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# DETERMINATION OF BANK PROFITABILITY WITH EFFICIENCY AS MODERATING VARIABLE

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**Abstract**
This research aims to analyze and obtain the empirical study about the effect of Loan to Deposit Ratio (LDR), Non Performing Loan (NPL) and Net Interest Margin (NIM) to Return on Assets (ROA) and the moderating effect of Efficiency (OEOI) on the variable that affect Return on Assets (ROA). The data population is 43 banking companies listed in Indonesia stock exchange and published its financial statements during the period 2012 to 2016. However, there are only 30 companies met the criteria as samples. This study found that NIM, NPL and OEOI affecting ROA. While other factors such as LDR has no effect on ROA. The study also found that OEOI has a partial mediation between the influence of NIM and ROA. The study also proves that ROA is influenced by variable observed by 48, 7%. It also can be concluded that the other factor over the observe independent variable that effect ROA is 51,3%.

**Keywords:** Loan to Deposit Ratio (LDR), Non Performing Loan (NPL), Net Interest Margin (NIM), Operating Expense to Operating Income (OEOI), Return on Assets (ROA), Mediating Variable.

## Introduction

The Bank has a vital role in the achievement of national goals related to the improvement and equity of the living standards of the community and supporting the economic growth. Given its function as an intermediary institution and the organizer of payment transactions, The Bank's role in the economic growth of the country can be seen from its function as a financial intermediary. The bank channels the funds from the parties that have surplus funds to the parties which need the funds. Moreover, bank also sell financial products and services in order to help transactions conducted by the public run smoothly (Riyadi&Hadiyati, 2012).

The free trade era or known as ASEAN Economic Community (AEC) has a contribution to the changes in a country's economy. It can also have an impact on changes in the banking world. The AEC is a realization of the free market in Southeast Asia that began at the ASEAN Summit in Singapore in 1992 (Suroso, 2015). With the existence of the AEC, it will expand the Company's market share including the Bank. In addition to the expanding market share, the AEC can be a threat due to the widespread competition between banks in various countries on ASIA. Therefore, Bank should improve their own performance.

Banking in Indonesia faces the development of the national economy that is always moving fast, competitive and integrated with increasingly complex challenges. Thus, the Bank should be able to show optimal performance, and create a high competitiveness, such as by maintaining the

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level of profitability. The performance of bank's profitability can be the indicator that the bank is ables to be going concern.

Net Interest Margin (NIM ) is a measure of the difference between the interest rate of loan with interest rate given by bank such as interest of deposits. Banks with high NIM should have a high level of profitability. However, the high profitability of banks in developing countries in ASIA tends to decline until 2014 (Bellens, 2015). NIM banks in Indonesia is the highest among the five emerging banks in ASIA. The average NIM Bank in Indonesia gets 5.5% while the other five banks are the highest, as high as 4% (Bellens, 2015). With the high of NIM or margin, Bank in Indonesia should have high profitability. However, based on the data that retrieved from the official web of Otoritas Jasa Keuangan shows the profitability of bank in Indonesia until 2015 tends to decline (Otoritas Jasa Keuangan, 2015).

Based on previous research studies, there are many factors that affect the performance of bank profitability, namely Loan to Deposit Ratio (LDR), Non Performing Loan (NPL) and Net Interest Margin (NIM). However, the previous studies such as (Kristianti & Yovin, 2016), (Permatasari & Novitasary, 2014), (Setiawan & Hermanto, 2017), (Winarso & Salim, 2017) shown inconsistent results regarding the effect of LDR, NPL and NIM to profitability. Because of those inconsistent results; therefore, the influence of LDR, NPL and NIM to ROA needs to be reviewed.

The inconsistency of the result may be due to other factors affecting the level of influence of the independent variable to the dependent variable such as the existence of the mediating variabel. Therefore, in this study the researchers added a mediating variable. This reasearch put efficiency that measured by the ratio of operating expense to operating income (OEOI) as mediating variabel. With assumption, efficiency can be mediation of bank operations such as LDR, NPL, NIM to get profit. It is because bank can be more profitable if the bank can runtheir business efficiency (Santoso, Samosir, & Suparnigsih, 2018).

Based on the explanation above, two research questions were developed. First, do the variables studied such as LDR, NPL and NIM affect on ROA. Second, does OEOI moderate the effect of LDR, NPL and NIM to ROA.

## Material and Methodes

Based on the theory of entities concept, company as a business organization is treated differently or is legally separated from the owner of the business. It means, the owner must separate his personal transactions from his business transactions activities. As a consequence of the concept of an entity, the relationship between the entity and the owner is seen as a business relationship, especially in the rights and obligations or debt obligations. Therefore, the company is expected to generate profits that can be given to its voters and the owner of the company as a stakeholder should know the performance of the company.

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Performance measurement that is generally used to assess the performance of a company including a bank is return on assets (ROA). Hence, shareholders should be aware of the company performance by measuring ROA. In addition, in decision making shareholder also necessary to know what factors can affect ROA. Here are some hypotheses formulated in measuring the Bank's performance:

**The Effect of LDR on ROA**

LDR is the ratio used to measure the composition of the credit given compared to the amount of third party funds. This ratio can also be used as an assessment of credit effectiveness. The greater LDR shows the effectiveness of banks in managing third party funds to be channelled into credit then as to generate profits for the company. An increase in LDR can affect the company's profit and automatically affect the value of ROA (Kristianti and Yovin, 2016). For that reason the following hypothesis is formulated:

$H_1$: LDR has a significant influence on ROA.

**The Effect of NPL on ROA**

NPL is a ratio that indicates the quality of credit given. The high NPL shows the quality of credit provided by banks is getting worse. An increase in NPL can also be interpreted as the high number of non performing loans held by banks. The non performing loans will affect the decrease in interest income earned by the bank. Thus an increase in NPL can reduce the value of ROA (Yudha, Chabachib and Pangestu, 2017). Thereupon, the following hypothesis is formulated:

$H_2$: NPL has a significant influence on ROA.

**The Effect of NIM on ROA**

Net Interest Margin (NIM) is the ratio used to measure the ability of a bank's management to manage a bank's earning assets to generate interest income. The greater ratio indicates the greater the interest income generated by the bank and the greater the profit generated by the company. For that reason, the increase in the NIM value has a significant effect on the ROA of the bank (Setiawan and Herman to, 2017). Thus, the following hypothesis is formulated:

$H_3$: NIM has a significant influence on ROA.

**Moderation of OEOI on the influence of LDR, NPL, NIM on ROA**

As explained previously LDR, NPL and NIM affect ROA. There is one factor that should be considered in determining profitability, namely efficiency. Efficiency in banks is indicated by the value of the OEOI ratio (Operating Expenses to Operating Income). Efficiency allows companies to earn more profits because the company managed to make efficiency in carrying out its operations. A bank is a financial services industry where in running its business, it is very

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dependent on the use of technology. With the technology of business operations that is operated by bank, the bank operation will become more efficient.Thereupon, if the company's operations are running efficiently; the ROA of the bank will increase (Buchory, 2015). The LDR value, NPL and NIM are basically indicators of the company's operational performance. So when bank operations in generating LDR, NPL and NIM are good, the ROA of the bank will also increase. Hence, the following hypothesis is formulated:

$H_3$: OEOI moderates the relationship between LDR, NPL and NIM to ROA.

**Methods**

The methode used in this research is a quantitative approach by examining specific populations and samples aimed at testing the predefined hypothesis (Sugiono, 2012). The model analysis used is a structural equation modeling (SEM) that is measured by Analysis of Moment Structure (AMOS). Sempel is chosen by using purposive sampling technique that is sample selection based on a certain criterion (Jogiyanto, 2010). The criterias are as follows:

1. All banks listed on the Indonesia Stock Exchange that report their financial statements during the study period, 2012 to 2016.
2. Companies that enclose required data such as total loans, total assets, total third party funds, interest income, interest expense, operating income, operating expenses, profit before tax, total non-performing loan.

There are three variables that become the main focus of the research. Namely independent variabel, mediating variabel and dependent variabel. Where LDR, NPL, NIM are as independent variable, OEOI as mediating variable and ROA as dependent variable. The measurements of these variables are as follows:

| Variabel | Measurement | Source |
|---|---|---|
| Loan to Deposit Ratio (LDR) | Loans divided by third party funds (savings, current accounts and deposits) | (Kristianti and Yovin, 2016) |
| Non Performing Loan (NPL) | Non-performing loans divided by total loans | (Kristianti and Yovin, 2016) |
| Net Interest Margin (NIM) | Net interest income divided by average consumption loans | (Kristianti and Yovin, 2016) |
| Operating Expense to Operating Income (OEOI) | Total Expenses divided by Total Revenue | (Winarso and Salim, 2017) |
| Return on Assets (ROA) | Net income before taxes divided by total assets | (Kristianti and Yovin, 2016) |

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Table 1: Definition of variable operational

The first stage of the analysis is making the structural model. The second stage is determining the degrees of freedom of the model and the conformity of the Absolut Fit Measures such as CMIN/DF, CFI and RMSEA against the required value. The minimum score of the degrees of freedom must be more than zero (Ghozali, 2014). The required value of the Absolut Fit Measures is < 5 for CMIN/DF (Ghozali, 2014), RMSEA must be close to 0.06 or below and CFI are close to 0,95 or more (Albright & Park, 2009). If the model does not fit the requirement of Absolut Fit Measures, that we must modify the model. After the model met the requirement, we did the hypothesis testing. Hypothesis is significant if the P-value above 5% (Ghozali, 2014). The mediating effect is determined from score of Variance Accounted For (VAF). The mediating variable has a full mediating if VAF is more than 80%, has a partial mediation if VAF is between 20% and 80% (20% < VAF < 80%), and have no mediating effect if FAV is less than 20% (Sholihin & Ratmono, 2013). The last analysis is to determine how far the dependent variable being studied is influenced by the independent variable. This can be seen from the value of multiple correlation. The value of multiple correlation approaching 1 or 100% means the strength of the independent variable being studied in influencing the dependent variable.

**Result and Discussion**

The first step of the analysis is we should make structural model. The fixed structural model that has been modified is as follow:

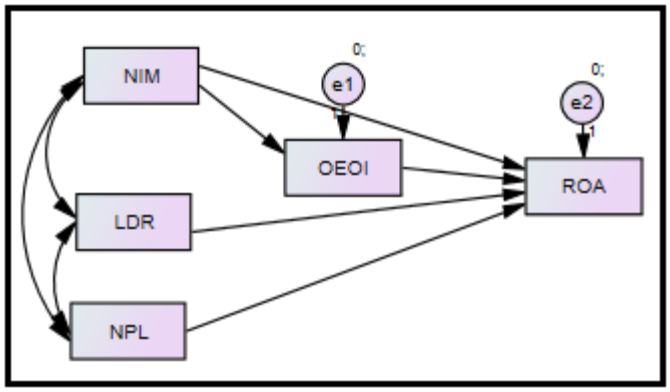


Figure 1: Structural Model.

The model above describes that only NIM varibel that can be mediated by OEOI. While the effect of LDR and NPL to ROA can not be mediated by OEOI.It also can be caused LDR and NPL do not have effect on OEOI. It shows from result of the first model. The resut of P-value from the first model show that P-value of the effect of LDT to OEOI is 0,466 and P-value of the effect of LDT to OEOI is 0,454. The degrees of freedom of the model above is 2, the number of distinct sample moments is 20 and the number of distinct parameters to be estimated is 18. The other requirements of the Absolute Fit Measures is as follow:

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| Model | NPAR | CMIN | DF | P | CMIN/DF |
|---|---|---|---|---|---|
| Default model | 18 | ,878 | 2 | ,645 | ,439 |
| Saturated model | 20 | ,000 | 0 | | |
| Independence model | 10 | 212,393 | 10 | ,000 | 21,239 |

Table 2: CMIN Table

| Model | NFI Delta1 | RFI rho1 | IFI Delta2 | TLI rho2 | CFI |
|---|---|---|---|---|---|
| Default model | ,996 | ,979 | 1,005 | 1,028 | 1,000 |
| Saturated model | 1,000 | | 1,000 | | 1,000 |
| Independence model | ,000 | ,000 | ,000 | ,000 | ,000 |

Table 3: Baseline Comparison

| Model | RMSEA | LO 90 | HI 90 | PCLOSE |
|---|---|---|---|---|
| Default model | ,000 | ,000 | ,128 | ,736 |
| Independence model | ,370 | ,327 | ,414 | ,000 |

Table 4: RMSEA Table

The three tables above show that the model has met the requirement of Absolute Fit Measures.The Measurement of CMIN/DF is 0,439 (less then 5), the Measurement of CFI is 1 (more than 0.95) and the Measurement of RMSEA is 0.00 (below 0,06).Becauses the measurement has met the requirement, then we can do the hypothesis testing. The hypothesis testing shown in the following table:

| | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|
| OEOI <--- NIM | -,065 | ,006 | -10,989 | *** | |
| ROA <--- NIM | ,004 | ,001 | 3,848 | *** | |
| ROA <--- OEOI | -,055 | ,010 | -5,352 | *** | |
| ROA <--- LDR | -,013 | ,013 | -,995 | ,320 | |
| ROA <--- NPL | -,152 | ,039 | -3,857 | *** | |

Table 5: Regression Weights

Table 5 shows that only LDR which does not have significant effect to ROA. It is because the p-value of LDR is 0.320. While the other variables such as NIM, NPL and OEOI have significant effect to ROA. Tabel 5 shows that the P-value of NIM, NPL and OEOI are 0,001 (below 5%). The P-value of the effect of NIM to OEOI also show the significant influence. It is 0.001 (below 5%).Because NIM has significant effect on OEOI and OEOI has significant effect on ROA, then

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the assumption of OEOI can moderate the influence of NIM to ROA is fulfilled. The measurement of the moderating variable is as follow:

| | NIM | NPL | LDR | OEOI |
|---|---|---|---|---|
| OEOI | -,670 | ,000 | ,000 | ,000 |
| ROA | ,314 | -,234 | -,063 | -,425 |

Table 6: Standardized Direct Effects

| | NIM | NPL | LDR | OEOI |
|---|---|---|---|---|
| OEOI | -,670 | ,000 | ,000 | ,000 |
| ROA | ,599 | -,234 | -,063 | -,425 |

Table 7: Standardized Total Effects

Table 6 shows that the indirect effect of NIM to OEOI is -0,670, and the indirect effect of OEOI to ROA is -0,425. So, the total of indirect effect NIM to ROA is 0,285 (-0,670 x -0,425). VAF is indirect effect divided by total effect. The table 7 shows the total effect NIM to ROA is 0,599 so, the VAF value is 0,476 (0,285 / 0,476).It meens OEOI has a partial mediation between the influence of NIM to ROA.

The last analysis is to determine how far the dependent variable being studied is influenced by the independent variable. The analysis is shown below:

| | Estimate |
|---|---|
| OEOI | ,449 |
| ROA | ,487 |

Table 8: Squared Multiple Correlations

Based on the score of multiple correlation above can be concluded that ROA is influenced by NIM, NPL, LDR and OEOI by 0,487 or 48,7%. It also can be concluded that the score of the other factors over the observen independent variable that effect ROA is 51,3% (100% - 48,7%). The table also shown that OEOI is influenced by NIM by 0,449 or 44,9%. It also can be concluded that the score of the other factors over the observen independent variable that effect OEOI is 55,1% (100% - 44,9%).

**Conclusion**

Based on the analysis result above, the empirical evidence suggests that the factor which can lead bank in Indonesia to get the high profitability is NIM, NPL and OEOI. The results of this study are in line with the previous research stated that NIM, NPL and OEOI have a significant effect to ROA (Soares & Yunanto, 2018). Therefore, the results of this research suggest the

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bank'sstakeholder to pay attention on NIM, NPL and OEOI in decision making on forecasting ROA.

The results of this study cannot prove that LDR affects ROA. This is because the overall observed data is around 30% of the bank's LDR value which is below the bank's well-being assessment standard by Bank Indonesia and around 70% of the Bank's LDR value which meets the well-being criteria according to Bank Indonesia, which is in the range of 70% to 110%. This shows the inequality of the LDR value, proven by the descriptive LDR which has a minimum value of 47.51% and a maximum of 104.8% and a high standard deviation value of the LDR is 10.6%. LDR may affect ROA if the imbalance does not occur. So, from the descriptive data shows there are banks that are not optimizing third party funds; on the other hand, there are banks that are excessive in providing credit.

The empirical evidence proves that OEOI has a partial mediation between the influence of NIM to ROA. The empirical evidence also proves that ROA is influenced by variabel observed by 48,7%. It also can be concluded that the other factors over the observen independent variable that effect ROA is 51,3%. It means, the model studied can only predict ROA moderately. Therefore, further research is expected to add independent research variables outside NIM, NPL and OEOI to get better prediction on the factors that can affect ROA.

**Reference**

Albright, J. J., & Park, H. M. (2009). *Confirmatory Factor Analysis Using Amos, Lisrel, Mplus, SAS/STAT CALIS**. Working Paper. India: The University Information Technology Services (UITS) Center for Statistical and Mathematical Computing.

Bellens, J. (2015). Appendix: Key Features of Individual Markets. Banking in Asia-Pacific: Size matters and digital drives competition. Retrieved from http://www.ey.com/Publication/vwLUAssets/EY-banking-in-asia-pacific/$FILE/EY-banking-in-asia-pacific.pdf

Buchory, H. A. (2015). Bank Profitability: How Dose The Credit Risk and Operation Efficiency Effect?. *Journal of Business and Management Sciences*, 3(4), 118-123.

Ghozali, I (2014). *Model Persamaan Struktural Konsep dan Aplikasi dengan Program AMOS 22*. Semarang: Badan Penerbit Universitas Diponegoro.

Jogianto. (2010). *Metodologi Penelitian Bisnis: Salah Kaprah dan Pengalaman-Pengalaman*. Yogyakarta: BPFE UGM.

Kristianti, R. A.,& Yovin. (2016). Factors Affecting Bank Performing: Case of Top 10 Biggest Government nad Privat Bank in Indonesia in 2004-2013. *Review of Integrative Business & Economics Research*, 5(4), 371-378.

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ISSN: 2456-7760

Otoritas Jasa Keuangan. (2015). Statistik Perbankan Indonesia – Desember 2015. Retrieved from https://www.ojk.go.id/id/kanal/perbankan/data-dan-statistik/statistik-perbankan-indonesia/Pages/Statistik-Perbankan-Indonesia---Desember-2015.aspx

Permatasari, I.,& Novitasary, R. (2014). Pengaruh Implementasi *good corporate governance* Terhadap Permodalam dan Kinerja Perbankan di Indonesia: Manajemen Risiko Sebagai Variabel Intervening. *Jurnal Ekonomi Kuantitatif Terapan*, 7(1), 52-59.

Riyadi, S.,& Hadiyati, P. (2012). *Manajemenjasa-jasaper bank and alam dan luarnegri*. Jakarta: Lembaga Penerbit Fakultas Ekonomi dan Bisnis Universitas Indonesia.

Santoso, I., Samosir, P. S., & Suparningsih, B. (2018). Effect of Capital Adequacy Ratio (CAR), Operational Cost (BOPO) on Return on Assets (ROA) Through Operational Income and Loan Deposit Ratio (LDR) in Bank Market City Bogor, Indonesia. *The International Journal of Business & Management*, 6(3), 47-61.

Setiawan, A., & Hermanto, B. (2017). Comparative Study: Determinant on Banking Profitability Between Buku 4 and Buku 3 Bank in Indonesia. *BENEFIT Jurnal Manajemen and Bisnis*, 2(1), 92-101.

Soares, P., & Yunanto, M. (2018). The Effect of NPL, CAR, LDR, OER and NIM to Banking Return on Asset. *International Journal of Economics, Commerce and Management*, 6(3), 40-55.

Surono, G.T. (2015). Masyarakat Ekonomi Asean (MEA) dan Perekonomian Indonesia. Situs resmi BPPK Kemenkeu. Retrived from http://www.bppk.kemenkeu.go.id/publikasi/artikel/150-artikelkeuanganumum/20545-masyarakat-ekonomi-asean-mea-dan-perekonomian-indonesia

Sholihin, M.,& Ratmono, D. (2013). *Analisis SEM-PLS Dengan Warp PLS 3.0 untuk Hubungan Nonlinierdalam Penelitian Sosial dan Bisnis*. Yogyakarta: Andi Offset.

Sugiyono. (2012). *Metode Penelitian Kombinasi (Mixed Methods)*. Bandung: Alfabeta.

Winarso, E., & Salim, I. A. (2017). The Influence of Risk Management to The Return on Asset (ROA) Banking Sector (Case Study of Bank in Indonesia Listed in Indonesia Stock Exchange). *Advance in Economics and Business*, 5(7), 382-393.

Yudha, A., Chabachi, M & Pangestu, I. R. D. (2017). Analysis of The Effect of NPL, NIM, Non Interest Income, and LDR Toward ROA with Size as Control Variables (Differences Study on Domestic and Foreign Bank List on BEI Periode 2010-2015). *Jurnal Bisnis STRATEGI*, 26(2), 100-113.