Analysis Of Risk Management and Profitability: Study on State-owned and Private Banks

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ABSTRACT

Introduction – The banking sector has a function as a financial channeling institution and financing provider that has a crucial role in society. Therefore, a risk management mechanism is needed to overcome the financial crisis that occurred in 2008. The Government of Indonesia through the Financial Services Authority (Otoritas Jasa Keuangan) issued regulation number 18/POJK.03/2016 concerning Commercial Bank Risk Management which regulates banking risk management.

Purpose – This study aims to determine the effect of credit risk, liquidity risk and operational risk on profitability; as well as to determine the differences in the level of credit risk, liquidity risk, operational risk and profitability between state-owned and private banks.

Methodology/Approach – This research using multiple regression analysis, data collected from state-owned bank and private banks registered in Indonesian Stock Exchange from 2016 – 2019. Credit risk is proxied by the NPL ratio, liquidity risk is proxied by the LDR ratio, operational risk is proxied by the ROA ratio and profitability is proxied by the ROA ratio mention the method of the research, sampling and data collecting. To determine the difference between state-owned bank and private bank, this research using Mann-Whitney test.

Findings – By using multiple linear regression analysis on banks listed on the Indonesia Stock Exchange during 2016-2019, it was found that NPL had a negative effect on ROA, LDR had a positive effect on ROA and BOPO had a negative effect on ROA. In testing the difference, the Mann-Whitney difference test was used which resulted in the finding that there was a difference in the NPL ratio between state-owned and private banks, there was a difference in the BOPO ratio between state-owned and private banks and there was a difference in the ROA ratio between state-owned and private banks. From all different tests, the results show that private-owned banks have worse financial ratios than state-owned banks. Meanwhile, the LDR ratio found that there was no difference between state-owned and private banks.

Originality/ Value/ Implication – The results of this study have implications as follow: for banks to pay more attention to the NPL, LDR and BOPO ratios because they affect bank profitability; regulators should pay attention to the financial ratios of private-owned banks in order to control banking risks.

Keywords: *credit risk, liquidity risk, operational risk, private banks, state-owned banks*

INTRODUCTION

Banks are financial institutions that play a very important role in the stability and development of economic growth.

It is not easy for banks to always maintain maximum profits because of the large number of business risks that banks will face including credit risk, liquidity risk, and interest rate risk. The diversity of risks faced by banks requires management to be able to implement effective risk management.

The function of the bank as a financial intermediary institution that deals with saver and user of funds faces credit risk or the risk of default. The lower the customer default ratio, the better the chance for the bank to return the money to the owner of the funds and making profit. Research by Saiful & Ayu (2019) and Yousuf & Felfodi (2018) using the Non-Performing Loan (NPL) proxy suggests that the smaller the non-performing loans, the greater the profitability of the banking system. Therefore, bad loans are inversely proportional to profitability.

In running its business, each bank is required to maintain its level of liquidity. The forms of liquidity can be in the form of deposit funds that are kept as reserve funds. This reserve fund functions as a stock fund when emergency things happens. Reserve funds have 2 (two) functions, namely; as a reserve fund when a crisis occurs and as a reserve fund fotr customers to withdraw their funds. Therefore, banks are recommended to have reserve funds for loans disbursed. In the research of Manta, Badircea, & Pirvu (2018) and Wulandari, Anggraeni & Andati (2016) using the Loan to Deposit Ratio (LDR) proxy, it is stated that LDR is inversely proportional to profitability. It can be concluded when too much credit is disbursed compared to deposits, it results in reduced profitability of banks.

Apart from the financial side of banking, banks must also pay attention to the internal operational aspects of the bank. In the research of Topak & Talu (2017) and Supriyono & Herdhayinta (2019) using the BOPO ratio (Operating Expenses to Operating Income) it was found that the BOPO ratio was inversely proportional to banking profitability. This can be interpreted that the greater the bank's operational burden, the lower the profitability.

Data from the Financial Services Authority shows that state-owned banks have experienced a significant increase from year to year. This was supported by the growth in assets of state-owned banks and regional development banks which grew by 72.11% and 62.82%, respectively. When calculated in total, the growth of state-owned banks' assets in the last five years was 70.49%. Meanwhile, although private-owned banks also experienced an increase in total assets, the growth rate was not as high as the growth rate of state-owned banks' assets. In the last 5 (five) years, the growth of total assets of private banks was only 37.88%, far below the growth rate of total assets of state-owned banks. In addition,

2019 was the first time in the last 5 (five) years that the total assets of government-owned banks were more than the total assets of private-owned banks. This shows that the performance of state-owned banks in terms of total assets is better than private-owned banks.

This study aims to analyze the influence of the Bank's Risk Management on Profitability. This research is a replication and extension research of Saiful & Ayu (2019) by continuing to use the NPL ratio as a proxy for credit risk variables, the LDR ratio as a proxy for liquidity risk management variables, the BOPO ratio as a proxy for operational risk management variables and ROA ratios as a proxy for bank profitability. This study also adds an analysis of the differences between risk management carried out by state-owned and private banks based on proxies and the research model of Mamahit et. al. (2016) to investigate the differences in risk management practices in state-owned and private banks.

LITERATURE REVIEW
Bank Risk Management
The global financial crisis in 2008 triggered by the failure of subprime mortgage prompted state leaders to declare increased in transparency, accountability and regulation in the banking sector. One of the causes of the global financial crisis is the high level of leverage in the banking system, both in positions recorded on the balance sheet and off-balance sheet. The results of the meeting of the country's financial leaders later bore fruit with the issuance of the Basel III regulation: A global regulatory framework for more resilient banks and banking systems in December 2010 (Laksmana, 2019).

The Basel III regulation is a product of the Basel Committee on Banking Supervision, which consists of heads of state, ministerial-level finance officials and central bank governors from G20 member countries including Indonesia (Goodhart, 2011). This regulation is a refinement of the previously issued regulations, namely Basel I in 1988 and Basel II in 2004 (Shakdwipee & Mehta, 2017). As a form of improvement from the regulations that have been made previously, Basel III focuses on strengthening capital and liquidity regulations to avoid financial crises in the future (Taskinsoy, 2018). It also includes improvements to the standard leverage ratio as well as the concept of systemic risk management and interconnectedness between financial institutions (Ramlall, 2018).

In its implementation in Indonesia, the Financial Services Authority (OJK) issued Regulation No. 4/POJK.03/2016 concerning the assessment of bank soundness and regulation No. 18/POJK.03/2016 concerning the implementation of risk management for commercial banks. In assessing bank health, OJK requires commercial banks operating in Indonesia to conduct an independent assessment or self-assessment of the soundness of their respective banks. The components of bank soundness that are examined are: risk profile, profitability, capital and good corporate governance.

a. Credit risk management
Credit risk is the risk due to the failure of the debtor or other party to fulfill obligations to the bank. To assess credit risk, the credit risk ratio is used, which is a ratio to measure the risk of disbursed loans by comparing bad loans with loans disbursed (Dimitrios et al., 2016).

Credit risk measurement in this study uses the Non-Performing Loan (NPL) ratio in accordance with a copy of the Financial Services Authority Regulation Number 15 /POJK.03/2017 concerning Status Determination and Follow-Up Supervision of Commercial Banks which regulates the ideal limit of net non-performing loans (NPL net). is below 5% (five percent) (Saiful & Ayu, 2019).

b. Liquidity risk management
In accordance with the Financial Services Authority Regulation No. 4/POJK.03/2016 Liquidity risk is defined as the risk caused by the inability of a bank to meet its maturing obligations. In general, liquidity problems arise when there is a sudden large withdrawal of deposits by customers and the bank does not have sufficient cash. But in reality, banks experience liquidity problems in the form of imbalances in assets and liabilities in the balance sheet repeatedly. So those banks are required to manage it well so as not to be exposed to the risk of bankruptcy (Abdul-Rahman et. al., 2018).

The low liquidity owned by banks is often the cause of bank bankruptcy. However, holding too many liquid assets has a disadvantage in the form of opportunity costs to channel it into productive financing that generates profits (Ndoka et. al., 2017).

In this study, researchers used the LDR ratio (Loan to deposit Ratio) as a reflection of the bank's liquidity conditions. This ratio is a comparison between the funds that have been disbursed and the funds collected and has often been used to measure the banking liquidity ratio (Buchory, 2015). Referring to Bank Indonesia regulation Number: 15/7/PBI/2013 states that a good LDR level is in the range between 78% and 100%.

c. Operational risk management
Operational risk is the potential deviation from the expected results due to the malfunction of an HR system, technology, or other factors. Operational risk is a risk that can come from internal or external to the company where all risks related to fluctuations in the company's operating results due to the influence of matters related to system failures or supervision and events that cannot be controlled by the company (Sirait & Susanty, 2016).

The ratio used to measure the level of operational risk is Operating Expenses to Operating Income (BOPO). Based on attachment 2d of Circular Letter of Bank Indonesia No. 6/23/DPNP of 2004 stated that the efficiency level of a bank is quite good if it has an BOPO ratio of 96%.

Difference between Public and Private Banks
A state-owned company is a company whose majority ownership is owned by the government. In general, these companies become the driving force of the economy in a country and have an important role in controlling prices in industries related to the community. In a study conducted in Russia, it was found that state-owned enterprises contribute to 29% - 30% of the country's Gross Domestic Product (Abramov et. al., 2017). In the banking sector of Indonesia, 4 of the top 5 banks with the most assets are state-owned banks, namely Bank Rakyat Indonesia, Bank Mandiri, Bank Negara Indonesia and Bank Tabungan Negara (Laksmana, 2019).

In terms of efficiency, Belousova et. al. (2018) found that state-owned banks consistently perform better than private banks. This is possible because state-owned banks consistently obtain guarantees from the government, increase customer confidence and have the opportunity to finance projects with low risk and high profitability (solvent). On the other hand, both national private banks, foreign private banks and state banks have the same opportunity in applying banking technology so that no significant difference is found between bank efficiency based on ownership (Mamonov & Vernikov, 2017).

Hypothesis Development
1. Effect of Credit Risk on Profitability
The activity of the banking industry is to channel credit to generate interest as a source of income. Therefore, the greater the loan disbursed, the greater the interest. But on the other hand, disbursement of a large loan carries an even greater risk. Credit risk arises when creditors are unable to repay their obligations. The higher the non-performing financing that occurs to the customer, the more difficult it is for the bank to collect it. These uncollectible loans are commonly referred to as non-performing loans (NPLs). This problematic financing is bad for bank profitability because it hampers the collectability of banks in recording income based on loan interest (interest margin).

Alshatti (2015) conducted a study of the effect of credit risk management on 13 banks in Jordan and concluded that credit risk has a significant influence on the financial performance of banks in Jordan. While Gizaw et. al. (2015) empirically examines the impact of credit risk on the profitability of eight conventional banks in Ethiopia and Indonesia. The results show that credit risk using the NPL proxy, loan loss provisions, and capital adequacy has a significant impact on the profitability of commercial banks. So, based on the results of previous studies, the following hypotheses can be formulated:
H1: Credit risk has a negative effect on bank profitability.

2. Effect of Liquidity Risk on Profitability
The function of the bank in raising funds, causes the bank to have a lot of deposit funds from third parties. When the bank has excess funds that are idle due to not being distributed, the bank suffers a loss in the form of opportunity costs that are not used to fund financing from customers. On the other hand, when a bank experiences a shortage of funds, it will find it difficult to meet its short-term obligations and provide funds for those who wish to withdraw their deposits. Thus, there is a conflict of interest between seeking large profits or maintaining good liquidity. Because when banks expect high profits, the liquidity risk will be bad. And vice versa when the level of liquidity is high, the level of profit will be small as well. So, this is where the role of liquidity risk management is to maintain the liquidity ratio at an ideal level (Saiful & Ayu, 2019).

An indicator that is often used to measure banking liquidity ratios is the LDR (Loan to Deposit Ratio) ratio (Buchory, 2015). Referring to Bank Indonesia regulation Number: 15/7/PBI/2013 states that a good LDR level is in the range between 78% and 100%. The loan amount that is too small for the bank makes the bank lose the opportunity to record profits that come from the interest on the loan. Meanwhile,

too many loans make it difficult for banks to meet their short-term liquidity, which can reduce customer confidence in banks, thereby reducing bank profitability. Supriyono & Herdhayinta's research (2019) which examined the determinants of the profitability of Regional Development Banks (BPD) in Indonesia found that LDR had a positive effect on bank profitability. Based on the results of previous studies, the following hypotheses can be formulated:
H2 : Liquidity risk has a positive effect on bank profitability.

3. Effect of Operational Risk on Profitability
Operational risk is the risk caused by internal process incompetence, human error, system failure or external problems that affect the bank's operational tasks. Furthermore, compliance risk, compliance risk and reputation risk are factors that can affect bank operational risk (Saiful & Ayu, 2019). Operational risk experienced by banks can potentially reduce the level of profitability. When the bank has difficulty dealing with operational problems, the bank will lose the opportunity to serve more customers and earn profits. Thus, the level of operational risk management is related to the level of bank profitability.

The ratio used to measure the level of operational risk is Operating Expenses to Operating Income (BOPO). Based on Bank Indonesia regulation Number: 6/23/DPNP/2004 it is stated that a fairly good BOPO ratio is 96%. The BOPO figure of more than 96% indicates that the bank has inefficient operational management, so the operational risk is high. When the risk is high, this indicates that the operational risk management of banks in Indonesia is poor. Conversely, when the BOPO level is low (<96%) it means that the level of operational risk is low, and the implementation of operational risk management is good.
Topak & Talu (2017) examined the determinants of banking profitability using banking ratios and macroeconomic conditions at commercial banks in Turkey during 2005 to 2015. The results obtained indicate that the BOPO component has a significant negative effect on profitability both by measuring ROA and ROE. Based on previous research, the following hypotheses can be formulated:
H3: Operational risk has a negative effect on bank profitability.

4. Differences in credit risk management between state and private banks
In lending, different types of banks indicate differences in client relations and the types of payments provided. Government-owned banks have political support from the government so that they get a guarantee from the government which causes banks to get funds more cheaply and debtors are more solvent (Belousova et. al., 2018). However, government ownership does not necessarily guarantee lower credit risk. Privately-owned banks in Bangladesh were found to be more risk-averse and more stable than state-owned banks. This is due to state banks which have direct sources of information from the government so that they have a tendency to take greater risks resulting in a high risk of default (insolvency risk) and low stability (Zheng et. al., 2017). Research by Wulansari et. al., (2019) regarding the financial performance of private banks, state-owned banks, BPD, and foreign banks found that there was a significant difference in the level of NPL

when only isolating a sample of company-owned banks from private banks. So, the fourth hypothesis is drawn as follows:

H4: There is a difference between the NPL ratio of state-owned banks and private banks.

5. Differences in liquidity risk management between state-owned and private-owned banks

One of the bank's functions is as a creator of liquidity, the difference in policies can have an impact on the difference in the resulting impact. In terms of liquidity, there are differences in the nature of liquidity creation in state and private banks. Private banks are considered more pro-cyclical, while state banks are more counter-cyclical. This is generally due to the function of state banks which have a greater role as a balancer for economic stability and a driver in times of crisis (Davydov et. al., 2018).

Furthermore, in terms of deposit and loan efficiency, it was found that state-owned banks have higher efficiency and ability to absorb liquidity risk. This is an impact because state banks are able to receive larger amounts of deposits so that they can channel larger loans as well. Furthermore, the fact that the larger reach and size of state-owned banks is suspected to be a strong reason why state-owned banks have large lending capacity (Liu et. el., 2020). Tiarso & Idawati (2017) revealed that in their research on the differences in the performance of state-owned banks and private banks using the CAMEL method, they found that there were differences between LDR in private and government-owned banks. So, the following hypothesis is drawn:

H5: There is a difference between the LDR ratio of state-owned banks and private banks.

6. Differences in operational risk management between state-owned and private-owned banks

In terms of efficiency, in developing countries it is found that state-owned banks have poor performance compared to private banks. This is because state banks are more directed to fulfill the mandate of economic development rather than maximizing profit (Cull, 2018). Moreover, foreign banks and public private banks have a responsibility to restore investor confidence and support the discourse of banking privatization (Mamonov & Vernikov, 2017). Regarding the difference in the BOPO ratio between state and private banks, both the research of Wulansari et. al., (2019) and Tiarso & Idawati (2017) show that there is a difference between the BOPO ratio in state-owned and private banks. Based on the research, the writer formulates the following hypothesis:

H6: There is a difference between the BOPO ratio in state-owned banks and private banks.

7. Differences in profitability between state-owned and private-owned banks

In terms of profitability as measured by ROA on banks in Pakistan, it was found that state-owned banks had better performance than foreign private banks. This can be attributed to the different influence and power held by state banks. State banks can enjoy support and connections from the government. In addition, it is suspected that state-owned banks are easier to raise funds and can enjoy subsidies to improve the bank's financial performance (Din et. al., 2021). However, the literature does not always find that government banks are more efficient. Sometimes it is also found that privately owned banks are more profitable than state banks. This is presumably because government companies are also pursuing various social targets such as poverty alleviation which makes them less profitable (Lazzarini & Musacchio, 2018). In examining the differences in the performance of national foreign exchange private banks with state-owned banks, Ramadhany (2015) using RGEC analysis found that the ROA, NIM, and CAR ratios in state-owned banks were greater than private-owned banks. Based on this research, the authors formulate the following hypotheses:

H7: There is a difference between the ROA ratio of state-owned banks and private banks.

RESEARCH METHODS

Object of research

The object of this research is a banking company listed on the Indonesia Stock Exchange.

Data and Sample

The data used in this study is secondary data collected from data available on the Indonesia Stock Exchange. The total sample population is all banks listed on the IDX that issued financial statements consecutively from 2016 to 2019.

This study uses purposive sampling with the following conditions:

a. Private and government-owned commercial banks that publish financial reports on the Indonesia Stock Exchange from 2016 – 2019.

b. Private and government-owned commercial banks that recorded profits in the observation year from 2016 - 2019.

c. Private and government-owned commercial banks that have a Loan to Deposit Ratio (LDR) between 78% to 100% as a limit for liquidity risk management compliance.

Variable Measurement and Operational Definition

1. Dependent Variable

The dependent variable is the variable that is trying to be explained by using the independent variables. This study uses 1 (one) dependent variable, namely profitability which is proxied by ROA.

The following is the formula for calculating ROA as quoted from Appendix 1d of Circular Letter of Bank Indonesia No.6/23./DPNP dated May 31, 2004.

ROA = (net income before tax / total assets) x 100%

2. Independent Variable

Independent variables are variables that explain or affect the dependent variable. In this study, researchers used 3 (three) independent variables, namely; credit risk as measured by non-performing loan (NPL), liquidity risk as measured by loan to deposit ratio (LDR), and operational risk measured by operating expenses per operating income (BOPO) (Saiful & Ayu, 2019).

a) Credit Risk

Credit risk variable in this study is proxied by Non-Performing Loans (NPL). In accordance with Appendix I.1.a regarding Credit Risk Assessment BI Circular Letter Number 13/24/DPNP dated October 25, 2011 NPL can be formulated as follows (Dewi et al., 2016):

NPL = (Total Non-performing Financing/Total Financing) x 100%

b) Liquidity Risk

Liquidity risk is measured by Loan-to-Deposit Ratio (LDR). Based on Attachment 1e to Circular Letter of Bank Indonesia No.6/23/DPNP dated 31 May 2004, the LDR can be formulated as follows:

LDR = (Credit/Third Party Funds) x 100%

c) Operational Risk

Operational risk used in this study is ETOI (Expense to Operating Income) or also known as BOPO.

The BOPO formula based on Appendix 1d of Circular Letter of Bank Indonesia No.6/23/DPNP dated 31 May 2004 can be written as follows:
BOPO = (Operating Expenses/Operational Income) x 100%

Data analysis technique
This study uses multiple linear regression analysis model, because it will test the influence between variables and also because the number of independent variables is more than one. This analysis was performed using IBM Statistics SPSS 21.0 software.
The following is a research regression equation model
$ROA = + b_1NPL + b_2LDR + b_3BOPO + e$
Where:
= constant
b = regression coefficient
ROA = Profitability of commercial banks listed on the IDX
NPL = Commercial bank risk
LDR = Commercial bank liquidity risk
BOPO = Commercial Bank Operational Risk
e = error rate (error)

Hypothesis Testing (t partial)
Hypothesis testing in this study used the t statistic test (partial). The t-statistical test shows how much influence an independent variable has in explaining the dependent variable individually (Ghozali, 2016).

Comparison of Two Means
The two-mean difference test is used to see if the two groups have differences. In determining the test instrument, the normality test of the data is first carried out. If the data is normally distributed, then the difference test is carried out using the independent sample t-test, while if it is not normally distributed, the Mann-Whitney non-parametric test is used. The test is conducted in order to determine the difference between the ratio of risk management and profitability in state-owned and private banks. The financial ratios observed were Non-Performing Loan (NPL), Loan to Deposit Ratio (LDR), Operating Expenses to Operating Income (BOPO) and Return on Assets (ROA).

Research Model
Based on the research results that have been stated above, the research model created can be seen in the following chart:
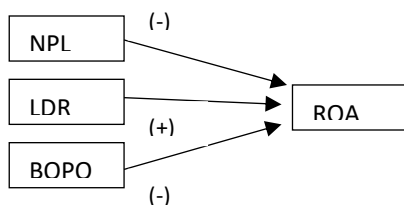

Figure 1. Research Model to Test the Effect of Risk Management on Profitability

Meanwhile, to test the hypothesis of the difference between the risk management of government-owned and private banks, the research model is used as follows:
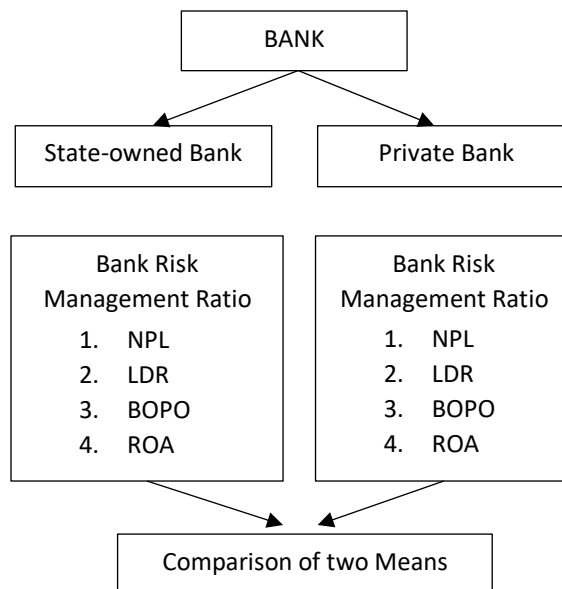

Figure 2. Research Model to Examine Differences in Risk Management between Government-Owned and Private Banks

RESULTS AND DISCUSSION
Table 1. Regression Result

Model	Unstandardized Coefficient B	Sig.	Notes
Constant	4,068		
NPL	-0,082	0,027	Significant Negative
LDR	0,022	0,043	Significant Positive
BOPO	-0,055	0,000	Significant Negative
Dependent variable: ROA			

Source: Processed Data (2021)

Table 1 shows the results of the multiple regression carried out, so that the regression equation can be seen as follows:
ROA = 4.068 - 0.082 NPL + 0.022 LDR – 0.055 BOPO + e
The regression equation can be explained as follows:
1. The constant value of 4.068 means that when the LDR, NPL and BOPO variables do not change or are considered constant, the profitability ratio (ROA) is at 4.068.
2. The NPL variable has a regression coefficient of -0.082 meaning that when other variables are considered constant, then every 1 percent increase in NPL has an impact on a decrease in profitability (ROA) of 0.082 percent.
3. The LDR variable has a regression coefficient of 0.022, meaning that when other variables are considered constant, every 1 percent increase in LDR has an impact on an increase in profitability (ROA) of 0.022 percent.
4. The BOPO variable has a regression coefficient of -0.055, meaning that when other variables are considered constant, every 1 percent increase in the BOPO value has an effect on a decrease in profitability (ROA) of 0.055 percent.
Table 1 also shows the significance value of the NPL variable of 0.027 which is smaller than 0.05 indicating a significant influence between variables. While the negative coefficient (-0.082) indicates the opposite direction of influence, so it can be concluded that the NPL variable has a negative effect on the dependent variable ROA. It can be concluded that the greater the NPL value, the lower the ROA value. Therefore, **hypothesis 1 which states that**

credit risk has a negative effect on profitability is accepted.

While the significance value of the LDR variable is 0.043, which is smaller than 0.05, indicating a significant influence between variables. While the positive coefficient (0.022) indicates the direction of the influence in the same direction, so it can be concluded that the LDR variable has a positive influence on the dependent variable ROA. Meaning that the greater the LDR value, the lower the ROA value. Therefore, **hypothesis 2 which states that liquidity risk has a positive effect on profitability is accepted.**

In the BOPO variable, it is known that the significance value of 0.000 is smaller than the alpha 0.05, so it is said that the relationship between BOPO and ROA is significantly correlated. While the negative coefficient (-0.055) indicates the opposite relationship, the smaller the BOPO value, the greater the ROA value. Therefore, **hypothesis 3 which states that operational risk has a negative effect on profitability is accepted.**

Table 2. Comparison Test

	Asymp. Sig. 2-tailed
NPL	0,034
LDR	0,575
BOPO	0,000
ROA	0,000

Source: processed data (2021)

From the normality test using the Shapiro-Wilik instrument, it was found that the data were not normally distributed. Therefore, the two-mean difference test uses the Mann-Whitney non-parametric difference test.

From Table 2 it is known that in the NPL variable the Asymp value. Sig. The 2-tailed value of 0.034 is smaller than 0.05 indicating that there is a significant difference in the NPL ratio between state-owned and private banks. Thus, **hypothesis 4 which states that there is a difference in NPL between state-owned banks and private banks is accepted.**

The LDR variable has an Asymp value. Sig. 2-tailed of 0.575 which is greater than 0.05 indicates that there is no significant difference between the LDR ratio of state-owned and private banks. Thus, **hypothesis 5 which states that there is a difference in LDR between state-owned banks and private banks is rejected.**

The BOPO variable has an Asymp value. Sig. The 2-tailed value of 0.000 which is smaller than 0.05 indicates that there is a significant difference between the BOPO ratio of state-owned and private banks. Thus, **hypothesis 6 which states that there is a difference in BOPO between state-owned banks and private banks is accepted.**

It is also known that the value of Asymp. Sig. The 2-tailed variable ROA of 0.000 is smaller than 0.05. This indicates that there is a significant difference between the ROA of state-owned and private banks. Thus, **hypothesis 7 which states that there is a difference in ROA between state-owned banks and private banks is accepted.**

Table 3. Mean Ranks Comparison

Variabel	Kepemilikan	N	Mean Ranks
NPL	Pemerintah	22	37,07
	Swasta	73	51,29
BOPO	Pemerintah	22	21,80
	Swasta	73	55,90
ROA	Pemerintah	22	67,61
	Swasta	73	42,09

Sumber : Data diolah (2021)

Table 3 above shows a comparison of the differences in the values of each variable in the government-owned and private bank groups from the Mann-Whitney test only on variables that are proven to have significant differences between groups. From the table presented above, it is known that the NPL variable of private banks recorded a higher NPL value than the NPL of private banks with 51.29 points compared to 37.07 owned by state-owned banks. This indicates that private banks have poorer quality of financing than state banks.

In the BOPO variable, it can be seen that state banks recorded a better level of efficiency than private banks with a mean rank of 21.80 compared to 55.90 owned by private banks. This indicates that private banks have worse operational efficiency than state banks based on the observation period from 2016 – 2019.

In the aspect of profitability as measured by the ROA ratio, it is known that state-owned banks recorded a higher value than private-owned banks with a ratio of 67.61 to 42.09. This shows that the banks that meet the purposive sampling of the study, state-owned banks have better performance than private-owned banks.

The discussion of each hypothesis testing result is as follows:

Credit risk has a negative effect on profitability

By using multiple linear regression test it was found that the NPL ratio had a negative effect on ROA.

The higher the level of NPL, it will reduce the rate of profit from interest or profit sharing. This happens because of the difficulty of collectability of loans in the form of principal and interest loans, thereby reducing the level of ROA. This supports the research of Panta (2018) which found that there is a significant negative relationship between NPL and ROA.

This phenomenon is in line with the hypothesis regarding the unidirectional relationship between NPL and banking ROA. The bad luck hypothesis shows that the high level of NPL does not always come from things that can be controlled by the bank, but can also come from external factors of the bank such as economic conditions or financial crises. Because of these external conditions, banks are required to incur more costs in handling them. These costs can be; (1) additional supervision of troubled borrowers, (2) costs of analyzing and negotiating agreements, (3) costs of maintaining and selling collateral in the event of default, (4) additional costs of maintaining a sound bank, and (5) time spent by senior managers taken up in solving other operational problems (Gunawan & Sudaryanto, 2016). These additional costs make it worse for banks to record profits in addition to uncollectible loans (Tran & Phan, 2020).

The bad management hypothesis indicates that the bank's managerial incompetence in managing loans results in the high NPL of the bank. Bank managers who have a weak ability to assess borrowers (credit scoring), low competence in supervising credit, and difficulties in monitoring debtors will affect the poor collectability of loans and lead to low profits (Gunawan & Sudaryanto, 2016).

In controlling the level of non-performing financing, banks can perform the following steps; (1) conduct a careful credit analysis to select good borrowers, (2) require additional loan collateral if the value of the collateral submitted has decreased, (3) provide loans only based on a predetermined limit, (4) conduct loan inspection and supervision periodically, (5) before imposing sanctions, should collect

all files related to financing and (6) only allow borrowers to use funds according to their designation (Akter & Roy, 2017).

Liquidity risk has a positive effect on profitability

By using multiple linear regression test it was found that the LDR ratio had a positive effect on ROA.

The higher the financing disbursed, the better the impact on profit. This can happen because the higher the loan disbursed, the greater the potential profit achieved by the bank. By using a research sample that complies with regulations from the Financial Services Authority and Bank Indonesia, this study can prove that as long as the liquidity ratio is still relatively healthy, large financing will generate large profits as well. These results support Ibrahim's research (2017) which finds that LDR has a positive effect on the ROA of banks listed on the stock exchange.

The direct influence of the LDR liquidity ratio and profitability (ROA), has the implication that banks in Indonesia should meet the established bank health criteria, namely the LDR ratio between 78% - 100% in order to obtain optimal profits and maintain liquidity risk. In general, banks in Indonesia, both government-owned and private, have met the liquidity compliance ratio.

The low liquidity owned by banks is often the cause of bank bankruptcy. However, holding too many liquid assets has a disadvantage in the form of opportunity costs to channel it into productive financing that generates profits (Ndoka et. al., 2017).

Therefore, the regulator of the Financial Services Authority should provide a mechanism so that banks can maintain healthy liquidity for the health of the financial industry in Indonesia and in order to support the Basel Accord agreement.

Operational risk has a negative effect on profitability

By using multiple linear regression test it was found that operational risk proxied by the ratio of Operating Expenses per Operating Income (BOPO) has a negative effect on profitability as measured by return on assets (ROA).

When the BOPO ratio increases, it will cause a decrease in bank income (ROA). This situation occurs because the growth in operating costs that is not followed by growth in operating income will have a negative impact on income before tax which ultimately reduces the ROA ratio (Yusuf & Surjaatmaadja, 2018). These results support previous research by Saiful & Ayu (2019) which states that there is an opposite relationship between BOPO and ROA in Islamic and conventional banks in Indonesia. This is also supported by the research of Fidanoski et. al., (2018) using operational costs as a measure of efficiency found that operational risk has a negative effect on bank profitability.

The high operational cost of income is one sign that the bank is running inefficiently due to poor utilization of bank income, resulting in a decrease in profitability (Yao et. al., 2018). In an effort to reduce operational costs and improve banking efficiency, the use of e-banking technology is considered to be able to significantly allocate costs efficiently so as to increase revenue in general (Taiwo & Agwu, 2017). Therefore, the regulator should further tighten the BOPO financial ratios and encourage banks to be more efficient in placing their operational expenditures because they have been proven to have a significant effect on bank profitability.

There are differences in the NPL ratio between state and private banks

The results of the different test using the Mann-Whitney non-parametric instrument show that there is a significant difference between the credit risk ratio as measured by the non-performing loan (NPL) in state-owned and private banks. The results show that privately-owned banks have a higher NPL ratio than state-owned banks. Thus, these results accept the research hypothesis 4 which states that there is a difference between the NPL ratio in state-owned banks and private banks.

Based on table 3, the results of the mean ranks indicate that credit risk management owned by private banks is worse than state banks during the observation period. State-owned banks in Indonesia continue to increase the financing of government-funded infrastructure projects. Bank Negara Indonesia, for example, has disbursed Rp 39.4 trillion in corporate infrastructure financing during 2020, an increase of 39.8% compared to the previous year (Sembiring, 2021). This finding supports the research of Belousova et. al. (2018) which states that state-owned banks have the advantage of guarantees from the government and better client relations so that they can get debtors who are more solvent (solvent).

There is no difference in the LDR ratio between state and private banks

The results of the different test using the Mann-Whitney non-parametric instrument show that there is no significant difference between the liquidity risk ratio as measured by the loan to deposit ratio (LDR) in state-owned and private banks. The results show that privately-owned banks have the same LDR ratio as state-owned banks. Thus, this result rejects the research hypothesis 5 which states that there is a difference between the LDR ratio in state-owned banks and private banks.

This phenomenon is thought to be caused by the absence of differences in the behavior of both government-owned and private banks in terms of liquidity creation. This result is possible because in the formation of liquidity, state banks and private banks serve the same consumer market (Davydove et. al., 2018). So that there is no difference in the ratio of lending as measured by LDR between state-owned and private banks.

The LDR ratio found to have no significant difference is supported by the research of Mauliyana & Sudjana (2016) which uses the risk profile assessment method, it is found that state-owned banks and private banks have the same composite value and rating. By using the independent sample t-test analysis test, it was found that the LDR ratio of government-owned and private banks in Indonesia did not have a significant difference (Firdaus & Qumaira, 2020).

There are differences in the BOPO ratio between state banks and private banks

The results of the different test using the Mann-Whitney non-parametric instrument show that there is a significant difference between the operational risk ratio as measured by the ratio of operating expenses to operating income (BOPO) at state-owned and private banks. The results show that privately-owned banks have a higher BOPO ratio than state-owned banks. Thus, these results accept the research hypothesis 6 which states that there is a difference between the BOPO ratio in state-owned banks and private banks.

The results of the mean ranks table show that the operational risk management owned by private banks is worse than state banks during the observation period. This can be attributed to 1) state-owned banks have good efficiency due to the new

policies owned by the leaders of the selected state-owned banks have superior skill qualifications and 2) in addition, state-owned banks have also realized that state-owned banks government must equally compete with the private sector. This encourages banks to increase efficiency and compete with privately owned banks (Hatammimi, 2016).

This finding supports the research of Wulansari et. al., (2019) and Tiarso & Idawati (2017) show that there is a difference between the BOPO ratio in state-owned and private banks. This study proves that state banks are proven to be more efficient when compared to private banks in line with the research of Indahwati & Suryasaputra (2019).

There is a difference in the ROA ratio between state and private banks

The results of the different test using the Mann-Whitney non-parametric instrument show that there is a significant difference between the profitability ratios measured by the return on assets (ROA) of state-owned and private banks. Thus, these results accept the research hypothesis 7 which states that there is a difference between the ROA ratio in state-owned banks and private banks.

These results are in line with the results of testing hypotheses 1 – 3 about things that affect bank profitability. Because the ratios of NPL and BOPO both show that state-owned banks have better ratios than private-owned banks, this has an effect on the profitability ratios as measured by ROA which shows the results of government-owned banks are better than private banks.

This finding supports the research of Din et. al., (2021) who revealed that state-owned banks enjoy connection support from the government so that they can obtain subsidized and regulatory support in order to improve banking financial performance. This phenomenon indicates that the observed state-owned banks have recorded better profits than private-owned banks. Therefore, stricter supervision is needed on private sector banking in order to maintain the soundness of banking finances.

CONCLUSIONS AND SUGGESTIONS

This study serves to identify the effect of bank risk management on bank profitability by using data sources derived from bank statements listed on the Indonesia Stock Exchange in the period 2016 to 2019. The method used is multiple linear regression using SPSS 22 software. the second is to identify differences in risk management in state-owned and private banks using financial ratios such as NPL, LDR, BOPO and ROA. In testing the differences, the Mann-Whitney test was used. The results showed the following conclusions:

1. Using the NPL ratio as a proxy for credit risk, a significant negative effect was found on profitability as measured by ROA. This confirms that the higher the NPL ratio will reduce the level of bank profitability.
2. Using the LDR ratio as a proxy for liquidity risk, a significant positive effect was found on profitability as measured by ROA. This indicates that the higher the financing disbursed, the higher the bank's profitability.
3. Using the BOPO ratio as a proxy for operational risk, a significant negative effect was found on profitability as measured by ROA. This shows that the high BOPO ratio of banks has a significant negative effect on bank profitability.
4. Using the Mann-Whitney test, it is found that the variables of NPL, BOPO and ROA have significant differences in state-owned and private-owned banks. The results show that credit risk (NPL), operational risk (BOPO)

and profitability (ROA) of private banks are worse than state-owned banks.
5. Meanwhile, in the LDR variable, there is no significant difference between state-owned and private banks tested using the Mann-Whitney test.

The results of the study provide the following recommendations:

1. For Banking Industry Players
Banks should maintain the ratio of credit health, liquidity and bank operations in order to be able to record profitability and be able to face credit, liquidity and operational risks.

2. For Financial Institution Supervisors
The supervisory function should be tightened in reviewing the risk of bad loans (NPL), liquidity ratios (LDR) and operational ratios (BOPO) because they have a significant effect on the sustainability of banking business.

3. For Further Researchers
This study has limitations in explaining the determinants of banking profitability. Further researchers can further explore other factors such as macroeconomic aspects in explaining bank profitability.

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