR value is 527.91 percent obtained by PT Bank Krom Indonesia Tbk in 2023. The average (mean) LDR value in 2019-2023 was 87.93 percent. The standard deviation value shows the size of the spread of the liquidity variable data of 51.04 percent. A standard deviation value that is lower than the average (mean) value indicates that the data variation is more uniform or homogeneous.
- 3) The minimum value of bank capital proxied using the Capital Adequacy Ratio (CAR) ratio is 2.70 percent obtained by PT Bank Central Asia Tbk in 2020. The maximum CAR value is 283.88 percent obtained by PT Bank Krom Indonesia Tbk in 2022. The average (mean) CAR value in 2019-2023 is 31.84 percent. The standard deviation value shows the size of the spread of bank capital variable data of 30.87 percent. A standard deviation value that is lower than the average (mean) value indicates that the data variation is more uniform or homogeneous.
- 4) The minimum value of profitability proxied using the Return on Asset (ROA) ratio is 0.04 percent obtained by PT Bank Mayapada Internasional Tbk in 2022. The maximum ROA

value is 13.58 percent obtained by PT Bank Tabungan Pensiunan Nasional Syariah Tbk in 2019. The average (mean) ROA value in 2019-2023 is 1.88 percent. The standard deviation value shows the size of the spread of bank capital variable data of 1.90 percent. A standard deviation value that is higher than the average (mean) value indicates that data variation is relatively high and data distribution is heterogeneous.

- 5) The minimum value of operational efficiency proxied using the BOPO ratio is 34.13 percent obtained by PT Bank Krom Indonesia Tbk in 2021. The maximum BOPO value is 119.43 percent obtained by PT Bank Sinarmas Tbk in 2019. The average (mean) BOPO value in 2019-2023 is 80.36 percent. The standard deviation value shows the size of the spread of bank capital variable data of 14.15 percent. A standard deviation value that is lower than the average (mean) value indicates that the data variation is more uniform or homogeneous.

Multiple Linear Analysis Results

Table2. Multiple Linear Regression Analysis Test Results

Model	Coefficientsa				
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
(Constant)	-6,860	4.022		-1,706	.090
Liquidity	.416	.271	.124	1,532	.128
Bank Capital	-.037	.169	-.017	-.222	.826
Profitability	-.342	.162	-.252	-2.108	.037
Operational Efficiency	1,799	.832	.258	2.162	.032

Source: Appendix 10, processed secondary data (2024)

Based on the results of the multiple linear regression analysis described in Table 2, the following equation can be formulated:

$$Y = (-6.860) + 0.416 X1 - 0.037 X2 - 0.342 X3 + 1.799 X4$$

Information:

Y = Credit Risk (NPL)

X1 = Liquidity (LDR)

X2 = Bank capital (CAR)

X3 = Profitability (ROA)

X4 = Operational Efficiency (BOPO)

Based on the multiple linear regression equation above, the following analysis can be carried out.

- 1) The constant value of -6.860 indicates that if liquidity, bank capital, profitability, and operational efficiency are equal to 0, then credit risk decreases to -6.860.
- 2) The regression coefficient value of the liquidity variable has a positive value of 0.416, meaning that if liquidity increases by 1 percent, then the credit risk will increase by 0.416 percent assuming other independent variables are considered constant. A positive sign means that it shows a unidirectional influence between the independent variable and the dependent variable.
- 3) The regression coefficient value for the bank capital variable is -0.037, meaning that if the bank capital increases in percent, the credit risk variable will decrease by 0.037 percent, assuming that other variables are considered constant. The negative sign indicates an opposite effect between the independent variable and the dependent variable.
- 4) The regression coefficient value for the profitability variable is -0.342, meaning that if profitability increases by 1 percent, then conversely the credit risk variable will decrease by 0.342 percent assuming that other variables are considered constant. The negative sign means that it shows the opposite effect between the independent variable and the dependent variable.
- 5) The regression coefficient value for the operational efficiency variable is 1.799, meaning that if operational efficiency increases by 1 percent, the credit risk variable will increase by 1.799 percent, assuming that other variables are considered constant. A positive sign means that it shows a unidirectional influence between the independent variable and the dependent variable.

Hypothesis Test Results

1) Coefficient of Determination (R-Square)

Table3. Results of the Determination Coefficient (R-Square)

Model Summary				
Adjusted R				
Model	R	R Square	Square	Std. Error of the Estimate
1	.449a	.201	.180	1.23717

Source: Appendix 10, processed secondary data (2024)

Based on Table 3, the R square value is 0.201, so it can be concluded that 20.1 percent variable credit risk is influenced by liquidity, bank capital, profitability, and operational efficiency in Banking Sector Companies on the Indonesia Stock Exchange for the period 2019-2023. The remaining 79.9 percent is influenced by other variables outside the study. The result of 20.1 percent shows that the influence of the independent variable on the dependent variable is quite low.

2) Model Feasibility Test (F Test)

Table 4. Results of Model Feasibility Test (F Statistic Test)

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	57,844	4	14,461	9,448	.000b
	Residual	229,588	150	1,531		
	Total	287,431	154			

Source: Appendix 10, processed secondary data (2024)

Based on the test results in Table 4, the significance value of 0.000 is smaller than the significance level of 0.05. The test indicates that the regression model used is feasible, so it can be continued for partial testing.

3) t-test

Table 4. t-Test Results

Coefficients ^a					
Model		Unstandardized		Standardized	
		B	Std. Error	Beta	Sig.
1	(Constant)	-6,870	4.022		.090
	Liquidity	.416	.271	.124	.128
	Bank Capital	-.037	.169	-.017	.826
	Profitability	-.342	.162	-.252	.037
	Operational Efficiency	1,799	.832	.258	.032

Source: Appendix 10, processed secondary data (2024)

Based on the test results in Table 5, it can be concluded that the partial hypothesis test results for each independent variable against the dependent variable are as follows.

- a) The t-test results show that the significance value of the t liquidity variable is 0.128, this value is greater when compared to the real level of $\alpha = 0.05$. The Beta value of the standardized coefficient of the liquidity variable on credit risk is 0.124 which indicates a positive direction. Based on the results of the study, it can be concluded that the first hypothesis (H1) which states "Liquidity has a positive effect on Credit Risk in Banking Sector Companies on the Indonesia Stock Exchange for the 2019-2023 period" is rejected.
- b) The t-test results show that the significance value of the bank capital variable is 0.826, this value is greater when compared to the real level of $\alpha = 0.05$. The Beta value of the standardized coefficient of the bank capital variable on credit risk is -0.017 which indicates a negative direction. Based on the results of the study, it can be concluded that the second hypothesis (H2) which states "Bank Capital has a negative effect on Credit Risk in Banking Sector Companies on the Indonesia Stock Exchange for the 2019-2023 period" is rejected.
- c) The t-test results show that the significance value of the profitability variable is 0.037, which is smaller than the real level of $\alpha = 0.05$. The Beta value of the standardized coefficient of the profitability variable on credit risk is -0.252, which indicates a negative direction. Based on the results of the study, it can be concluded that the third hypothesis (H3) which states "Profitability has a negative effect on Credit Risk in Banking Sector Companies on the Indonesia Stock Exchange for the period 2019-2023" is accepted.
- d) The t-test results show that the t-significance value of the operational efficiency variable is 0.032, this value is smaller when compared to the real level of $\alpha = 0.05$. The Beta value of the standardized coefficient of the profitability variable on credit risk is 0.258 which indicates a positive direction. Based on the results of the study, it can be concluded that the fourth hypothesis (H4) which states "Operational Efficiency has a positive effect on Credit Risk in Banking Sector Companies on the Indonesia Stock Exchange for the 2019-2023 period" is accepted.

Classical Assumption Test Results

- 1) Normality Test

Table5. Normality Test Results (Before Data Transformation)

		Unstandardized Residual
N		155
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	1.22591520
Most Extreme Differences	Absolute	.072
	Positive	.065
	Negative	-.072
Test Statistics		.072
Asymp. Sig. (2-tailed)		.048c

Source: Appendix 11, processed secondary data (2024)

Based on the test results in Table 6, the Asymp. Sig. (2-tailed) value using the Kolmogorov – Smirnov test is $0.048 < 0.05$. The Asymp. Sig. (2-tailed) value is smaller than the significance level, which is 0.05, which reflects that the residuals are not normally distributed, so the model is not suitable for further analysis.

Residuals that are not normally distributed can be transformed to become normal. Data transformation can be done by looking at the histogram graph of the existing data whether moderate positive skewness, substantial positive skewness, severe positive skewness, moderate negative skewness, substantial negative skewness and severe negative skewness (Ghozali, 2018: 39). Based on the shape of the histogram graph showing a tendency to lean towards the upper left or what is often called substantial positive skewness, then Ln or Natural Logarithm transformation is carried out on the variables of liquidity, bank capital, profitability, and operational efficiency. The results of the data test after data transformation in semi-log (LN) form can be seen in table 7.

Table 6. Normality Test Results (After Data Transformation)

		Unstandardized Residual
N		155
Normal Parameters ^{a,b}	Mean	.0000000

	Std.	1.22099529
	Deviation	
Most Extreme	Absolute	.067
Differences	Positive	.062
	Negative	-.067
Test Statistics		.067
Asymp. Sig. (2-tailed)		.083c

Source: Appendix 11, processed secondary data (2024)

Based on the test results in Table 7, it shows that the Asymptotic significance value (2-tailed) is 0.083. The Asymp. Sig. (2-tailed) value in the data is greater than the significance level, which is 0.05, which reflects normally distributed residual data. These results indicate that the normality assumption has been met.

2) Autocorrelation Test

Table 7. Autocorrelation Test Results

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.449a	.201	.180	1.23717	1,819

Source: Appendix 11, processed secondary data (2024)

With a significant level of 0.05 and $N = 155$ and the number of independent variables $k = 4$, the value of $dl = 1.6848$ and $du = 1.7906$ is obtained, the value $(4 - du)$ is $4 - 1.7906 = 2.2094$. The Dw value is 0.899, so $1.7906 > 1.819 < 2.2094$. The dw results indicate that the regression model does not show autocorrelation symptoms.

3) Multicollinearity Test

Table 8. Multicollinearity Test Results

Coefficients ^a			
Model		Correlations	
		Tolerance	VIF
1	(Constant)		
	Liquidity	.812	1.232
	Bank Capital	.945	1,058
	Profitability	.372	2,691

Operational Efficiency	.374	2,674
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Source: Appendix 11, processed secondary data (2024)

Based on Table 9, it shows that the overall tolerance value of the independent variables is greater than the previously determined tolerance value of 0.10 and the VIF value for each independent variable is less than 10. These results indicate that the regression model does not contain symptoms of multicollinearity between independent variables. The regression model is stated to be free from symptoms of multicollinearity so that it is suitable for use in predicting.

4) Heteroscedasticity Test

Table 9. Heteroscedasticity Test Results

		Coefficients ^a				
		Unstandardized		Standardized		
		Coefficients		Coefficients		
		Std.				
Model		B	Error	Beta	t	Sig.
1	(Constant)	-	2.428		-1.235	.218
		3.006				
	Liquidity	-.189	.164	-.096	-1.161	.251
	Bank Capital	.160	.102	.120	1,561	.120
	Profitability	-.111	.098	-.139	-1.128	.261
	Operational Efficiency	.974	.503	.237	1,937	.055

Source: Appendix 11, processed secondary data (2024)

Based on the test results in Table 10, it shows that the level of significance or Sig. of each independent variable is more than 0.05. A significance value greater than 0.05 indicates that this research model is free from heteroscedasticity symptoms. The regression model is stated to be free from heteroscedasticity symptoms so that it is suitable for use in predicting.

Discussion of Research Results

The Effect of Liquidity on Credit Risk

Based on the results of the analysis, it shows that liquidity has no significant effect on credit risk. This shows that the first hypothesis is rejected. Increasing liquidity has no effect on credit risk. The size of liquidity will not affect credit risk.

A high LDR ratio indicates that the amount of credit disbursed is greater than the third party funds received. High credit distribution is at risk of causing credit risk, which can be overcome by having a reserve fund for impairment losses (CKPN). CKPN functions as a buffer to deal with the possibility of the debtor's inability to fulfill its obligations according to the agreement, so that credit risk can be controlled. In addition, banks can reduce credit risk through the management of a well-diversified credit portfolio. Diversification of the credit portfolio is carried out by differentiating the use of credit based on the type and economic sector. Banks that are able to manage credit diversification effectively can reduce the concentration risk in the credit portfolio, so that the overall credit risk becomes smaller.

Other factors that are more dominant in determining the level of credit risk are effective risk management. Credit risk management can be done by implementing standards and criteria to conduct selection and assessment of borrower eligibility. Credit eligibility assessment criteria can be done through 5 C analysis (character, capacity, capital, condition, and collateral). In addition, it is very important to have credit supervision such as monitoring the development of the debtor's business. A healthy and sustainable bank requires effective risk management to mitigate the risks faced by bank activities.

The results of this study are in accordance with the research of Lestari and Khusaini (2016) which found that liquidity has no significant effect on credit risk. Other similar studies stating that liquidity has no effect on credit risk were conducted by Yuzevin and Sijabat (2020), Malik (2020), and Rasyidin and Hirawati (2020).

The Influence of Bank Capital on Credit Risk

Based on the results of the analysis, it shows that bank capital does not have a significant effect on credit risk in banking sector companies on the Indonesia Stock Exchange for the period 2019-2023. This shows that the second hypothesis is rejected. The size of bank capital will not affect credit risk.

Bank capital does not affect credit risk, because the increase in capital owned by the bank is not fully used to support losses from credit risk. Bank capital is more focused on business expansion needs than anticipating credit risk. In general, bank capital has the main function of financing operational activities, supporting investment needs, and purchasing securities. Based on this, the increase in bank capital cannot affect the value of credit risk owned by banking companies.

The ideal bank capital in banking is not entirely used to anticipate risks but is used for business expansion. Bank capital has the main function to finance operational activities,

investment needs, and purchase of securities. Credit distribution through an effective credit analysis and credit management process can minimize credit risk. Capital used as a financial buffer for banks indirectly affects the ability to assess and distribute credit. This means that banks that have small capital in distributing credit are more selective and conduct effective analysis to minimize credit risk. Banks with low capital when conducting credit analysis and effective credit diversification will not affect the level of credit risk.

Based on the results of the study, ideal capital does not affect the level of non-performing loans owned by banks. Other factors can be more dominant in influencing the level of credit risk, such as the quality of the credit portfolio and economic conditions. The selection of an optimal credit portfolio is highly dependent on the implementation of an effective credit granting process based on the principle of prudence. This is done to ensure that the credit provided is of good quality and minimizes credit risk. The second factor, namely economic and economic conditions, is very important to consider in maintaining the level of credit risk. Unstable economic conditions will reduce the debtor's ability to pay because the income earned is low. The existence of the Covid-19 pandemic is an example that economic conditions have a significant effect on the level of non-performing loans. The Covid-19 pandemic increased the NPL value in 2020 significantly because there was an economic slowdown resulting in massive layoffs. This condition will affect the decline in income of the community and companies so that the debtor's ability to pay becomes low and increases the risk of non-performing loans.

The results of this study are in accordance with research Pardosi et al. (2024), Wulandari et al. (2021), Melani et al. (2022), showed that bank capital has no effect on credit risk. Other similar studies that state that bank capital has no effect on banking credit risk were conducted by Yuzevin and Sijabat (2020), Abyanta et al. (2020), and Rasyidin and Hirawati (2020).

The Effect of Profitability on Credit Risk

Based on the results of the analysis, it shows that profitability has a significant negative effect on credit risk. This indicates that the third hypothesis is accepted. The negative and significant effect of profitability on credit risk reflects that the higher the level of profitability owned by the bank, the credit risk will decrease. Increased profitability reflects effective management in managing assets to generate profits. Large profits can be used by banks to cover potential losses due to bad debts, so that credit risk decreases. Conversely, low profitability indicates that the bank has poor management including in credit activities, thus increasing credit risk. Based on these results, banks are expected to pay attention to their profitability as reflected by ROA so that it continues to increase so that credit risk decreases.

The results of this study are in accordance with research Andriani and Rahmawati (2021), Yuzevin and Sijabat (2020), and Wulandari and Susanti (2021) showed that bank Non-Performing Loans (NPL) increased along with the decline in bank profitability (ROA). Other similar studies that state that profitability has a negative and significant effect on bank credit risk were conducted by Kusuma and Haryanto (2016) and Melani et al. (2022).

The Impact of Operational Efficiency on Credit Risk

Based on the results of the analysis, it shows that operational efficiency has a significant positive effect on credit risk. This indicates that the fourth hypothesis is accepted. The positive and significant effect of operational efficiency on credit risk reflects that the higher the level of operational efficiency owned by the bank, the credit risk will increase. The increase in operational efficiency proxied by the BOPO ratio shows that operational costs are relatively greater compared to operational income. Operational inefficiency can cause additional burdens on banks, reduce net profits, and increase financial risks, especially credit risks. Banks that are able to manage efficiency at a good level will have better capabilities when facing credit risk and minimize non-performing loans. Banks that operate efficiently will be able to maximize revenue, increase the amount of money disbursed, improve customer service, and strengthen the overall health of the bank, all of which reduce the likelihood of non-performing loans. Conversely, a decreasing BOPO ratio indicates that the bank's operational costs are increasingly efficient. Banks that have good efficiency will have high profits, so they can accommodate losses from non-performing loans. Banks that operate efficiently will be able to maximize revenue, improve customer service, and strengthen the overall health of the bank, all of which reduce the likelihood of non-performing loans.

The results of this study support the research conducted by Amir et al. (2019), Yuliani et al. (2020), and Pratamawati (2018) who found that BOPO had a significant and positive effect on NPL. Another study conducted by Suryani and Africa (2021) showed that NPL would decrease along with bank operational efficiency as indicated by a decreasing BOPO ratio. Other similar studies stating that operational efficiency has a positive and significant effect on banking credit risk were conducted by Asyadiah and Hasanuh (2023), Herlina and Damayanti (2024), and Palupi and Azmi (2019).

4. CONCLUSION

Based on the results of the analysis and discussion that have been described in the previous chapter, the conclusions that can be drawn are as follows.

- 1) Liquidity does not have a significant effect on credit risk in the banking sector on the Indonesia Stock Exchange for the 2019-2023 period. Liquidity does not affect credit risk because liquidity, which is proxied using the LDR ratio, if it increases, reflects an increase in the amount of credit given to customers but does not affect non-performing loans. The implementation of an optimal credit diversification strategy by banks is a determining factor why the increase in credit distribution does not have a significant impact on the increase in the non-performing loan ratio. Through diversification, credit risk is evenly distributed, thereby minimizing the potential for losses due to payment failure by debtors.
- 2) Bank capital does not have a significant effect on credit risk in the banking sector on the Indonesia Stock Exchange for the 2019-2023 period. Bank capital does not have a significant effect on credit risk because the increase in capital in banks is not fully used for loss reserve funds that can buffer risks, the capital is mostly used for investment and purchase of securities that can generate profits for the bank. This shows that high capital cannot fully cover losses from non-performing loans. In addition, banks that carry out a good credit risk analysis process and effective credit management will be able to reduce credit risk. Good credit management will reduce the bank's dependence on capital as a risk buffer. A healthy and sustainable bank requires effective risk management to mitigate the risks faced by banking activities
- 3) Profitability has a negative and significant effect on credit risk in the banking sector on the Indonesia Stock Exchange for the 2019-2023 period. Increased profitability reflects effective management in managing assets to generate profits. Large profits can be used by banks to cover potential losses due to bad debts, so that credit risk decreases.
- 4) Operational efficiency has a positive and significant effect on credit risk in the banking sector on the Indonesia Stock Exchange for the period 2019-2023. The increase in operational efficiency as measured by the BOPO ratio indicates that operational costs are relatively higher than operational income. Operational inefficiency can cause additional burdens on banks, reduce net profits, and increase financial risks, especially credit risks.

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