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Analysis of The Effect of Loan Distribution, Non-Performing Loans, and Loan at Risk on The Allowance For Impairment Losses at PT Bank Sumut Conventional Unit

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Abstract

Loan Distribution is one of the bank's activities that can contribute to profit. However, the activity presents credit risks, which can be measured by the bank's Non-Performing Loans (NPL) and Loans at Risk (LaR). One of the bank's efforts to mitigate this credit risk is establishing an Allowance for Impairment Loss (CKPN). This study aims to analyze the effect of Loan Distribution, NPL, and LaR on CKPN at PT Bank Sumut Conventional Unit from 2022 to 2024. The data used in this study is secondary data obtained from PT Bank Sumut's annual financial reports, which are available on the bank's official website, and monthly reports retrieved from the bank's internal reporting application. The data was collected using a non-participatory observation technique. This involved gathering the complete monthly data for the variables under study from 2022 to 2024. The validity of the collected data was first examined using the Classical Assumption tests, which comprise the Autocorrelation, Heteroscedasticity, Multicollinearity, and Normality tests. Multiple Regression Analysis was used to examine the data. The Coefficient of Determination (R Square) test, the Simultaneous test (F test), and the Partial test (t-test) were used to test the hypotheses. The analysis results showed that the Loan Distribution and NPL variables have an impact on CKPN. Meanwhile, the LaR variable does not affect the CKPN at PT Bank Sumut Conventional Unit from 2022 to 2024.

Keywords: CKPN; Loan Distribution; LaR; NPL

1. Introduction

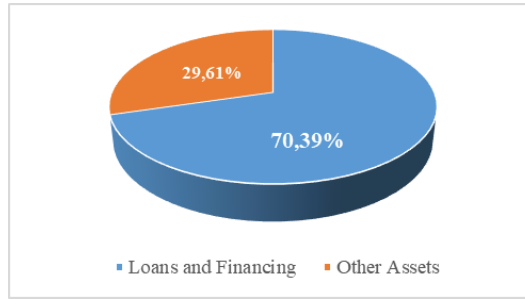
According to Undang-Undang Republik Indonesia (1998), a bank is a company that raises the standard of life for the populace by collecting public funds in the form of savings and distributing them to the public in the form of loans and/or other forms. Distributing money to the general public through loans (for traditional banks) or financing (for Sharia banks) is one of a bank's primary functions. Loans and financing contribute high profits to a bank, but these business activities are also expose banks to significant risks, with credit risk being the most common.

According to PT Bank Sumut's 2024 financial report, the bank's consolidated assets - which include both conventional and sharia units - exceeded Rp45.4 trillion. Of this amount, loans and financing distribution totaled more than Rp31.9 trillion. This data shows that the distribution of bank loans/financing contributed more than 70% of all bank assets.

Table 1.1 PT Bank Sumut assets as of December 2024

Assets	Balance (Rp.Million)	%
Loans	29.061.727	63,94%
Financing	2.930.688	6,45%
Loans	31.992.415	70,39%
Other Assets	13.456.729	29,61%
Total Assets	45.449.144	100,00%

Source: PT Bank Sumut Financial Report, 2024.



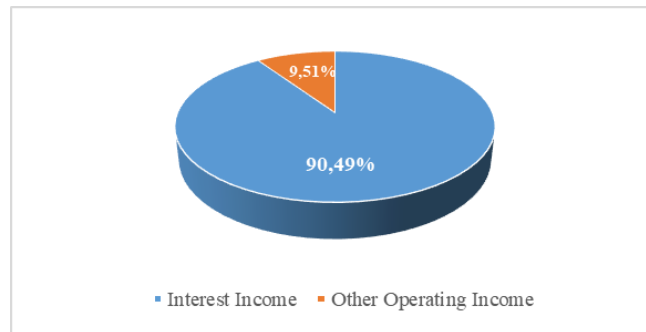
Picture 1.1. PT Bank Sumut assets as of December 2024

The interest income and profit margins from PT Bank Sumut's financing and loans topped Rp3.6 trillion in 2024. This sum made up more than 90% of the bank's approximately Rp4 trillion in total operating income, demonstrating that lending and financing operations are the main sources of the bank's earnings.

Table 1.2. PT Bank Sumut's Operating Income as of December 2024

Pendapatan	Balance (Rp.Million)	%
Interest Income	3.623.209	90,49%
Other Operating Income	380.976	9,51%
Total Pendapatan	4.004.185	100,00%

Source: PT Bank Sumut Financial Report, 2024.



Picture 1.2. PT Bank Sumut's Operating Income as of December 2024

Controlling credit risk is essential because the bank's primary source of profit and fund distribution is its loan and financing operations. As required by the Bank Indonesia Regulation and subsequently revised by the Financial Services Authority (OJK), banks must set aside funds for each loan and financing that is included in their assets in order to reduce this risk.

The creation of loans and financing reserves was done through Provision for Asset Write-Offs (PPA), with calculation guidelines described in the following table, prior to the 2008 Indonesian Banking Accounting Guidelines (PAPI 2008), specifically Bank Indonesia Regulation Number 7/2/PBI/2005 dated January 20, 2005 concerning the Assessment of Asset Quality of Commercial Bank.

Table 1.3. PPA Calculation Rules

Criteria	Loans or Financing Quality	PPA (Rupiah)
General Reserve	Current / Pass	1% x Loans or Financing Balance
Special Reserve	Special Mention	5% x (Loans or Financing Balance - Collateral Value)
Special Reserve	Substandart	15% x (Loans or Financing Balance - Collateral Value)
Special Reserve	Doubtful	50% x (Loans or Financing Balance - Collateral Value)
Special Reserve	Loss	100% x (Loans or Financing Balance - Collateral Value)

The rules governing the requirement to establish loans and financing reserves were revised when PAPI 2008 went into effect. Provisions for Productive Assets (PPA) for both productive and non-productive assets, classified as general and special reserves, must now be calculated by banks in accordance with the update outlined in Bank Indonesia Regulation Number 14/15/PBI/2012 dated October 24, 2012, concerning the Assessment of Asset Quality of Commercial Banks. In compliance with relevant financial regulations, banks must also create Allowance for Impairment Losses (CKPN). Additionally, OJK Regulation Number 40/POJK.03/2019, which was published on December 19, 2019, was the most recent of several revisions to the rules pertaining to the Assessment of Asset Quality of Commercial Banks.

Banks determine Allowance for Impairment Losses (CKPN) by analyzing historical loan loss data and utilizing an appropriate statistical model to produce a reasonable value for risk mitigation. The absence of specific regulatory guidelines for CKPN calculation formulas results in diverse models across banks. Since CKPN is essential for bank control and risk mitigation of disbursed loans/financing and given the lack of explicit regulation on its calculation method, banks need to analyze and evaluate if the CKPN adequately reflects risk control based on various loan performance variables.

We can conduct the analysis and evaluation by examining credit risk control variables, specifically the Allowance for Impairment Losses (CKPN) created for disbursed loans. This will be compared against several loan performance variables that directly impact credit risk. To this study, the selected loan performance variables are Loan Distribution, Non-Performing Loans (NPL), and Loan at Risk (LaR).

This research focuses exclusively on PT Bank Sumut Conventional Unit. Throughout this document, 'PT Bank Sumut' or 'the bank' refers solely to this unit. We've limited our Allowance for Impairment Losses (CKPN) analysis to CKPN on loans, excluding sharia financing. This scope ensures data relevance and avoids bias, as PT Bank Sumut Syariah Unit's CKPN calculation follows different accounting standards than the Conventional Unit.

The impact of several bank financial factors on the development of impairment losses (CKPN) has been examined in a number of earlier research. Maulidiyah (2017) looked at how NPL, CAR, and LDR affected impairment losses (CKPN) for traditional banks that were listed between 2011 and 2015 on the Indonesia Stock Exchange. The findings indicated that NPL had an effect on impairment losses, while CAR and LDR did not. Setiatin and Dita (2020) analyzed the influence of LDR and NPL on impairment losses. Their findings indicated that NPL had an effect, whereas LDR did not.

Drawing from the previously mentioned context, the author will investigate "Analysis of the Effect of Loan Distribution, Non-Performing Loans, and Loans At Risk on the Allowance for Impairment Losses at PT Bank Sumut Conventional Unit." The author restricts the study's analysis timeframe to 2022–2024.

2. Literature Review

2.1. Credit Risk

The chance that a counterparty or debtor will not fulfill their commitments to the bank is known as credit risk. This encompasses the risk of settlement, counterparty credit, and credit concentration. Banks must carefully manage credit risk as part of their entire banking risk management procedures, out of all the different kinds of risks they encounter. At the very least, the following are included in the implementation of risk management for commercial banks (Otoritas Jasa Keuangan, 2016):

- Active oversight of the Board of Directors and Board of Commissioners,
- Determining risk limits and ensuring that risk management policies and processes are enough,
- The sufficiency of risk management information systems, thorough internal control systems, risk identification, measurement, monitoring, and control procedures.

Both the amount and quality of credit exposure influence the magnitude of credit risk. The amount of loans made to borrowers reflects the quantity; the larger the loan amount, the bigger the exposure. In the meantime, the quality is based on the quality of the collateral that the bank has and the probability of a debtor failing. Low-quality collateral reduces credit quality, thereby increasing credit risk (Ikatan Bankir Indonesia, 2018).

2.2. CKPN

A bank reserve known as Allowance for Impairment Losses (CKPN) was established to cushion possible losses from productive assets. According to Vebriana et al. (2020), banks allocate a certain percentage of their loan balance to this reserve. According to relevant financial accounting rules, the Financial Services Authority defines CKPN as a provision created for the impairment of financial instruments (Otoritas Jasa Keuangan, 2021).

Based on Financial Accounting Standards Statement Number 71 (PSAK 71) and the Financial Accounting Guidelines (BPAK), bank loan reserves are calculated using the backward-looking and forward-looking methods, namely by considering historical loan data that has decreased in value and estimating risks that are considered to be able to affect loan quality in the future. PSAK 71 only regulates the purpose of calculating CKPN but does not regulate the methodology and calculations in detail. The method used must be proportional to the complexity of the bank.

Calculating individual CKPN involves projecting future cash flows based on the total number of recoverable loans, whereas calculating collective CKPN involves applying the following formula:

$$\text{CKPN} = \text{PD} \times \text{LGD} \times \text{EAD} \times \text{DF} \times \text{FLA}$$

Information:

- PD: Probability of Default
- LGD: Loss Given Default
- EAD: Exposure At Default
- DF: Discount Factor
- FLA: Forward-Looking Adjustment

CKPN is a bank reserve specifically created to mitigate and control the risks associated with distributing funds as loans.

2.3. Loan Distribution

Loan Distribution is the net amount of loans that the bank has disbursed up to a given point in time. On the bank's balance sheet, this loan exposure is shown by the Fair Value balance of loans.

Loan distribution or Fair Value Balance	=	Fair Value Position at the End of the Previous Month (+) Current Month's Loans Realization Balance (-) Current Month's Debtor's Principal Loan Payment
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A larger Loan Distribution inevitably results in higher credit risk for the bank because every loan has the potential to default. This danger is increased in particular if the loans that are disbursed are of low quality. Therefore, any increase in Loan Distribution must always be accompanied by a thorough loan analysis conducted in accordance with the principle of prudence (Ikatan Bankir Indonesia, 2018).

2.4. Non-Performing Loans (NPL)

Problematic loans, known as Non-Performing Loans (NPLs), are loans classified into three categories: Substandard, Doubtful, or Loss. This classification is consistent with the legislative provisions for general bank asset quality and OJK regulations (Otoritas Jasa Keuangan, 2017).

$$\text{NPL} = \text{Fair Value of Substandard Loan} + \text{Fair Value of Doubtful Loans} + \text{Fair Value of Loss Quality Loans}$$

NPLs quantify the percentage of troublesome loans in a bank's portfolio, so indicating the degree of credit risk that the bank confronts. A growing realization of inherent risk from the loans made to consumers is directly shown by an increasing NPL number.

2.5. Loan at Risk (LaR)

The terms NPL and LaR often appear in several banking studies. According to Soraya (2020), many have interpreted NPL and LaR in the same context, namely problematic loans, even though there are things that differentiate the two terms in banking. Loan at Risk (LaR) is a broader category than Non-Performing Loans (NPLs). It includes all NPLs, along with loans classified as 'Special

Mention' and restructured 'Current' loans. Therefore, if NPLs represent problematic loans, LaR can be viewed as low-quality loans (Otoritas Jasa Keuangan, 2017). The LaR calculation formula is as follows:

$$\text{LaR} = \text{Fair Value of Restructured Loans with Current Quality} + \text{Fair Value of Special Mention Loans} \\ + \text{Fair Value of NPL}$$

The OJK adopted a loan stimulus that placed a strong emphasis on managing and handling debt restructuring in order to stabilize the banking industry during the COVID-19 pandemic. This stimulus significantly boosted restructured loans, making it crucial to pay attention to banking LaR. This is because LaR calculations include restructured loans as a component of loans considered low quality, even if they are still categorized as "Current" quality. Like NPL, a bank's risk increases with the LaR figure over a given time period.

2.6. Previous Research

Several previous studies are relevant to the problem we are examining, and they help provide an overview and clarify our framework for discussion. The table below summarizes a number of earlier studies in Table 2.1.

2.7. Hypothesis

The following are the hypotheses that were developed for this study:

H1: Loan Distribution affects CKPN at PT Bank Sumut Conventional Unit from 2022 to 2024.

H2: NPL affects CKPN at PT Bank Sumut Conventional Unit from 2022 to 2024.

H3: LaR affects CKPN at PT Bank Sumut Conventional Unit from 2022 to 2024.

3. Methods

3.1. Research Location

The study was carried out at the PT Bank Sumut Head Office, which is situated at Jalan Imam Bonjol Number 18 in Medan, North Sumatra. The data required for analysis was obtained from PT Bank Sumut's financial reports, specifically both its published annual reports and the bank's internal monthly performance reports.

3.2. Types of research

Because the data in this study is numerical and the analysis is done using a statistical method, the research type is quantitative. According to Sugiyono (2021), quantitative research is a positivist-based approach that is used to examine a particular population or sample. It uses statistical and quantitative data analysis to test preexisting theories.

3.3. Population and Research Sample

The entire population of monthly data for all variables is used as the sample in this study, which employs the total sampling (also known as census) technique. According to Sugiyono (2021), this technique involves sampling all members of a population. The sample includes monthly data for CKPN, Loan Distribution, NPL, and LaR from January 2022 to December 2024.

The number of dependent variable data observed is 36 (thirty-six) points. The dependent variable in the form of CKPN data was obtained using monthly data from the end of January 2022 to the end of December 2024, or for 3 (three) years or 36 (thirty-six) months.

Table 2.1
Summary of Previous Research

No.	Researcher	Research Title	Research Approach	Data analysis	Variables	Research result
1.	Daksa (2021)	Analysis of the Influence of LaR, NPL, and LDR on the Formation of CKPN at PT Bank Jasa Jakarta.	Quantitative Data Validity test: - Normality - Multicollinearity - Heteroscedasticity	Multiple Linear Regression, Coefficient of Determination, t-test, and F test	Independent: LaR, NPL, and LDR. Dependents: CKPN	- LaR and NPL partially affect CKPN. - LDR does not affect CKPN. - LaR, NPL, and LDR simultaneously affect CKPN.
2.	Setiatin and Dita (2020)	The Influence of LDR and NPL on CKPN (in Conventional Banks Listed on the IDX 2015-2019).	Quantitative	Linear Regression, Coefficient of Determination, t-test, and F test	Independent: LDR and NPL. Dependents: CKPN	- LDR has no significant effect on CKPN. - NPL has a significant effect on CKPN. - LDR and NPL together have a significant effect on CKPN.

3.	Vebriana, Setyowati, and Nurdin (2020)	The Influence of NPL and LDR on CKPN (in Conventional Banks Listed on the IDX 2014-2018).	Quantitative Data Validity test: - Normality - Multicollinearity - Heteroscedasticity - Autocorrelation	Regression, Coefficient of Determination, t-test, and F test	Independent: NPL and LDR. Dependents: CKPN	- NPL has a positive and significant effect on CKPN. - LDR has a negative and insignificant effect on CKPN. - NPL and LDR have a simultaneous effect on CKPN.
4.	Maulidiyah (2017)	The Influence of NPL, CAR, and LDR on CKPN (in Conventional Banks Listed on the IDX 2011-2015).	Quantitative Data Validity test: - Normality - Multicollinearity - Heteroscedasticity - Autocorrelation	Regression, t-test, and F test	Independent: NPL, CAR, and LDR. Dependents: CKPN	- NPL has a significant positive effect on CKPN. - CAR has no significant effect on CKPN. - LDR does not affect CKPN. - NPL, CAR, and LDR together affect CKPN.
5.	Fitriana and Arfianto (2015)	Analysis of the Influence of NPL, CAR, ROA, LDR, and SIZE on CKPN (case study on Conventional Banks Listed on the IDX 2010-2014).	Quantitative Data Validity test: - Normality - Multicollinearity - Heteroscedasticity - Autocorrelation	Multiple Regression Analysis, Coefficient of Determination, t-test, and F test	Independent: NPL, CAR, ROA, LDR, SIZE Dependents: CKPN	- NPL has a significant positive effect on CKPN. - CAR has a significant positive effect on CKPN. - LDR does not have a significant positive effect on CKPN. - ROA has a significant positive effect on CKPN. - SIZE does not have a significant adverse effect on CKPN. - NPL, CAR, ROA, LDR, and SIZE together affect CKPN.

Each of the three independent variables (Loan Distribution, NPL, and LaR) uses monthly data from the data position at the end of January 2022 to the end of December 2024, or for 3 years or 36 months. This means that 108 independent variable data were observed overall.

3.4. Data Types

This study employed secondary data. Researchers don't need to gather information directly because secondary data is supplied by other sources. As defined by Sinulingga (2023), this data is obtained by requesting processed information from a source, eliminating the need for the researcher to conduct interviews, issue questionnaires, or perform observations. The secondary data for this study consists of monthly financial reports from PT Bank Sumut, spanning from January 2022 to December 2024.

3.5. Data source

The secondary data used for each of the CKPN, Loan Distribution, NPL, and LaR variables came from PT Bank Sumut's annual financial report, which can be found on the bank's official website (www.banksumut.co.id), as well as the monthly report that was retrieved from the internal monthly report application.

3.6. Method of collecting data

Non-participatory observation is the method used in this investigation. According to Sinulingga (2023), this technique involves the researcher observing from outside without being directly involved with the work team. To test the hypothesis and draw conclusions, this study's data were collected by downloading, reading, observing, and recording from the data sources.

3.7. Research Variables

According to Sugiyono (2021), research variables are characteristics or values of individuals, things, or activities that are examined in order to make inferences. The following variables were examined in this study:

- Variables whose values are impacted or dictated by the values of other variables are known as dependent or bound variables. According to Sinulingga (2023), Dependent variables are the primary focus of a study since researchers look into changes that take place in them. The study's dependent variable is CKPN.
- Predictor variables, sometimes referred to as independent variables, have a positive or negative impact on dependent variables. LaR, NPL, and Loan Distribution are the study's independent variables.

3.8. Data Analysis Techniques

3.8.1. Classical Assumption test

The classical assumption test is a statistical requirement for multiple linear regression analysis that uses the ordinary least squares (OLS) method. According to Situmorang (2024), a valid estimate from the OLS model is produced when the assumptions of normality, no autocorrelation, no multicollinearity, and no heteroscedasticity are met.

- Normality test

The normality test aims to determine whether the relationship between the dependent and independent variables has a normal distribution. A good regression model is one whose data distribution is approximately normal. This study will assess data normality using both graphical and statistical tests. The Normality test of the graph is carried out using the Histogram test and the Probability Plot test (P-Plot).

According to Situmorang (2024), normality testing with a graphical method can lead to differing interpretations, so a statistical normality test is performed to confirm the results. Statistical normality test is performed using the Kolmogorov-Smirnov test. A Kolmogorov-Smirnov test is performed to determine if the data is normally distributed. According to Ghozali (2021), a significance value greater than 0.05 indicates that the regression model is normally distributed.

- Multicollinearity test

According to Ghozali (2021), the Multicollinearity test aims to test whether there is a correlation between independent variables in the regression model. A good regression model should not have a high correlation between independent variables. To check for multicollinearity, one examines the tolerance value and the Variance Inflation Factor (VIF). If the VIF value is <10 and the tolerance value is >0.1 , then there is no multicollinearity between the independent variables.

- Heteroscedasticity test

According to Ghozali (2021), the Heteroscedasticity test determines if there is an unequal variance among the residuals in a regression model. A constant variance is called homoscedasticity, while a differing variance is called heteroscedasticity. A good regression model should have homoscedasticity, meaning it does not have heteroscedasticity. In this study, the heteroscedasticity test was performed using a two-pronged approach, a graphical analysis with a Scatterplot and a statistical analysis with the Park test.

- Autocorrelation test

According to Ghozali (2021), the autocorrelation test determines if the residuals in a linear regression model are correlated over time. If a correlation exists, it's called an autocorrelation problem. This problem can invalidate the statistical model and lead to less precise conclusions. To detect the presence of autocorrelation, one can utilize the Run test. If the Run test result is greater than the significance level (0.05), the residuals are random, indicating no autocorrelation problem.

3.8.2. Multiple Regression Analysis

According to Situmorang (2024), the multiple linear regression model is an extension of simple regression that involves more than one regressor variable. This model is often used by researchers as an empirical model to estimate the functional relationship between a dependent variable (Y) and independent variables (X1, X2, ..., Xk). The multiple linear regression equation is as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + e$$

Where:

- Y: CKPN

- a: Constant value

- b: Regression coefficient
- X1: Loan distribution
- X2: NPL
- X3: LaR
- e: Error term model (Residual Variable)

If the regression coefficients (b_1 , b_2 , and b_3) are positive, it indicates that Loan distribution, NPL, and LaR have a positive influence on CKPN. Conversely, if the regression coefficients are negative, it means that Loan distribution, NPL, and LaR have a negative influence on CKPN.

3.8.3. Hypothesis Testing

Hypothesis testing in this study uses Partial test (t-test), Model Feasibility test (F-test), and Coefficient of Determination test.

- Partial test (t-test)

According to Martono (2016), the partial or t-test is a statistical tool used to test the comparative hypothesis of two samples. It determines whether the averages of the two groups are significantly different, thereby assessing the generalizability of the findings.

In the t-test to test whether the proposed hypothesis is accepted or rejected, the following is done:

- If $t_{count} < t_{table}$, then H_0 is accepted or H_a is rejected,
- If $t_{count} > t_{table}$, then H_0 is rejected or H_a is accepted,
- If the significance level (α) is less than 0.05, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted.

This indicates that the independent variable has an influence on the dependent variable.

- Model Feasibility test (F test)

This model feasibility test, also known as an F-test or simultaneous test, aims to determine whether the independent variables used in the model can collectively explain changes in the dependent variable. The calculated F value tests the model's overall goodness of fit. It determines if the independent variables collectively have a positive and significant influence on the dependent variable.

According to Situmorang (2024), to test whether the proposed hypothesis is accepted or rejected, the following is done:

- If $F_{count} < F_{table}$, then H_0 is accepted or H_a is rejected,
- If $F_{count} > F_{table}$, then H_0 is rejected or H_a is accepted,
- If the significance level is less than 0.05, then H_0 is rejected or H_a is accepted, which means that the independent variables simultaneously have a positive and significant influence on the dependent variable.

- Coefficient of Determination test

The coefficient of determination (R squared) measures how well the model explains the variation in the dependent variable. The value of R squared ranges from 0 to 1. An R squared value closer to 1 means the model can explain most of the variability in Y. Conversely, a value closer to 0 indicates the model has limited explanatory power. According to Situmorang (2024), Adjusted R-Squared is used when a study involves more than two research variables.

All data analysis, including classical assumption tests, multiple regression analysis, and hypothesis tests, was performed using the SPSS version 27 software.

4. Results and Discussions

4.1. Data Identification Results

We determined and gathered data for the variables CKPN, Loan Distribution, NPL, and LaR for this research, which covered the years 2022–2024. The complete population is represented by the statistics in the table below, which is shown monthly. The independent variables are Loan Distribution, NPL, and LaR, and the dependent variable is CKPN. All figures are balance amounts and have been simplified to millions of Rupiah for presentation.

4.2. Classical Assumption test Results

1. Normality test

The Histogram test gives the following results in Figure 3. The histogram in Figure 3, which has a symmetrical, bell-shaped curve, suggests a normal distribution. To confirm this, a P-Plot test will be conducted next.

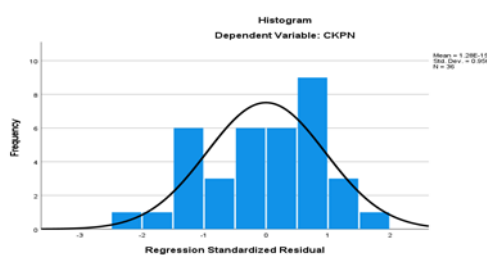


Figure 3. Histogram

- P-Plot test

The P-Plot test gives the following in Figure 4.

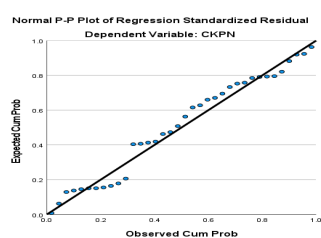


Table 4.1 CKPN, Loan Distribution, NPL, and LaR PT Bank Sumut Conventional Unit 2022 to 2024

<i>Rp.million</i>					
No.	Month	Loans Distribution	NPL	LaR	CKPN
1	Jan-22	23.077.381	590.991	3.622.860	649.729
2	Feb-22	23.323.471	591.397	2.489.841	640.608
3	Mar-22	23.541.911	581.074	2.405.074	609.887
4	Apr-22	23.692.919	566.777	2.143.668	582.209
5	May-22	23.644.361	570.432	2.140.009	608.209
6	Jun-22	23.970.930	542.640	2.078.351	618.483
7	Jul-22	24.261.543	558.728	2.088.157	599.091
8	Aug-22	24.305.671	565.574	1.885.502	613.161
9	Sep-22	24.481.992	543.716	1.878.934	629.734
10	Oct-22	24.975.820	551.963	1.896.383	619.270
11	Nov-22	25.083.669	600.672	1.874.010	645.813
12	Dec-22	25.414.490	548.668	1.793.019	621.383
13	Jan-23	25.240.737	565.265	2.053.484	606.842
14	Feb-23	25.677.050	569.549	1.889.492	613.836
15	Mar-23	25.876.323	582.420	1.823.361	621.539
16	Apr-23	25.914.910	606.605	1.768.384	622.330
17	May-23	25.992.491	591.881	1.769.344	619.985
18	Jun-23	26.033.932	600.696	1.777.409	608.803
19	Jul-23	26.086.700	598.994	1.749.802	611.843
20	Aug-23	26.203.352	609.765	1.772.971	612.249
21	Sep-23	26.365.521	617.575	1.778.499	598.864
22	Oct-23	26.666.506	617.810	1.748.482	596.663
23	Nov-23	26.809.982	569.072	1.693.753	576.110
24	Dec-23	26.768.512	530.212	1.626.253	573.127
25	Jan-24	26.674.605	566.229	2.194.951	599.386
26	Feb-24	26.684.541	575.633	1.738.558	604.763
27	Mar-24	26.758.900	571.425	1.689.270	613.226
28	Apr-24	26.705.459	583.697	1.670.165	616.304
29	May-24	26.807.283	595.996	1.659.937	610.654
30	Jun-24	27.012.522	567.487	1.944.299	621.415
31	Jul-24	27.323.400	561.561	1.914.610	579.074
32	Aug-24	27.532.487	551.451	1.903.756	577.129
33	Sep-24	27.487.659	541.008	2.013.077	576.962
34	Oct-24	27.977.454	530.946	1.931.616	581.970
35	Nov-24	28.202.282	539.339	1.922.064	591.101
36	Dec-24	29.061.727	513.438	1.807.794	588.227

Source: Financial Report of PT Bank Sumut.

Because the data distribution in the image is grouped along the diagonal line, it is normal and satisfies the normality

assumption.

- Kolmogorov Smirnov test

The Kolmogorov-Smirnov test gives the following results in Figure 5.

Based on the Figure 5, the Asymp. Sig. (2-tailed) value of 0.200, which is greater than 5%, indicates a significant probability. Therefore, the Kolmogorov-Smirnov test results confirm that the data for this study has a normal distribution.

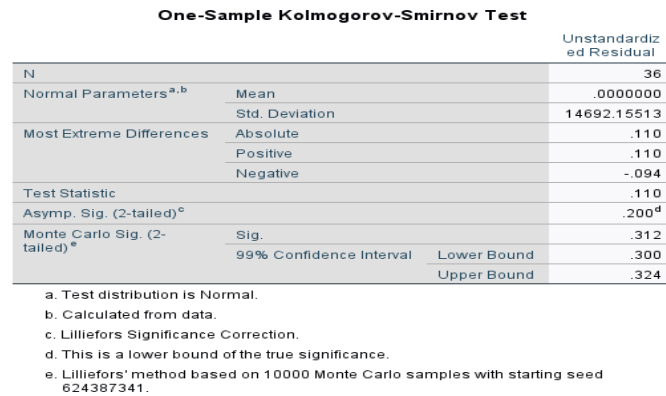


Figure 5.

2. Multicollinearity test

The findings of the multicollinearity test utilizing the VIF and tolerance approaches are as follows:

Coefficients^a

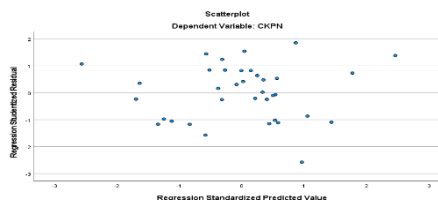
Model		Collinearity Statistics	
		Tolerance	VIF
1	Loans	.617	1.620
	NPL	.913	1.095
	LaR	.661	1.513

a. Dependent Variable: CKPN

The table shows that the VIF values are fewer than 10 and the tolerance values for each of the independent variables (Loan Distribution, NPL, and LaR) are more than 0.1. This suggests that the independent variables do not have any problems with multicollinearity.

3. Heteroscedasticity test

- These outcomes were attained using the Scatterplot graph test:



According to the image, there is no heteroscedasticity in the data because the points are dispersed randomly along the Y-axis without following any particular pattern.

- The following are the findings of the Park test:

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	31.085	13.796		2.253	.031
	Loans	-1.540E-7	.000	-.114	-.520	.607
	NPL	-1.661E-5	.000	-.215	-1.192	.242
	LaR	2.646E-7	.000	.046	.217	.830

a. Dependent Variable: CKPN

All of the independent variables (Credit Distribution, NPL, and LaR) have significance values (Sig.) higher than 0.05, according to the table. This suggests that heteroscedasticity has no effect on the study data.

4. Autocorrelation test

The following outcomes are obtained from the Run test:

	Unstandardized Residual
Test Value ^a	1368.22607
Cases < Test Value	18
Cases ≥ Test Value	18
Total Cases	36
Number of Runs	11
Z	-2.536
Asymp. Sig. (2-tailed)	.065

a. Median

The table indicates that the Run Test's Asymp. Sig. (2-tailed) value is 0.065, above the significance level of 0.05. This suggests that there are no autocorrelation issues with the study data.

4.3. Multiple Linear Analysis Result

The following outcomes are obtained via multiple linear regression analysis:

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	598471.231	103652.797		5.774	<.001
	Loans	-.006	.002	-.427	-2.524	.017
	NPL	.247	.105	.327	2.357	.025
	LaR	.007	.009	.119	.730	.471

a. Dependent Variable: CKPN

The following is the multiple linear regression equation that was found in this investigation based on the previous table:

$$Y = 598,471.231 - 0.006(X1) + 0.247(X2) + 0.007(X3)$$

Where:

- Y: CKPN
- X1: Loan Distribution
- X2: NPL
- X3: LaR

The following explanation can be made in light of the equation's findings:

- a. The value of 598,471.231 is the constant. When all independent variables, Loan Distribution (X1), NPL (X2), and LaR (X3), are zero or have no effect on CKPN, the constant is a fixed number that represents the value of the dependent variable, CKPN (Y). In this study, CKPN will be 598,471.231 Rupiah if Loan Distribution, NPL, and LaR have no effect.
- b. Loan Distribution (X1) has a coefficient of -0.006. This figure shows that for every Rupiah rise in Loan Distribution, CKPN (Y) will drop by 0.006 Rupiah, provided all other factors stay the same.
- c. For NPL (X2), the coefficient is 0.247. With all other factors in the model maintained constant, this positive coefficient means that the CKPN (Y) balance should rise by 0.247 Rupiah for every 1 Rupiah increase in NPL.
- d. For LaR (X3), the coefficient is 0.007. With all other variables in the model maintained constant, this coefficient shows that the CKPN (Y) balance should rise by 0.007 for every 1 Rupiah increase in LaR.

The NPL variable (X2) has the most significant coefficient (0.247) according to the results of multiple linear regression, suggesting that it has a stronger impact on CKPN than the other factors (Loan Distribution and LaR). Loan Distribution (X1) has a negative coefficient according to the multiple linear regression analysis, suggesting that it has an inverse link with CKPN (Y). This implies that a rise in Loan Distribution will cause the CKPN balance to fall.

4.4. Hypothesis test Results

1. Partial test (t-test)

The t-test gives the following results:

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	598471.231	103652.797		5.774	<.001
	Loans	-.006	.002	-.427	-2.524	.017
	NPL	.247	.105	.327	2.357	.025
	LaR	.007	.009	.119	.730	.471

a. Dependent Variable: CKPN

The values in the above table's significant column (Sig.) indicate how the independent and dependent variables have an impact on each other. The significance level of the Loan Distribution variable is 0.017, which is below 0.05 (Sig. <0.05), suggesting that the Loan Distribution variable and the CKPN variable are influenced by each other. The CKPN variable and the NPL variable are influenced, as evidenced by the NPL variable's significance level of 0.025, which is smaller than 0.05. A significance score 0.471 indicates that the LaR variable is more than 0.05 (Sig. >0.05) in the previous table. The implication is that the LaR and CKPN variables are unrelated. It shows a different status than the other two independent variables in this study.

The following outcomes are achieved when comparing the t-count analysis approach to the t-table:

Table 4.2
Analysis of t-count and t-table

Variables	count	table	Results	Conclusion
Loans	2,524	2,0369	t-count > t-table	H _a accepted
NPL	2,357	2,0369	t-count > t-table	H _a accepted
LaR	0.730	2,0369	t-count < t-table	H ₀ is accepted

The above table indicates that the conclusion for the Loan Distribution variable is to accept Ha and reject H0. This shows that there is a significant correlation between the Loan Distribution variable and the CKPN variable. Both the NPL and CKPN variables are impacted, as the NPL variable shows that either Ha is accepted or H0 is rejected. However, the LaR variable determines that either Ha is rejected or H0 is accepted, hence there is no association between it and the CKPN variable. Both t-test approaches (comparing the t-count and t-table or analyzing the level of significance) yielded the same findings: each Loan Distribution variable influences the CKPN variable, the NPL variable influences the CKPN variable, and the LaR variable influences the Credit CKPN variable.

2. Model Feasibility test (F test)

These are the outcomes of the F test:

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5842090803	3	1947363601	8.248	<.001 ^b
	Residual	7555079778	32	236096243.1		
	Total	1.340E+10	35			

a. Dependent Variable: CKPN
b. Predictors: (Constant), LaR, NPL, Loans

In the table above, the value in the significant column (Sig.) represents the total effect of the independent factors on the dependent variable. The significant threshold of <0.001, which is less than 0.05 (Sig. <0.05), indicates that the Loan Distribution, NPL, and LaR variables are either independently or jointly influencing the CKPN variable.

Comparing the calculated F-statistic utilizing the F test technique with the critical F-value reveals the following: The F-calculated value, as shown in the table, is 8.248, whereas the F-table value, as determined by the Microsoft Excel function, is 2.901. Since F-calculated is bigger than F-table, we infer that H_a is approved and H_0 is rejected. This demonstrates that the independent variables affect the dependent variable at the same time.

By comparing the F-count with the F-table or by looking at the significance level, the two F test techniques that were employed led to the same conclusion. It may be concluded that the CKPN variable is influenced by the Loan Distribution, NPL, and LaR variables either separately or in combination.

3. Coefficient of Determination test

The coefficient of determination, or R² (R-square) test gives the following results:

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.660 ^a	.436	.383	15365.424

a. Predictors: (Constant), LaR, NPL, Loans

The previous table makes clear that the adjusted R squared is 0.383, or 38.3%, but the actual R squared value is 0.436, or 43.6%. Because this study involves more than two variables, the Adjusted R-squared number is employed.

The Adjusted R squared value of 38.3% indicates that the independent factors of the study (Loan Distribution, NPL, and LaR) can explain around 38.3% of the diversity of changes in the dependent variable, CKPN. The remaining 61.7% may be explained by additional variables that were not taken into account or included in the model employed in this investigation. The 38.3% result suggests that while the independent factors in this study do correlate with the dependent variable, there may be a greater connection between other variables that were not examined.

4.5. Discussions

According to the results of the hypothesis test, the following are the findings of the analysis of the impact of independent variables (Loan Distribution, NPL, and LaR) on the dependent variable (CKPN) at PT Bank Sumut Conventional from 2022 to 2024:

1. The Effect of Loan Distribution on CKPN.

The Loan Distribution variable affects the CKPN variable. The results of the partial test (t-test), which show that the Loan Distribution variable and the CKPN variable are influenced, support this. With a significance level of 0.017, the Loan Distribution variable is below 0.05 (Sig. <0.05). Comparing the t-calculated and t-table values, we reach the same conclusion (the t-calculated value is greater than the t-table value).

2. The Effect of NPL on CKPN.

The NPL variable affects the CKPN variable. The results of the partial test (t-test), which show that the NPL and CKPN variables have an impact on one another, support this. With a significance level of 0.025, the NPL variable is below 0.05 (Sig. <0.05). Comparing the t-calculated and t-table results leads us to the same conclusion. The analysis's findings are consistent

with a number of earlier investigations that looked at related variables, including those by Fitriana and Arfianto (2025), Maulidiyah (2017), Vebriana, Setyowati, and Nurdin (2020), Daksa (2021), and Setiatin and Dita (2020). These studies also found that CKPN is impacted by NPL.

3. The Effect of LaR on CKPN.

The LaR variable has no effect on the CKPN variable. This conclusion is supported by the partial test results (t-test). The LaR variable's significance level, in particular, is 0.471, which is greater than 0.05 (Sig. >0.05). Accordingly, there appears to be no relationship between the LaR and CKPN variables. When comparing the calculated t-value to the t-table, the same conclusion is also reached (the calculated t-value is less than the t-table value).

The analysis's findings contradict those of Daksa's (2021) earlier study, which found that LaR influences CKPN. Daksa's study examined how PT Bank Jasa Jakarta's CKPN formation was impacted by LaR, NPL, and LDR. According to the study, LDR had no partial effect on CKPN production, although LaR and NPL each had a partial effect.

4. The effect of Loan Distribution, NPL, and LaR together on CKPN.

The CKPN variable is simultaneously or jointly impacted by the Loan Distribution, non-performing loan, and LaR factors. The model feasibility test (F test) results demonstrate this, with the variables of Loan Distribution, NPL, and LaR having a significance level of <0.001, or less than 0.05 (Sig. <0.05). This suggests that the variables of Loan Distribution, NPL, and LaR have an impact on the CKPN variable either simultaneously or in combination. Comparing the F-table with the F-count value presents the same result. The F-count value, in particular, is higher than the F-table. As a result, H_a is accepted and H_0 is rejected since the independent factors either individually or together affect the dependent variable.

The results of the analysis align with several previous studies that examined CKPN being the dependent variable and several bank financial parameters to be independent variables. These studies, which also found that the independent variables collectively affect CKPN, include those conducted by Daksa (2021), Setiatin and Dita (2020), Vebriana, Setyowati, and Nurdin (2020), Maulidiyah (2017), and Fitriana and Arfianto (2025).

5. How the independent and dependent variables are correlated.

Even if this study's independent factors and dependent variable are correlated, the other variables that were not examined most likely have a stronger correlation. Evidence for this can be found in the coefficient of determination (R-squared), particularly in the Adjusted R-squared value of 38.3%. The study's independent variables (Loan Distribution, NPL, and LaR) may be responsible for around 38.3% of the diversity in the dependent variable (CKPN), as this figure illustrates. For the amount that remains 61.7%, other factors that were not taken into account or included in the model are responsible.

5. Conclusion

Several conclusions were drawn from the study's findings:

- The Loan Distribution affects CKPN at PT Bank Sumut Conventional Unit from 2022 to 2024.
- The NPL affects CKPN at PT Bank Sumut Conventional Unit from 2022 to 2024.
- The LaR does not affect CKPN at PT Bank Sumut Conventional Unit from 2022 to 2024.
- Loan Distribution, NPL, and LaR collectively affect CKPN at PT Bank Sumut Conventional Unit from 2022 to 2024.
- Loan Distribution, NPL, and LaR are correlated with CKPN at PT Bank Sumut Conventional Unit from 2022 to 2024. However, other variables not included in this study may have a stronger correlation with CKPN.

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