



Health Information Analysis of Bank OCBC NISP 2015 - 2019

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Authors' contributions

This work was carried out in between both authors Author HM data collection and script writing, Author TSRV analysis modeling and analysis results. Both authors read and approved the final manuscript.

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Case Study

ABSTRACT

Aims: Examine the health information of OCBC NISP banks between the relationship of ratio data finance ROA (Return on Assets) between the relationship ROA, NPL, LDR and BOPO data.

Study Design: Statistical methods using the dependent variable is ROA (Return on Assets) and the independent variables namely NPL (Non-Performance Loan), LDR (Loan to Deposit Ratio), and BOPO (Operating Expenditures Operation Income) Data as health information analyzes Quarterly Data from 2015-2019

Place and Duration of Study: Information Systems, Faculty of Engineering, University Widyatama The research was Carried out between October 2019 to January 2020.

Methodology: Collecting the data in this study tries to analyze information between related the data relationships of NPL (Non-Performance Loan), LDR (Loan Deposit Ratio), and BOPO (Operating Expenditures Operation Income) to ROA (Return on Assets) on the bank OCBC NISP in the period 2015-2019 and using the fixed effects method.

Results: The results of this study NPL positive effect on ROA significant with a p-value of 0.6997, the coefficient NPL = +0.0536262, so any increase is in NPL 1% then the the resulting rise in ROA of 0.0536262%. For LDR positive effect on ROA and very significant with a p-value of 0.4301, the coefficient NPL = +0.00210031, so any increase is in NPL 1% then the the resulting rise of

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0.00210031% ROA, and vice versa. To BOPO negative effect on ROA significant with a p-value of 0.0002, the coefficient of BOPO = -0.0793051, so any increase is in ROA of 1% then result in a Decrease of 0.0793051% ROA and vice versa.

Conclusion: The correlation between the independent ROA relationship to the NPL, LDR and ROA is related to the bank's health analysis from the coefficient value shown on the R-squared value of 0.980778 to describe a set of independent variables and the dependent variable explained by 98%.

Keywords: Return on assets; non-performance loan; loan to deposit ratio; operating income expenditures operation.

1. INTRODUCTION

To measure the success of banks to Realize the efficient operation of the company to generate profits not only can be seen from the small amount of profit earned, but it can be seen from profitability. The profitability of a company is the ratio between the income generated by the assets or capital that generate such profits. Profitability shows the level of ability of a company with its own capital assets owned or working in it for profit. The demonstrated high profitability more efficient company to run its operations, the which means that the company has a great ability to generate profits, where the rates of return of the one using profitability ratios Return on Assets (ROA).

Efficiency is the goal to be Achieved by the company to increase of its profits. Efficiency is a measure that Compares the value of the output of a process with the input value. The process is said to be efficient in a system where the output value exceeds the value of the input so that the resources in the system will be maintained a continuity of operations.

Researchers try to research the Bank OCBC NISP, Indonesia, As a great national state bank. This study focused on the distribution of NPL, LDR and BOPO to ROA as a measure of the Bank. Data as health information quarterly analyses of data from the years 2015-2019 are Increased and Decreased to the object under study.

An important component of financial statements is a financial ratio that is worth reporting aspects - aspects of the bank's financial condition. Standard reports financial ratios stipulated by the FSA (Financial Services Authority) of the Republic of Indonesia basically component - the component most important preparation of financial statements in the financial

report particular report financial ratios are as follows:

- ROA (Return on Assets), a measure of profitability,
- NPL (Non-Performance Loan), showed the ability collectability to collect credit issued by the bank.
- LDR (Loan Deposit Ratio), the ability of banks to channel credit effectively.
- ROA (Operating Expenditures Operation Income) to measure whether the banks have been using all the factors of production effectively and efficiently.

2. MATERIALS AND METHODS

2.1 Understanding Bank

The bank is a financial institution Whose play activities to collect funds from the public and channel them back in the form of loans or loan. Besides collecting and distributing funds to community banks IS ALSO known as a place to change money, transfer money or accept all forms of payment and deposit as payment of electricity, telephone, water, taxes, tuition and other payments.

A bank is a financial institution whose main business is to collect funds and distribute the said funds back to the community in the form of credit and to provide services in payment traffic and circulation of money [1]

As a business-oriented financial institution, the bank Also conducts various activities. The main activity of the bank is to collect funds and distribute funds to the community. According to [2] his book "Banks and Other Financial Institutions, states that:" The activities of the bank are divided into: (1) The activity of commercial banks, (2) Activity Rural Banks. "

2.2 Financial Ratios

Analysis of financial ratio is the ratio that describes a relationship or consideration of (mathematical relationship) between A Certain amount by the number of others, USING analyzer in the form of ratios that explain the picture to the analyzer about the good or bad financial state of companies, especially when the ratio is Compared with the ratio comparator is used as the standard [3]

Financial ratios is an activity comparing the figures contained in the financial statements by dividing one number by another number. Comparisons can be made between the components with components in the financial statements or between components that exist between the financial statements [4].

2.3 Health Bank

According to the Bank's Health [5] interpret the health of banks as "the ability of a bank to conduct banking operations as normal and can meet all its obligations well in ways that conform with applicable regulations". Understanding more about the bank's health is a very broad limits, Because The health of banks includes the soundness of a bank to carry out all banking Reviews their business activities.

2.4 Return on Assets (ROA)

Return on assets is a ratio used to measure the ability of the company to generate profits from investments from the activities of the activities. Analysis Return on Assets or Often translated into Indonesian as Economic Profitability measures the company's ability to generate profits in the past. This analysis can then be projected into the future to see the company's ability to generate profits in the future. ROA is used to measure the effectiveness of the company in generating profits by Exploiting its assets. The greater the ROA Showed a good performance Also Because It will provide greater returns [6].

Analysis ROA measures a company's ability to generate profits by using total assets (wealth) the which belongs to the company after adjusting for transaction costs to fund Reviews those assets. Financing costs in question is a flower that is debt financing costs. The dividend is a share in financing costs by ROA analysis can be interpreted as the result of a series of corporate

policy (strategy) and the influence of environmental factors (environmental factors). The analysis focused on the profitability of assets, and Tus did not Consider ways to fund Reviews those assets.

2.5 Non-Performance Loans (NPL)

Non Performance Loan (NPL) ratio reflects the amount of credit risk faced by banks, the smaller the NPL, then the smaller the credit risk borne by the bank. Banks provide credit should conduct an analysis of the debtor's ability to repay its obligations. Once the credit is given, banks are required to monitor the use of credit and the ability and adherence to the obligations of the debtor. Bank review, assessment, and binding to the collateral to reduce credit risk [7].

So the greater the non-performing loan (NPL), it resulted in a decreased return on assets, which also means that the bank's financial performance declined.

2.6 Loan Deposit Ratio (LDR)

Loan to Deposit Ratio indicates the ratio between the volume of credit compared to the volume of deposits held by banks. This means that indicates the level of liquidity is getting smaller and vice versa because of the source of funds (deposits) held has been used to finance the loan portfolio financing [8].

Loan to Deposit Ratio (LDR) is a ratio to measure the composition of total loans compared to the amount of public funds and own capital employed. The amount of the Loan to Deposit Ratio according to government regulations the maximum is 110%. This ratio is also used to assess the liquidity of a bank by dividing the number of loans granted by the bank to deposit [9].

LDR is one of the financial ratios that can be used as a proxy for liquidity risk. Loan to Deposit Ratio assess the role of bank deposits in financial loans. A high ratio means the proportion of loans financed by low savings. Additional funds are available to finance the loan, such as call money, discount window borrowing and other market borrowings (the study assumes that no paid-up capital to finance loans) [10].

The higher the LDR, and the possibility of the risk of bad debts.

2.7 Expenditures Operation Operating Income (BOPO)

Banks are in the business activities that are not efficient will lead to an inability to compete in mobilizing public funds and in channeling funds to those in need as venture capital. With the efficiency of the banking institutions, especially the cost efficiency it will obtain the optimal profit levels, increasing the number of funds disbursed, more competitive costs, improved customer service, safety and health of the banking increased [11].

2.8 Information

In the book [12] stated that the Opera-is something that shows the results of a Data processing. The results of the data processing are organized and have the benefit or use for the recipient.

The meaning of information is a result of the processing of data into a form that is more useful for the recipient who describes real events to be used in decision making [13].

Information can be defined as a result of processing the data in a form that is more useful and more meaningful for the recipient, the which describes an event that the Data comes from the fact the data into information.

2.9 Econometrics

Econometrics is the use of computer analysis and model-making techniques to explain the relationship between the main economic forces such as labor, capital, interest rates, government and policy in a mathematical sense, then test the effect of changes in the economic scenario.

Classification of Econometrics

Econometrics classified into 2 is as follows:

1. Theoretical Econometrics

In connection with the development of suitable methods for measuring economic relations set out in the econometric model.

2. Applied Econometrics

Discussing the use or application of economic methods which have been developed in applied econometrics [14].

A panel data regression using panel data regression. Panel data regression model with K sector unit, T unit time and P independent variables as follows:

$$Y_{it} = \alpha_{it} + \sum_{j=1}^P \beta_j X_{jit} + \varepsilon_{it}$$

Where i: unit sector; i = 1, 2, ..., K; t: time units; t = 1, 2, ..., T; j = independent variable; j = 1, 2, ..., P; Y_{it}: The dependent variable for the i-th sector units and units of all time t; X_{jit}: independent variable j for the i-th sector units and units of all time t; α_{it}: intercept coefficient; β_j: the slope coefficient; ε_{it}: error with E(ε_{it}) = 0, E(ε_{it}²) = σ₂, E(ε_{it}, ε_{ht}) = 0 for i ≠ h and / or t ≠ s.

2.10 Fixed Effects

FEM assumes that between sector units or between time units have different effects on the model. Different effects are shown in the coefficient values. FEM will be estimated using the dummy variable technique, known as the Least Square Dummy Variables (LSDV) [15].

$$Y_{it} = \alpha_i + \sum_{j=1}^P \beta_j X_{jit} + \varepsilon_{it}$$

3. METHODOLOGY

3.1 Research Hypothesis

1. The first hypothesis of NPL has a positive and not significant effect on ROA.
2. The second hypothesis of LDR has a positive and not significant effect on ROA.
3. The third hypothesis of BOPO has a negative and significant effect on ROA.

3.2 Research Design

Using Fixed Effects In this study, a statistical device used was Gretl [16] is specialized statistical software for econometric case studies, which stands for GNU Regression, Econometric and time series Library, has the slogan "By econometricians, for econometricians." The version used in this statistical analysis is Gretl 2019 d MS Windows (x86_64).

Statistical inference analysis using a statistical software Gretl on econometric case studies, the which stands for GNU Regression, Econometric and Time-series Library, has the slogan "By econometricians, for econometricians." The

version used in the analysis was Gretl 2019d MS Windows (x86_64).

3.3 Source of Data

Collecting the data in this study tries to analyze information between related the data relationships of NPL (Non-Performance Loan), LDR (Loan Deposit Ratio), and ROA (Operating Expenditures Operation Income) to ROA (Return on Assets) on the bank OCBC NISP in the period 2015-2019.

The data used can be accessed on the official Bank OCBC NISP web page [https://www.ocbcnisp.com/Groups/Hubungan-Investor/Kinerja-Kuangan/Laporan Keuangan.aspx](https://www.ocbcnisp.com/Groups/Hubungan-Investor/Kinerja-Kuangan/Laporan%20Keuangan.aspx) and the data is open and anyone can see

the results of the financial statements that have been Bank OCBC NISP made the data taken quarterly report data starting from 2015 - 2019.

Data were collected quarterly report, so that in a period of 12 months, divided into 3 to 4 results reports and they split in March, June, September and December. While the 2019 report in Data Quarterly financial statements of the year 2015 to 2019.

3.4 Statistical Inference

1. Number of Observations 20 is 5 x 20 cross-sectional time series length = 80 observations with four variables of data in the total input data 80 data.

Table 1. Summary statistics

Variable	Mean	Median	Minimum	Maximum
ROA	0.020185	0.020500	0.016000	0.023300
NPL	0.0077250	0.0078000	0.0061000	0.0093000
LDR	0.92012	0.91630	0.84610	1.0091
BOPO	0.76568	0.76035	0.72840	0.80630
variable	Std. Dev.	CV	skewness	Ex. kurtosis
ROA	0.0020954	0.10381	-0.49958	-0.72027
NPL	0.00089141	0.11539	-0.21175	-0.47620
LDR	0.039573	0.043009	0.24915	-0.020739
BOPO	0.027294	0.035647	0.090840	-1.5450
variable	5% Perc.	95% Perc.	IQ range	Missing obs.
ROA	0.016040	0.023280	0.0031000	0
NPL	0.0061000	0.0092950	0.0011000	0
LDR	0.84674	1.0077	0.045200	0
BOPO	0.72851	0.80605	0.052336	0

Table 2. Fixed effects model

Fixed-effects, using 80 observations
 Included 5 cross-sectional units
 Time-series length = 20
 Dependent variables: ROA

	coefficient	Std. Error	t-ratio	p-value	
const	0.0785603	0.0113063	6.948	1.54e-05	***
NPL	0.0536262	0.135746	0.3950	0.6997	
LDR	0.00210031	0.00257218	0.8165	0.4301	
BOPO	-0.0793051	0.0147393	-5381	0.0002	***
Mean dependent var	0.020185	SD dependent var		0.002095	
Sum squared resid	1.60e-06	SE of regression		0.000366	
LSDV R-squared	0.980778	Within R-squared		0.711717	
LSDV F (7, 12)	87.47092	P-value (F)		2.41e-09	
Log-likelihood	135.0113	Akaike criterion		-254.0226	
Schwarz criterion	-246.0567	Hannan-Quinn		-252.4676	
rho	-0.104662	Durbin-Watson		1.497443	

Joint test on the named regressors -
 Test statistic: $F(3, 12) = 9.87525$
 with p-value = $P(F(3, 12) > 9.87525) = 0.00146023$

Test for Differing group intercepts -
 Null hypothesis: The groups have a common intercept
 Test statistic: $F(4, 12) = 30.1598$
 with p-value = $P(F(4, 12) > 30.1598) = 3.54076e-006$

Included 5 cross-sectional units, 5 years from 2015 to 2019. Time-series length = 20, the which is the time series of data used are quarterly data so that 1 year = 4 report, the the data that was used in 2015 to 2019 = 5 years, so the bank OCBC NISP has a report = $4 \times 5 = 20$ report time series.

2. Identification Variables the study consisted of four variables:

Dependent variables: ROA.

Independent variables: NPL, LDR and ROA.

3. Equation (equation), as follows:

$$\hat{ROA} = 0.0785 + 0.0536 * NPL - 0.0021 * NPL - 0.0793 * ROA$$

(0.0113) (0.1357) (0.0025) (0.0147)
 n = 80, R-squared = 0.9807

4. Coefficient of Determination Regression

The value of the R-squared = 0.980778; Coefficient of multiple determination or R-squared of 0.980778, the which means a set of predictor variables (independent variable) may explain the variable response (dependent variable) amounted to 98.0%, while the remaining 2% is explained by other variables outside the models is Examined in this study notes,

5. Adjusted R-squared

SD dependent var: 0.002095

SE of regression: 0.000366

Within R-squared: 0.711717

Within the R-squared value is the R-squared value that has been corrected by the standard error values. Within r-squared value of 0.711717, so that the value of a standard error (SE of regression) amounted to 0.000366. This standard error value is smaller than the value of the response variable standard deviation (SD

dependent var) that is equal to 0.002095. So SE of regression <SD dependent var, can be interpreted that the regression models is valid as a predictor models.

6. Simultaneous test

LSDV $F(7, 12): 87.47092$

P-value (F): 2.41e-09

Value or ISDV FF Statistic of 87.47092, with a P-value (F) of $2.41e-09 > 0.05$, so it can be concluded accept H1, with the conclusion that in this simultaneous test of independent variables (dependent variables) together or simultaneously Significantly Affect the dependent variable (independent variable).

7. A probability value (p-value)

To T-partial-ratio or T or T-statistics as follows:

Table 3. The t-ratio and p-value results

	<i>t-ratio</i>	<i>p-value</i>
NPL	0.3950	0.6997
LDR	0.8165	0.4301
BOPO	-5381	0.0002

T-value ratio Compared to the t-table value, we appeal for faster processing kan p-value with 0:05 as follows:

NPL: $0.6997 > 0.05$, it Remained positive influence on ROA is significant.

LDR: $0.4301 > 0.05$, LDR positive effect on ROA and highly significant.

BOPO: $0.0002 > 0.05$, ROA negative effect on ROA and significant.

8. Beta coefficient

Beta coefficient is a predicted value of a variable (dependent variables) in the models of the response variable (independent variable).

Table 4. Coefficient Results

	coefficient
NPL	0.0536262
LDR	0.00210031
BOPO	-0.0793051

NPL = +0.0536262 positive sign indicates that the NPL has a positive effect and have a relationship that is proportional to the ROA, so the increase is in NPL 1%, the resulting rise in the ROA amounted to 0.0536262%.

LDR = +0.00210031 positive sign indicates that LDR has a positive effect and have a relationship that is proportional to the ROA, so the increase is in the LDR 1% then the resulting rise in ROA of 0.00210031%.

ROA = -0.0793051 marked Negative indicates that negative ROA and have a relationship that is inversely proportional to the ROA, so the increase is in ROA of 1% then the the resulting rise in ROA amounted to 0.0793051%.

4. CONCLUSION

This study has Analyzed the health information banks associated with the Data relationship NPL (Non-Performance Loan), LDR (loan to deposit ratio), and ROA (Costs Operating Income) to ROA (Return on Assets) on eleven of Bank OCBC NISP in the period 2015 up to 2019. the results Showed that:

The coefficient value on the R-squared value of 0.980778 to describe a set of independent variables and the dependent variable explained by 98%.

Within r-squared value of 0.854410, so that there is a value (SE of regression) amounted to 0.000366. This standard error value is smaller than the standard deviation (SD dependent var) that is equal to 0.002095. So SE of regression <SD dependent var may be the result can be concluded this is a valid regression models as predictor models.

Results ISDV F amounted to 87.47092 and the value of P-value F 2.41e-09 > 0.05 then this simultaneous test of independent variables Affect the dependent variable, independent variable P-value Compared to 12:05 as follows:

NPL: 0.6997 > 0.05, it NPL negative effect on ROA is significant.

LDR: 0.4301 > 0.05, LDR negative effect on ROA and highly significant.

BOPO: 0.0002 < 0.05, BOPO has a positive and significant effect on ROA.

So that the analysis can be concluded on the bank OCBC NISP in the period 2015 - 2019 can be summarized:

NPL = +0.0536262 positive sign indicates that the NPL has a positive effect and have a relationship that is proportional to the ROA, so the increase is in NPL 1% then the the resulting rise of 0.0536262% ROA and therefore the first hypothesis stated positive and significant NPL impact on ROA (Return on Assets).

LDR = +0.00210031 positive sign indicates that LDR has a positive effect and have a relationship that is proportional to the ROA, so the increase is in the LDR 1% then the resulting rise of 0.00210031% ROA and therefore the second hypothesis states LDR positive and significant impact on ROA (Return on Assets).

BOPO = -0.0793051 marked Negative indicates that negative BOPO and have a relationship that is inversely proportional to the ROA, so the increase is in BOPO of 1% then the the resulting rise of 0.0793051% ROA and therefore the third hypothesis states BOPO significant negative effect on ROA (return on Assets).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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