



# **THE EFFECTS OF CREDIT RISK, OPERATIONAL RISK AND LIQUIDITY RISK ON THE FINANCIAL PERFORMANCE OF BANKS LISTED IN INDONESIAN STOCK EXCHANGE**

**Roni John Martin Simamora** 

Graduate Program of Universitas Gunadarma, Jakarta, Indonesia

ronijohnmartin@yahoo.co.id

**Teddy Oswari**

Graduate Program of Universitas Gunadarma, Jakarta, Indonesia

teddyoswari@yahoo.com

## **Abstract**

*The purpose of the present study was to determine the effects of credit risk, operational risk and liquidity risk on the financial performance of banks listed in Indonesian stock exchange in 2009-2017 period. The population in the present study was banking companies listed in Indonesian Stock Exchange in 2009-2017. The number of samples being used was 5 samples collected by purposive sampling technique. The research method was quantitative method with associative approach and the analysis technique was multiple linear regression. The research result showed that credit risk had no effect on financial performance. Operational risk had significant negative effect on financial performance. Liquidity risk had significant negative effect on financial performance.*

*Keywords: Credit risk, operational risk, liquidity risk, financial performance, Indonesian Stock Exchange*



## INTRODUCTION

Good and improving financial situation from year to year is expected by every company in order to achieve the main goal of earning maximum profit. Good and improving financial performance reflects a company's success in managing its business activities. However, it's not easy to have good and improving financial performance, especially since industrial revolution 4.0 requires various effective strategies and policies.

Industrial revolution 4.0 or also known as the digital era or information and communication technology heightens competition among similar businesses. The banking industry in Indonesia is also impacted by industrial revolution 4.0 which requires the banking industry to adapt with information and communication technology. Basically, in growing its business, the banking industry has utilized information and communication technology, e.g. ATM, online transaction, mobile application, etc..

Similarly, the media states that technology usage is common in banking. Machines and robots are considered more efficient and faster in serving customers who don't like going to branch offices. Today, many customers no longer have to go to branch offices to make transaction. They can use gadgets, from laptop to cell phone (Laucereno, finance.detik.com, 2019).

Financial performance is an analysis conducted to see how far a company has performed using financial implementation regulations appropriately and correctly (Fahmi, 2013:2). Bank financial performance can be assessed from the financial report which is released periodically which illustrates a company's financial position. The information contained in a financial report is used by the stakeholders.

Bank is a business entity which collects fund from the society in the form of saving and distributing it to the society in the form of credit or other forms to improve the quality of life of the general public (Law of the Republic of Indonesia Number 10 of 1998 on Banking). According to Kasmir (2015:3), bank is defined as a financial institution whose main activity is collecting fund from the society and redistributing the fund to the society, as well as providing other banking services.

In its business activities, banks can't avoid risks. Banking business activities are always connected to various types of risks. Risk is level of uncertainty on income which is expected to be earned. The higher the uncertainty on the earning of a bank, the bigger the risk faced and the higher the expected risk premium or interest. Risk is faced by the banking business sector as a form of various decisions in various fields, e.g. credit distribution, credit card issuance, foreign exchange, payment and other financial decisions.

Well-managed risk will have positive impact on the survival of a bank, but if the risk isn't managed properly, it will have negative impact on the survival of the bank, i.e. the bank will be bankrupt. In other word, risk is an opportunity where if it's managed well, it will produce big profit, thus improving financial performance. In the present study, bank's financial performance is affected by bank risks which are measured by credit risk, operational risk and liquidity risk.

Credit risk is risk due to another party's failure in fulfilling their obligation to Bank, including credit risk due to debtor's failure, credit concentration risk, counterparty credit risk, and settlement risk (Circular of the Financial Service Authority No. 14/SEOJK.03/2017). Meanwhile, Abdulkadir (2010:299) states that credit risk is risk due to customer's inability to return the loan to receive from bank and its interest in accordance with the set or scheduled period.

Credit risk generally exists in all bank activities whose performance depends on the performance of counterparty, issuer or borrower. Credit risk also could be caused by the provision of concentrated fund, e.g. in debtor, geographic region, product, payment type or certain business field. Credit risk in the present study was proxied by Non Performing Loan (NPL), which is a condition where customer is unable to pay part of or the whole obligation to the bank as promised (Kuncoro, 2011:462).

The results of the studies by Wood and McConney (2018), Poudel (2018), Olalekan et al (2018), Syafii (2016), Muriithi et al (2016), Noman et al (2015) state that credit risk measured by *Non-Performing Loan* (NPL) has negative impact on financial performance. Meanwhile, the results of the study by Badawi (2017), Capriani and Dana (2016), Sutrisno (2016) state that credit risk measured by Non-Performing Loan (NPL) doesn't affect financial performance.

H<sub>1</sub>: Credit risk has significant negative effect on financial performance.

Beside credit risk, operational risk could affect financial performance. Operational risk is risk due to inadequacy and/or non-functioning internal process, human error, system failure, and/or external event which affect bank's operation (Circular of the Financial Service Authority No. 14/SEOJK.03/2017). Sources of operational risk include human resources, internal process, system and infrastructure, and external event. Operational risk in the present study was proxied by Ratio of Operational Cost to Operating Income (BOPO), which is a ratio used to measure bank's level of efficiency and ability to perform its operational activities (Taswan, 2010:63). In operational activities, beside bearing the interest which must be paid by fund owner, the bank must expend another cost called overhead cost or operating cost. The higher the operating cost, the smaller the bank profitability, so bank management must be able to control the operating cost (Sutrisno, 2016). This is consistent with the studies by Kansil et al (2017), Capriani and Dana (2016), Sutrisno (2016) which state that operational risk measured by BOPO negatively affects financial performance.

H<sub>2</sub>: Operational risk has significant negative effect on financial performance.

Another factor which could affect financial performance is liquidity risk. Liquidity risk is bank's inability to fulfill mature liabilities from cash flow funding course and/or high quality liquid asset which can be guaranteed, without disturbing the bank's financial activities and condition (Circular of the Financial Service Authority No. 14/SEOJK.03/2017).

The risk is also referred to as funding liquidity risk. Liquidity risk also could be caused by bank's inability to liquidate asset without being charged material discount due to lack of active market or severe market disruption. The risk is called market liquidity risk. The liquidity risk in the present study was proxied by Loan to Deposit Ratio (LDR), which is the ratio used to measure the composition of total credit given compared with total public fund and owner's equity used (Kasmir, 2014:225). This is consistent with the studies by Olalekan et al (2018), Capriani and Dana (2016), Syafii (2016), Rengasamy (2014) which state that liquidity risk measured by Loan to Deposit Ratio (LDR) has positive effect on financial performance. Meanwhile, the studies by Chowdhury and Zaman (2018), Badawi (2017), Kansil et al (2017), Salim dan Bilal (2016), Sutrisno (2016) state that liquidity risk measured by Loan to Deposit Ratio (LDR) has negative effect on financial performance.

H<sub>3</sub>: Liquidity risk has significant effect on financial performance.

The purpose of this study was to determine and analyze the effect of credit risk on the financial performance of banks listed in Indonesian Stock Exchange, the effect of operational risk on the financial performance of banks listed in Indonesian Stock Exchange, the effect of liquidity risk on the financial performance of banks listed in Indonesian Stock Exchange and the effect of credit risk, operational risk and liquidity risk simultaneously on the financial performance of banks listed in Indonesian Stock Exchange.

## RESEARCH METHOD

Research design is general overview of research to be performed by researcher. Research design plans steps to be taken by researcher to collect accurate data and information to reach research purpose. Research design serves as a roadmap for researcher to avoid inconsistency in performing research process, Indrawan and Yaniawati (2014:30). The research method used in the present study was quantitative method with associative approach. The present study analyzed the effects of credit risk proxied by Non Performing Loan (NPL), operational risk proxied by Ratio of Operational Cost to Operating Income (BOPO) and liquidity risk proxied by Loan to Deposit Ratio (LDR) on financial performance proxied by Return On Asset (ROA). The research population was 43 banking companies listed in Indonesian Stock Exchange in 2009 - 2017. The sampling technique in the present study was purposive judgment sampling method.

In the present study, the sample was 5 banking companies in BEI in 2009 - 2017 period. The sampling determination method was purposive sampling technique which is sampling technique by collecting subjects not based on strata, random or region, but based on certain purpose (Arikunto, 2012). The data in the present study was secondary data based on financial reports of companies in the banking sub-sector in 2009 – 2017 which was obtained from Indonesian Stock Exchange via [www.idx.co.id](http://www.idx.co.id). The present study used the tool of statistical software Eviews 9.0. The present study used multiple linear regression to examine the effects using dependent variable, i.e. financial performance, and independent variables, i.e. credit risk, operational risk and liquidity risk.

## RESULTS AND DISCUSSION

Descriptive statistic of the research data was used to determine the characteristics of credit risk ( $X_1$ ), operational risk ( $X_2$ ), liquidity risk ( $X_3$ ) and financial performance ( $Y$ ). The data used in the present study was actual data obtained from financial reports and annual reports.

Table 1. Descriptive Statistics (*Eviews Processing*)

	ROA	NPL	BOPO	LDR
Mean	1.765111	0.824667	8.413333	9.030222
Median	1.840000	0.710000	8.350000	9.060000
Maximum	2.280000	1.450000	9.870000	9.970000
Minimum	0.710000	0.320000	7.660000	7.090000
Std. Dev.	0.313743	0.305180	0.509576	0.609204
Skewness	-1.150583	0.459863	0.792963	-0.854038
Kurtosis	4.819192	2.198810	3.219778	3.983804
Jarque-Bera	16.13405	2.789629	4.806492	7.285111
Probability	0.000314	0.247879	0.090424	0.026185
Sum	79.43000	37.11000	378.6000	406.3600
Sum Sq. Dev.	4.331124	4.097920	11.42540	16.32970
Observations	45	45	45	45

Based on table 1, the mean of financial performance measured by Return On Asset (ROA) is 1.77 with minimum value of 0.71 and maximum value of 2.28. Mean of 1.77 is quite high, showing that the ROA of banking companies listed in BEI was quite stable.

The mean of credit risk measured by Non Performing Loan (NPL) is 0.82 with minimum value of 0.32 and maximum value of 1.450. Mean of 0,82 is moderate, showing that NPL in

banking companies listed in BEI was quite stable and categorized as healthy bank consistent with the Circular of BI No.6/23/DPNP that  $NPL \leq 5\%$ .

The mean of operational risk measured by BOPO is 8.41 with minimum value of 7.66 and maximum value of 9.87. Mean of 8.41 is relatively high, showing that BOPO in banking companies listed in BEI was stable and categorized as healthy bank consistent with the Circular of BI No.6/23/DPNP that BOPO in the range of 76-93%.

The mean of liquidity risk measured by Loan to Deposit Ratio (LDR) is 9.03 with minimum value of 7.09 and maximum value of 9.97. Mean of 9.03 is relatively high, showing that LDR obtained by banking companies listed in BEI is quite stable and the range of LDR was below the maximum limit allowed by the government which is 110%.

Standard deviation of financial performance (ROA) is 0.31, credit risk (NPL) is 0.31, operational risk (BOPO) is 0.51, and liquidity risk (LDR) is 0.61. The smaller the standard deviation, the more homogenous the data. Therefore, data with smaller standard deviation is more accurate and shows data which approaches normality.

In Eviews, the normality of a data can be determined by comparing Jarque-Bera value (JB) and *Chi Square* value of table. JB test is obtained from normality histogram.

The hypotheses are:

$H_0$  : Normally distributed data

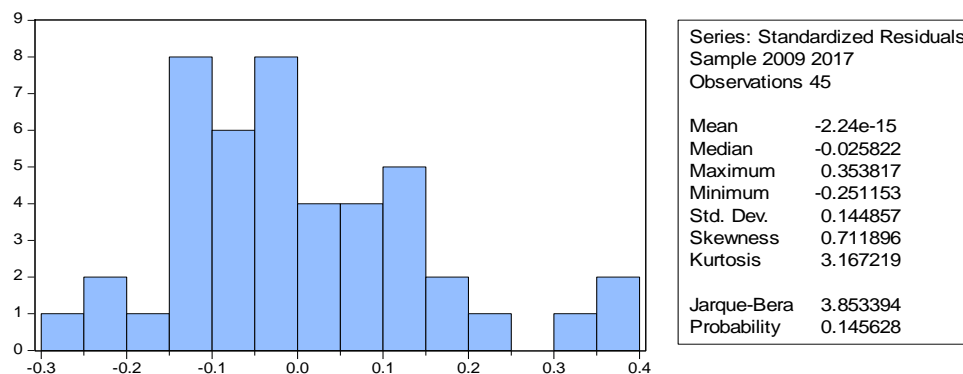
$H_1$  : Abnormally distributed data

If JB count > *Chi Square* table, then  $H_0$  is rejected

If JB count < *Chi Square* table, then  $H_0$  is accepted

Data normality test using Eviews is presented in the figure below.

Table 2. Data Normality



Based on table 2, Jarque Bera (JB) value is 3.85 and *Chi-Square* table value can be seen from 3 independent variables with level of significance of 0.05, so *Chi-Square* table obtained by excel

calculation  $CHIINV(0,05,3) = 7.82$ , meaning JB value  $< Chi-Square$  ( $3.85 < 7.82$ ) so it's concluded that the data in the present study was normally distributed.

Heteroscedacity classical assumption test was performed on the model to determine whether in the regression model there in any variance difference from the residual of one observation to another. Good regression model is homoscedacity or not having heteroscedacity. Based on the research result, the residual didn't form any particular pattern or in other word tended to be constant. It meant that the data used on the study didn't have heteroscedacity.

Multicollinearity test aims to determine any collinear relation between independent variables. Therefore, good multiple regression equation is equation free from multicollinearity between the independent variables. Multicollinearity can be determined from the correlation value between tested independent variables  $< 0,9$  (Hair, 2010). Based on the research result, all correlations between independent variables don't have correlation values above 0.9, meaning that the data used in the present study was free from multicollinearity.

Chow test which produces F stat probability value smaller than  $\alpha = 0.05$ , showing that Fixed Effect Model was significant in testing panel data, and vice versa. The selection of panel data method for the entire data sample using Chow test is as follows:

Table 3. Chow Test

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	17.603223	(4,37)	0.0000
Cross-section Chi-square	47.959303	4	0.0000

Hypotheses of Chow test:

$H_0$  : Common Effect Model or Pooled Least Square

$H_1$  : Fixed Effect Model

Based on table 3, the probability values of *cross-section* F and *cross-section* Chi-square are 0.000 smaller than Alpha 0.05, so  $H_0$  was rejected. It meant the result of Chow test supported the assumption that all data samples should use Fixed Effect Model. Because the result of Chow test showed that the best model was Fixed Effect Model, Hausman test was then performed to choose between Fixed Effect Model and Random Effect Model. The following is the result of Hausman test of all data:

Table 4. Hausman Test

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.420407	3	0.4898

Hypotheses of Hausman test:

$H_0$  : Random Effect Model

$H_1$  : Fixed Effect Model

Based on table 4, the result of Hausman test showed that the value of chi-square was insignificant using cross-section random effect. It meant there was no correlation between residual random effects and one of the explanatory variables, as the probability value is  $0.4898 > 0.05$  so that Random Effect Model should be used to estimate the whole data samples. The selected Random Effect Model method was cross-section random effect or period fixed effect, depending on which model could explain better.

The result of Chow test showed that the best model to be used was Fixed Effect Model, while the result of the Hausman test showed that the best model to be used was Random Effect Model. To confirm the best mode, Lagrange Multiplier (LM) test was performed to determine whether Random Effect model or Common Effect model (OLS) was most appropriate. The following was the result of Lagrange Multiplier (LM) test.

Table 5. Lagrange Multiplier (LM) Test

Lagrange Multiplier Tests for Random Effects			
Null hypotheses: No effects			
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives			
	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	45.44348 (0.0000)	0.262883 (0.6081)	45.70637 (0.0000)
Honda	6.741178 (0.0000)	-0.512721 --	4.404184 (0.0000)
King-Wu	6.741178 (0.0000)	-0.512721 --	5.208129 (0.0000)



Hypotheses of Lagrange Multiplier (LM) test:

$H_0$  : Fixed Effect Model

$H_1$  : Random Effect Model

Based on table 5, the result of Lagrange Multiplier (LM) test showed that Breusch-Pagan (BP) probability value is 0.0000. In accordance with the hypothesis, if BP Prob. < 0.05, then  $H_1$  is accepted, so the appropriate model was Random Effect Model (REM). Based on the results of Chow, Hausman and Lagrange Multiplier (LM) tests, the best model to use was REM.

Discussion on the results of regression estimation and hypothesis test was described based on the order of hypotheses. The result of regression estimation could be used to test hypotheses 1 – 3 presented in the table below.

Table 6. REM Regression Estimation Test

Dependent Variable: ROA				
Method: Panel EGLS (Cross-section random effects)				
Sample: 2009 2017    Periods included: 9    Cross-sections included: 5				
Total panel (balanced) observations: 45				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
NPL	-0.044395	0.106550	-0.416656	0.6791
BOPO	-0.544144	0.055476	-9.808627	0.0000
LDR	-0.069154	0.033452	-2.067297	0.0451
C	7.004267	0.586011	11.95244	0.0000
Effects Specification			S.D.	Rho
Cross-section random			0.158360	0.7447
Idiosyncratic random			0.092713	0.2553
Weighted Statistics				
R-squared	0.799404	Mean dependent var	0.338086	
Adjusted R-squared	0.784726	S.D. dependent var	0.198404	
S.E. of regression	0.092055	Sum squared resid	0.347439	
F-statistic	54.46348	Durbin-Watson stat	1.106673	
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.746568	Mean dependent var	1.765111	
Sum squared resid	1.097645	Durbin-Watson stat	0.350297	

The number of independent variables in the present study was more than 2, so Adjusted  $R^2$  value was used. Adjusted  $R^2$  value which approaches +1 means a model is better in explaining variation in dependent variable. In other words, variation in independent variable can explain variation in dependent variable. The criterion on Adjusted  $R^2$  which can explain dependent variable variation based on independent variable variation is  $> 0.50$  (50%). Based on the calculation result, Adjusted  $R^2$  value (0.785) is above 0.50 therefore +1, in which the closer to +1, the better the model in explaining the relationship between dependent and independent variables. Simultaneous test by examining the values of F statistic and F statistic probability was performed to test all regression parameters produced by model (not including constant).  $F_{\text{statistic}}$  value in table 6 is 54.463 with probability of  $0.0000 < \alpha = 0.05$ , so there was enough evidence to reject  $H_0$  in simultaneous test. With 95% level of confidence, data supported statistical evidence that all independent variables, credit risk (NPL), operational risk (BOPO) and liquidity risk (LDR) simultaneously affected financial performance (ROA).

Based on the result of test using random effect, credit risk (NPL) had p-value  $0.679 > \alpha = 0.05$  with  $t_{\text{statistic}}$  of -0.417, meaning there was no significant effect of credit risk (NPL) on financial performance (ROA). Bank management must maintain the level of Non-Performing Loan (NPL) to not exceed the standard set by the government. The level of Non-Performing Loan (NPL) can affect the level of bank's financial performance. In the present study, credit risk (NPL) didn't significantly affect bank's financial performance. It could be because the levels of Non-Performing Loan (NPL) of the five banks being studied were small, no more than 5% and the mean was less than 3%. The research result supported the studies by Badawi (2017), Capriani and Dana (2016), Sutrisno (2016) which state that credit risk measured by Non-Performing Loan (NPL) didn't affect financial performance.

Based on test result using random effect, operational risk (BOPO) has p-value probability of  $0.000 < \alpha = 0.05$  with  $t_{\text{statistic}}$  value of -9.809, meaning there was significant negative effect of operational risk (BOPO) on financial performance (ROA). The higher the operating cost, the smaller the bank profitability, so bank management must be able to control the operating cost (Sutrisno, 2016). The bigger the BOPO ratio, the more inefficient the bank. Every increase of operating cost will reduce profit before tax which eventually reduces the profit of the bank. The level of BOPO ratio can affect bank's financial performance. The research result supported the studies by Kansil et al (2017), Capriani and Dana (2016), Sutrisno (2016) which state that operational cost measured by BOPO had negative effect of financial performance.

Based on the result of test using random effect, liquidity risk (LDR) has p-value probability of  $0.0451 < \alpha = 0.05$  with  $t_{\text{statistic}}$  value of -2.067, meaning there was significant

negative effect of liquidity risk (LDR) on financial performance (ROA). The higher the LDR, the higher the fund distributed to third party. The higher the ratio, the lower the bank's ability to liquidate. It's because the amount of fund required to finance credit becomes bigger (a bank loans its entire fund (loan-up)). Conversely, lower LDR shows bank's ineffectiveness in distributing credit. The level of LDR can affect financial performance. The research result supported the studies by Chowdhury and Zaman (2018), Badawi (2017), Kansil et al (2017), Salim and Bilal (2016), Sutrisno (2016), Noman et al (2015), which state that liquidity risk (LDR) has significant negative effect on financial performance.

Based on the result of simultaneous test, the value of  $F_{\text{statistic}}$  is 54.463 with probability of  $0.0000 < \alpha = 0.05$ , proving that all independent variables, credit risk (NPL), operational risk (BOPO) and liquidity risk (LDR) simultaneously affected financial performance (ROA). The risks faced by the banking sector are results of various decisions made in various fields, e.g. credit distribution, credit card issuance, foreign exchange, payment and other financial decisions. Well-managed risk will have positive impact on the survival of a bank, but if the risk isn't managed property, it will have negative impact on the survival of the bank, i.e. the bank will be bankrupt. In other word, risk is an opportunity where if it's managed well, it will produce big profit. Bank risks consist of credit risk (NPL), operational risk (BOPO) and liquidity risk (LDR) which if managed well will simultaneously affect financial performance (ROA).

## CONCLUSION AND SUGGESTIONS

Based on analysis and discussion, it's concluded that credit risk didn't have significant effect on financial performance. Increased credit risk might not lead to reduced or increased financial performance because it was relatively small. Operational risk had significant negative effect on financial performance. Reduced operational risk of bank could improve the bank's ability to earn profit. Liquidity risk had significant negative effect on financial performance. The lower the credit distributed by bank, the lower the financial performance of the bank.

Based on the conclusion, banking companies are suggested to be more careful in managing and distributing credit and maintaining value below 5% to improve financial performance. Operating cost should be better managed so that the expense is lower than operating income. Credit distribution should be increased to earn more profit. Banking companies are also suggested to manage bank risks well to earn profit. Other researchers are expected to add other variables which could affect financial performance and expand the research object to have more optimal research result in the future.

## REFERENCES

- Abdulkadir, Muhammad, 2010, Hukum Perusahaan Indonesia, PT Citra Aditya Bakti, Bandung, 2010, hlm. 299.
- Badawi, Ahmad. 2017. Effect of Credit Risk, Liquidity Risk, and Market Risk Banking to Profitability Bank (Study on Devised Banks in Indonesia Stock Exchange). *European Journal of Business and Management* Vol.9, No.29.
- Capriani, Ni Wayan Wita dan I Made Dana. 2016. Pengaruh Risiko Kredit, Risiko Operasional dan Risiko Likuiditas Terhadap Profitabilitas BPR di Kota Denpasar. *E-Jurnal Manajemen Unud*, Vol. 5, No. 3.
- Chowdhury, Md. Mohiuddin dan Shafir Zaman. 2018. Effect of Liquidity Risk on Performance of Islamic banks in Bangladesh. *IOSR Journal of Economics and Finance (IOSR-JEF)*. Volume 9, Issue 4 Ver. I, PP 01-09.
- Irham Fahmi. 2013. Analisis Laporan Keuangan. Bandung: Alfabeta.
- Kansil, D., Sri Murni dan Joy E. Tulung. 2017. Pengaruh Risiko Perbankan Terhadap Kinerja Keuangan Tahun 2013-2015 (Bank Pembangunan Daerah Se-Indonesia). *Jurnal EMBA* Vol.5 No.3, Hal. 3508-3517.
- Kasmir, 2014. Analisis Laporan Keuangan, Cetakan Ketujuh, Edisi Revisi, Jakarta: PT Raja Grafindo Persada.
- Kasmir, 2015. Bank dan Lembaga Keuangan Lainnya, Cetakan Keenambelas, Edisi Revisi, Jakarta: PT Raja Grafindo Persada.
- Kuncoro, Mudrajad dan Suhardjono. 2011. Manajemen Perbankan. Yogyakarta: BPFE.
- Laucereno, Sylke Febrina. 2019. Bank Disebut Beralih ke Robot, BNI: Tetap Banyak Pakai Manusia. Diakses dari <https://finance.detik.com/moneter/d-4397477/bank-disebut-beralih-ke-robot-bni-tetap-banyak-pakai-manusia>, Maret 2019.
- Muriithi, J. Gathigia, Kennedy M., dan Willy Mwangi M. 2016. Effect of Credit Risk on Financial Performance of Commercial Banks Kenya. *IOSR Journal of Economics and Finance (IOSR-JEF)*.Volume 7, Issue 4. Ver. I, PP 72-83.
- Noman, Abu H.Md., Sajeda P, Mustafa M.C. dan Hasanul B. 2015. The Effect of Credit Risk on the Banking Profitability: A Case on Bangladesh. *Global Journal of Management and Business Research: C Finance*. Vol. 15 Iss. 3.
- Olalekan, Lasisi I, Mustapha L. Olumide dan Irom M. Irom. 2018. Financial Risk Management and the Profitability: An Empirical Evidence From Commercial Banks in Nigeria. *Journal of Management Sciences*. Vol.16, No.2,, University of Maiduguri.
- Poudel, Shiva Raj. 2018. Impact of credit risk on profitability of commercial banks in Nepal. *Journal of Applied and Advanced Research*, 3(6) 161-170.
- Rengasamy, Dhanuskodi. 2014. Impact of Loan Deposit Ratio (LDR) on Profitability: Panel Evidence from Commercial Banks in Malaysia. *Proceedings of the Third International Conference on Global Business, Economics, Finance and Social Sciences (GB14Mumbai Conference)* Mumbai, India. 19-21 December 2014.
- Republik Indonesia. 2017. Surat Edaran Otoritas Jasa Keuangan No. 14/SEOJK.03/2017 tentang Penilaian Tingkat Kesehatan Bank Umum.
- Republik Indonesia. Undang-undang Republik Indonesia No. 10 tahun 1998 tentang Perbankan.
- Salim, Badreldin F. dan Zaroug O. Bilal. 2016. The Impact Of Liquidity Management On Financial Performance In Omani Banking Sector. *IJABER*, Vol. 14, No. 1. Pp. 545-565.
- Sutrisno. 2016. Risiko, Efisiensi dan Kinerja Pada Bank Konvensional di Indonesia. *Jurnal Ilmiah Akuntansi dan Bisnis*, Vol. 11, No. 2.
- Syafi'i, M. Fahrul Rozi dan Ellen Rusliati. 2016. Credit Risk, Market Risk, Operational Risk and Liquidity Risk on Profitability of Banks in Indonesia. *Trikonomika* Volume 15, No. 2, Page. 78-88.
- Taswan. 2010. Manajemen Perbankan, Konsep, Teknik, dan Aplikasi. Edisi Kedua. Yogyakarta : UPP STIM YKPN.
- Wood, Anthony dan Shanise McConney. 2018. The Impact of Risk Factors on the Financial Performance of the Commercial Banking Sector In Barbados. *Journal of Governance and Regulation*. Vol. 7, Iss 1.