# EFFECT OF CAPITAL ADEQUACY RATIO (CAR), LOAN TO DEPOSIT RATIO (LDR) AND NON PERFORMING LOAN (NPL) TO RETURN ON ASSETS (ROA) LISTED IN BANKING IN INDONESIA STOCK EXCHANGE

Hantono

Lecturer Faculty of Economics University Prima Indonesia-Accounting Studies

Email: hantono_78@yahoo.com

**Abstract**

This study aims to verify and analyze the influence of Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), and Non-Performing Loans (NPL) to Return on Assets in banking companies listed in Indonesia Stock Exchange 2010-2013. The population in this study were 41 banking companies listed in Indonesia Stock Exchange 2010-2013. Of the 41 listed companies, selected 26 companies sampled using purposive sampling. The data used in this research is secondary data, by collecting the required information from idx 2010-2013. Metode year financial report that is used to analyze the relationship between the independent variables with the dependent variable is a multiple regression analysis, and test asumsi.Hasil discussion shows that simultaneous independent variables; Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), and Non-Performing Loans (NPL) by F test, jointly affect the Return on Assets. The results partially by t test, variable Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), and Non-Performing Loans (NPL) effect on Return on Assets.

**Keywords: Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), Non Performing Loan (NPL), Return on Assets (ROA).**

## 1. Introduction

Economic development can not be separated from the banking sector. This is because the bank is one of the means that have an important role in economic activities, where such important roles, namely as an intermediary institutions that collect and distribute public funds effectively and efficiently. The Bank also has a function as an agent of the trust, which means that the business activities of banks rely on public trust. In order to maintain the trust of the community then the bank should be able to maintain, improve and maintain its financial performance remained good.

## 2. Reader Review and Hypothesis Development

Capital Adequacy Ratio is the ratio between the net capital owned bank with total assets [1]. Capital Adequacy Ratio is the ratio between the minimum ratio of capital to risk assets that the risk [2]. The indicators used to calculate the current ratio is given by:

$$CAR = \frac{Capital}{Risk - weighted\ assets} \qquad [3]$$

Figures Capital Adequacy Ratio, the better the greater because the larger the bank capital. Bank Indonesia (BI) as the banking authority in Indonesia, menetpkan minimum CAR at the rate of 8%. If there is a bank that has a CAR of less than 8%, the bank's theoretically higher risk. If there is a massive rush, the bank will not be able to repay the public funds. Thus the CAR indicate the level of ability of banks to risk funds. Banks with high CAR perceived as a bank safe, and the people's choice [1]. Capital Adequacy Ratio aims to ensure that banks can absorb losses arising from the activities done. Bank will calculate the capital needed to cover losses that may arise with the use of certain probability ratio [4]. Loan to Deposit Ratio is the ratio that states how much money the bank has been using storage (depositor) to provide loans to its customers. In other words, the amount of money which is used to give a loan is money that comes from the deposit of the storage [5]. Loan To Deposit Ratio (LDR) is known as one of the ways to measure the level of liquidity of a bank. The higher the number, the more illiquid position of the bank concerned. This can occur because the loans not only financed by deposits, but also funds from the current account. The nature of the current account can be withdrawn at any time by the owner could result in higher liquidity of a bank because funds are still embedded in loans that have not matured [6]. If the savings / deposit and credit demand has not changed, or if the credit demand proportion to the increase of deposits, the bank will not face liquidity problems. Problems arise if the new liquidity fluctuations in the funds are not in accordance with fluctuations in the demand for credit [5]. Formula Loan to Deposit Ratio (LDR), namely:

$$LDR = \frac{Credit}{Third\text{-}party\ funds} \qquad [3]$$

Non-performing loans is the rate of return of loans to bank depositors in other words non-performing loans is the level of bad debts on banks [7]. Lending without analyzed beforehand will greatly harm the bank. If one of the analyzing, the loans will be difficult to recover alias jammed. If the loans failed, then steps taken to rescue the credit varied. Told diverse as previewed cause. If it still can be helped, then the action of helping is by increasing the amount of credit or by prolonging the time. However, if it has not be saved again, then the last action for the bank was seized collateral that has been pledged by customers [8]. Non-Performing Loans formula is:

$$NPL = \frac{Nonperforming\ loans}{Total\ Credit} \qquad [3]$$

Return on Assets (ROA) is a ratio showing comparison between profit (before taxes) by total assets of the banks, this ratio shows the level of efficiency of asset management conducted by the bank concerned, to measure the ability of the bank's management to make a profit overall. The greater the ROA of a bank, the greater the level of bank profits and the better the position of the bank in terms

of asset use [5]. return on total assets ratio is to measure the ability of bank management to manage the assets that it controls to produce a variety of income [9]. Return on Assets is economic profitability, capital is taken into account for calculating the economic profitability is a capital work in the company. For companies in general, profitability issues are more important than profit problem, because a big profit alone is not a measure that the company has been working efficiently. New efficiency can be determined by comparing the profits from it by wealth or capital that generate such profits, or in other words, calculating the economic profitability [10]. Return on assets is a ratio that illustrates the ability of banks to manage the funds invested in the total assets that generate profits. ROA is a picture of the productivity of the bank in managing funds that generate profits [11]. ROA formula used is:

$$Return\ on\ assets \quad = \frac{\text{Profit before tax}}{\text{Total assets}} \times 100\ \% \qquad [12]$$

Research related to this study has been done before by: Defri [13] in a study entitled "The Effect of Capital Adequacy Ratio (CAR), Liquidity and Operational Efficiency To Profitability Banking Companies Listed on the Stock Exchange" The results of the study in partial positive effect CAR no significant effect on ROA, LDR and not significant positive effect on ROA and ROA significant negative effect on ROA. While simultaneously CAR, LDR and BOPO positive effect on ROA. Suminar [14] in a study entitled "Analysis of Effect of Capital Adequacy Ratio (CAR), Non Performing Loans (NPLs) and loan to deposit ratio (LDR) of the Return On Asset (ROA) in the state-owned bank listed in the Indonesia Stock Exchange (BEI ) Period 2009-2013 ". Research results simultaneously show the Capital Adequacy Ratio (CAR), Non Performing Loans (NPLs) and loan to deposit ratio (LDR) effect on Return on Assets (ROA) and partial showed variable CAR and LDR has no effect on ROA, while NPL effect on ROA. Dewi [15] in a study entitled "Effect of LDR, LAR, DER and CR Against ROA". The results can be seen that the variable partial LDR and LAR positive effect on ROA. DER and CR negative effect on ROA The research of simultaneous LDR, LAR, DER and CR effect on ROA.

Figure 1. Framework Concepts
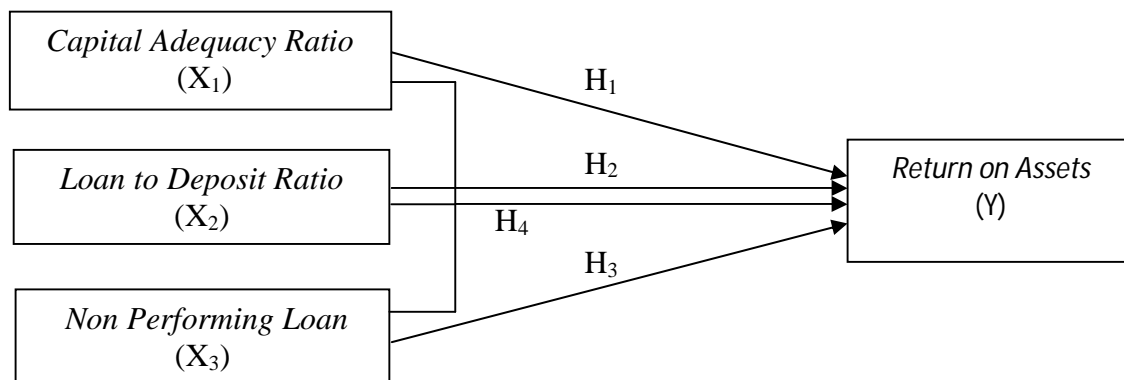
Caption :

H1:    Capital Adequacy Ratio (CAR) effect on Return on Assets (ROA) in the banking companies listed in Indonesia Stock Exchange 2010-2013.

H2:    Loan to Deposit Ratio (LDR) effect on Return on Assets (ROA) in the banking companies listed in Indonesia Stock Exchange 2010-2013.

H3:    Non Performing Loan (NPL) effect on Return on Assets (ROA) in the banking companies listed in Indonesia Stock Exchange 2010-2013.

H4:    Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR) and Non Performing Loan (NPL) effect on Return on Assets (ROA) in the banking companies listed in Indonesia Stock Exchange 2010-2013.

Based on the issues that have been formulated and some theoretical study that has been discussed, this hypothesis is the Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR) and Non Performing Loan (NPL) effect on Return on Assets (ROA) to the company banks listed on the Indonesia Stock Exchange 2010-2013 period either simultaneously or partially.

## 3.   Research Methods

Methods of data collection in this study is the use of secondary data documentation method that is based on the company's financial statements published by the banking Indonesia Stock Exchange during the period 2010-2013 through www.idx.co.id.

The operational definition in this study are as follows:

1. Independent Variable (Variables) X

Independent variables used in this study include Capital Adequacy Ratio ($X_1$) is the ratio between the minimum ratio of capital to risk assets that the risk [2]. Basis of calculation of this ratio is obtained by the formula:

$$CAR = \frac{Capital}{Risk - weighted\ assets} \quad [3]$$

Loan to Deposit Ratio ($X_2$) was used to measure the composition of the amount of loans compared to the amount of public funds and equity capital used [16]. Formula Loan to Deposit Ratio (LDR), namely:

$$LDR = \frac{Credit}{Third\text{-}party\ funds} \quad [3]$$

Non Performing Loan ($X_3$) is a comparison between the bad loans to total loans    disbursed by banks to the public [1]. Non-Performing Loans formula is:

$$NPL = \frac{Nonperforming\ loans}{Total\ Credit} \quad [3]$$

2.     Dependent Variable (Variable Bound) Y

This study uses the Return on Assets (ROA) in the banking companies listed in     Indonesia Stock Exchange as the dependent variable, with the period of the study     from 2010-     2013. ROA formula used is:

$$Return\ on\ assets\quad = \frac{Profit\ before\ tax}{Total\ assets} \times 100\ \% \qquad [12]$$

The population in this study is a banking company in Indonesia Stock Exchange 2010-2013. The population in this study there are 41 banking companies in the Indonesia Stock Exchange period from 2010 to 2013. Methods of data analysis used in this study is the method of statistical analysis. To determine the effect of each variable studied on profitability, this study using multiple linear regression analysis by first testing the classical assumptions.

## 4.   Results and Discussion

Based on data obtained from the financial statements in the period 2010-2013, it can be seen the value of the minimum, maximum, mean, and standard deviation of each of the variables in Table 1 as follows:

**Descriptive Statistics**

|  | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| CAR | 64 | .050 | .269 | .15482 | .037502 |
| LDR | 64 | .541 | 1.409 | .87843 | .175815 |
| NPL | 64 | .000 | .087 | .01843 | .013310 |
| ROA | 64 | .007 | .044 | .01894 | .008681 |
| Valid N (listwise) | 64 | | | | |

Based on the results of the calculations in Table 1, there are 64 samples. Average Capital Adequacy Ratio shows the deviation data is high due deviationnya standard value is higher than the mean value. These results indicate a current ratio variable data indicates the result is not good, because the standard deviation reflecting the deviation of the variable data is high as greater than the average value. The same thing also happened on other variables such as the Loan to Deposit Ratio, Non Performing Loan and Return on Assets.Given the analysis tool used is multiple linear regression analysis and research data used are secondary data, then to qualify determined that the use of linear regression models need to be tested on some classical assumptions were used that normality test, multicollinearity, heteroscedasticity test and autocorrelation test. Results of the test data indicates that the data in this study are not experiencing problems with classical assumption test, where the multicollinearity test, heteroscedasticity test and autocorrelation test to qualify. The test result data normality using graph analysis can be seen from Figure 2 below:

Dependent Variable: ROA
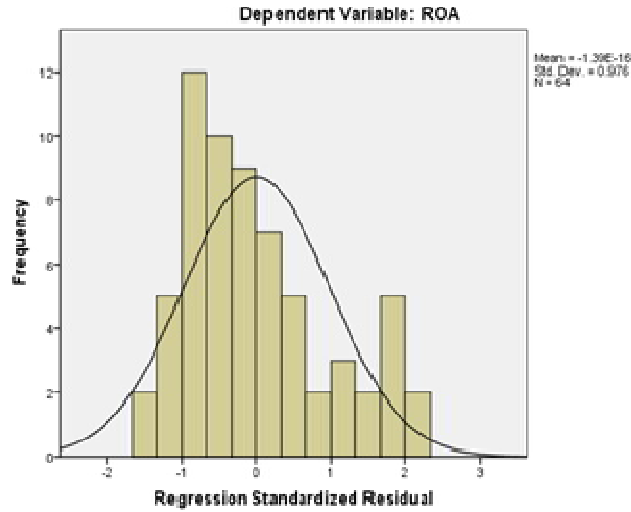
From Figure 2 above shows the curves tend to be symmetrical (U), it can be said to be normal distribution of data. Normal probability plot results in this study can be seen in Figure 3 below:
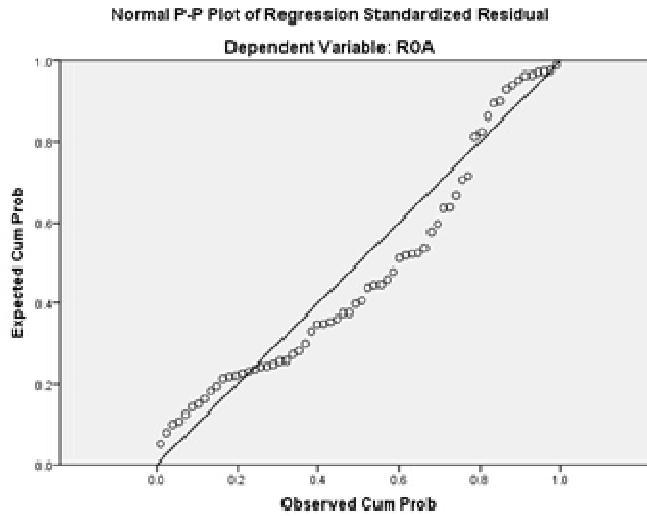


**Figure 3**
**The Graph Normal Probability Plots**

In figure 3, the graph normal probability plots, the points spread around the normal line and follow the direction of the diagonal line and it shows that the data are normally distributed, then the regression model to meet the assumption of normality.

Kolmogorov-Smirnov test results can be seen in Table 2 as follows:

**Table 2**
**Testing Normality with Kolmogorov- Smirnov**

One-Sample Kolmogorov-Smirnov Test

|  |  | Unstandardiz ed Residual |
|---|---|---|
| N |  | 64 |
| Normal Parameters,a,b | Mean | .0000000 |
|  | Std. Deviation | .00841318 |
| Most Extreme Differences | Absolute | .135 |
|  | Positive | .135 |
|  | Negative | -.076 |
| Kolmogorov-Smirnov Z |  | 1.081 |
| Asymp. Sig. (2-tailed) |  | .193 |

a. Test distribution is Normal.
b. Calculated from data.

Kolmogorov-Smirnov normality test results in Table 2 show that a significant value 1.081> 0.05 thus Kolmogorov Smirnov normality test results can be concluded normal distribution of data. Multikolinearitas testing results in this study are as follows:

**Table 3**
**Testing Multicollinearity**

Coefficients$^a$

| Model |  | Collinearity Statistics | |
|---|---|---|---|
|  |  | Tolerance | VIF |
| 1 | CAR | .934 | 1.070 |
|  | LDR | .933 | 1.072 |
|  | NPL | .997 | 1.003 |

a. Dependent Variable: ROA

3. According to the table above shows the tolerance value for the variable Capital Adequacy Ratio, Loan to Deposit Ratio, Non-Performing Loan is above 0.10 while the value of the variable VIF Capital Adequacy Ratio, Loan to Deposit Ratio, non-performing loans are under 10. thus multicolinearity test regression does not occur between the independent variables.

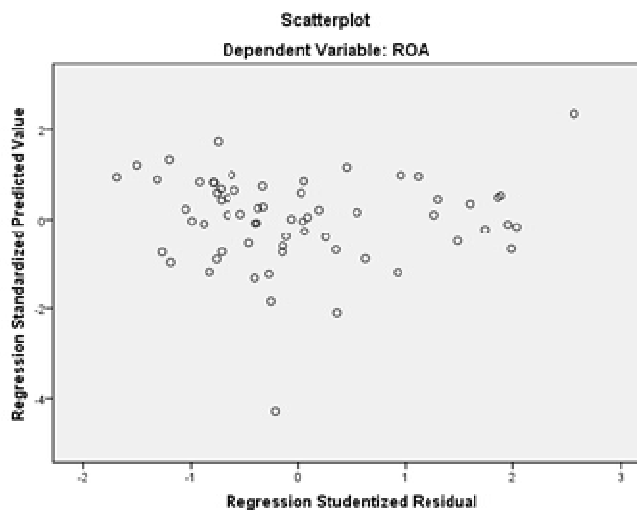The test results heteroscedasticities using graph analysis can be seen from the scatter plot graph as follows:



Scatterplot
Dependent Variable: ROA

**Figure 4**
**Testing Heteroskidastity**

From the scatterplot graph seen that the dots randomly spread and spread both above and below zero on the Y Axis It can be concluded that the absence of heteroscedasticity in our model so that the model is feasible to use research. Autocorrelation test results are as follows:

**Table 4**
**testing autocorrelation**

Model Summary[b]

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | .246[a] | .061 | .014 | .008621 | 2.604 |

a. Predictors: (Constant), NPL, CAR, LDR
b. Dependent Variable: ROA

4. Based on the table above shows the results of data processing obtained statistical value of Durbin-Watson (DW) amounted to 2,604. When viewed from the Durbin-Watson test table on □ = 0.05 for the number of independent variables as much as three and the number of sample 64 obtained lower limit value table (dL) = 1.4990 and the upper bound (dU) = 1.6946. Because the value DW = 2,604 which is more than the du and smaller than the value of (4-du = 4-1.6946 = 2.3054) is 1.6946 <2604 <2.3054 then it can be concluded autocorrelation test results are not positive and negative autocorrelation.

Statistical test results simultaneously shown in

**Table 5**
**Statistical test results simultaneously**

ANOVA[b]

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | .000 | 3 | .000 | 1.292 | .286[a] |
| | Residual | .004 | 60 | .000 | | |
| | Total | .005 | 63 | | | |

a. Predictors: (Constant), NPL, CAR, LDR
b. Dependent Variable: ROA

Results F arithmetic in table 5 above show the significance test simultaneously / together (statistical test F) produces a value F count 1292. At degrees of freedom 1 (DF1) = k - 1 = 3-1 = 2, and the degrees of freedom 2 (DF2) = nk = 64-3 = 61, where n = number of samples, k = the number of variables, the value of F table at the level of 2.76 0.05 is thus of F = 1292> F table = 2.76 with a significance level of 0.286. because the probability of significance is much greater than sig 0.286 <0.05, then Ha denied means jointly Capital Adequacy Ratio, Loan to Deposit Ratio, Non-Performing Loan effect on Return on Assets in banking companies listed in Indonesia Stock Exchange in 2010 -2013.

Based on the statistical test t seem partial influence of the two variables on the dependent variable as shown in Table 6 as follows:

Coefficients<sup>a</sup>

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .017 | .007 | | 2.570 | .013 |
| | CAR | -.009 | .030 | -.038 | -.291 | .772 |
| | LDR | .007 | .006 | .139 | 1.075 | .287 |
| | NPL | -.139 | .082 | -.213 | -1.699 | .095 |

a. Dependent Variable: ROA

The results of the partial test (t-test) $X_1$, namely capital adequacy ratio shows the value t <t table (-0291 <1.66901) and the significance value above 0.05 (0772> 0.05) means that there is significant influence between variable capital adequacy ratio on return on assets. The results support the research Defri [13] and Suminar [14] which states are the result of research partially CAR does not affect the ROA. The results of the partial test (t-test) $X_2$ is Loan to Deposit Ratio (LDR) shows t value of 1.075 and sig.t of 0287, then counted <t table (1,075 <1.66901) and a significant value (0287> 0.05) so partially Loan to Deposit Ratio (LDR) no significant effect on return on assets. The results support the research Suminar [14] which states that the LDR variable does not affect the ROA. However, it is contrary to the Goddess study [15] which states that in partial LDR positive effect on ROA. The results of the partial test (t-test) X3 ie Non Performing Loan (NPL) shows t value of -1699 and sig.t of 0095, then counted < ttable (-1699 <1.66901) and a significant value (0095> 0.05) thus partially Non Performing Loan (NPL) no significant effect on return on assets. The results of this study do not support Suminar study [14] which states that the NPL variable effect on ROA.

The linear regression equation is formed :

$$Y = 0.017 \text{ to } 0.009 + 0.007 \text{ LDR CAR } - 0139 \text{ NPL} \quad (6)$$

From the multiple linear regression equation, the constant of 0.017 states that if the independent variables are considered constant, then the value of return on assets amounted to 0.017 states that if the capital adequacy ratio, loan to deposit ratio and non-performing loans is zero then the value of return on assets remained at 0,017 times , Variable capital adequacy ratio has a regression coefficient of -0009 states that the effect of variable capital adequacy ratio to a negative return on assets. If the capital adequacy ratio increased by one, the return on assets will decrease by - 0,009 times. Variable loan to deposit ratio has a regression coefficient of 0.007 states that the effect of variable loan to deposit ratio to a positive return on assets. If the debt to equity ratio increased by one, the return on equity will be increased by 0,007 times. Variable non-performing loan ratio has a regression coefficient - 0139 states that the effect of variable non-performing loan ratio to a positive return on assets. If the debt to equity ratio increased by one, the return on equity will be decreased by 0,139 times.

Coefficient determination test used to measure how much influence the Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR) and Non-Performing Loan (NPL) effect on Return on Assets. The calculation result can be seen in Table 7 below:

Model Summary[b]

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|-------|------|----------|-------------------|----------------------------|---------------|
| 1 | .246[a] | .061 | .014 | .008621 | 2.604 |

a. Predictors: (Constant), NPL, CAR, LDR
b. Dependent Variable: ROA

7. In the table above shows that the coefficient of determination coinciding (adjusted R-square) of 0.014%. This means that 0.986% influences profitability (return on assets) can be explained by the variation of the three independent variables, the Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR) and Non-Performing Loan (NPL). While the rest of 0.986% is explained by other variables not examined in this study.

## 5.    Conclusion

From the results it can be concluded that the previous description simultaneously on the results of tests carried out simultaneously current ratio significantly influence return on equity in the banking companies listed in Indonesia Stock Exchange 2010-2013. While the simultaneous testing of the Capital Adequacy Ratio, Loa`n to Deposit Ratio, Non-Performing Loan effect on Return on Assets in banking companies listed in Indonesia Stock Exchange 2010-2013. From the results of tests performed by partial no significant effect between variable capital adequacy ratio, loan to deposit ratio and non-performing loans to the return on assets in banking companies listed in Indonesia Stock Exchange 2010-2013.

**Reference**

[1]   Wira, Desmond. 2014, *Analisis Fundamental Saham*, Edisi 2, Penerbit, Exceed, Jakarta.

[2]   Abdullah, Thamrin dan Francis Tantri. 2014, *Bank dan Lembaga Keuangan*, Cetakan Ketiga, Penerbit : Rajawali Pers, Jakarta.

[3]   Surat Edaran Bank Indonesia No 3/30/DPNP tanggal 14 Desember 2001, *Pedoman Perhitungan Rasio Keuangan*, Bank Indonesia, Jakarta.

[4]   Idroes, Ferry N. 2011, *Manajemen Resiko Perbankan*, Cetakan Kedua, Rajawali Pers, Jakarta.

[5]   Pandia, Frianto.2012, *Manajemen Dana dan Kesehatan Bank*, Penerbit Rineka Cipta, Jakarta.

[6]   Latumaerissa, Julius R. 2014, *Manajemen Bank Umum*, Penerbit : Mitra Wacana Media, Jakarta.

[7]   Taswan. 2015, *Akuntansi Perbankan*, Cetakan keempat, Ed. 3, Penerbit : UPP STIM YKPN, Yogyakarta.

[8]   Kasmir, 2010, *Bank dan Lembaga Keuangan Lainnya*. Penerbit : Rajawali Pers, Jakarta.

[9]   Sawir, 2005, *Analisis Kinerja Keuangan Dan Perencanaan Keuangan Perusahaan*. Cetakan Kelima, Penerbit PT. Gramedia Pustaka Utama, Jakarta.

[10]  Riyanto, Bambang.  2008. *Dasar-dasar Pembelanjaan Perusahaan,* Cetakan ke-16. Edisi.9, Penerbit BPFE, Yogyakarta.

[11]  Muhamad,2014, *Manajemen Dana Bank Syariah*, Penerbit RajaGrafindo Persada, Jakarta.

[12]  Kasmir. 2008. *Manajemen Perbankan,* Edisi Revisi, Penerbit: Prenada Media, Jakarta.

[13]  Defri, 2012, Pengaruh *Capital Adequacy Ratio* (CAR*),* Likuiditas dan Efisiensi Operasional Terhadap Profitabilitas Perusahaan Perbankan yang Terdaftar di BEI. Jurnal, Universitas Negeri Padang.

[14]  Suminar.*et.al.* 2015, Analisis Pengaruh *Capital Adequacy Ratio* (CAR), *Non Performing Loan* (NPL) dan *Loan To Deposit Ratio* (LDR) Terhadap *Return On Asset* (ROA) pada Bank BUMN yang Terdaftar di Bursa Efek Indonesia (BEI) Periode 2009-2013. Jurnal Manajemen *Branchmark* ISSN : 2407-8239.

[15]  Dewi, dkk, 2015, Pengaruh LDR, LAR, DER dan CR Terhadap ROA. Jurnal, Singaraja, Universitas Pendidikan Ganesha.

[16]  Kasmir, 2012, *Analisis Laporan Keuangan*.Penerbit : Rajawali Pers, Jakarta.