

# The Mediating Role of Efficiency Factors in Determining Bank Financial Performance in Indonesia

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**Abstract:- This research aims to analyze the mediating role of efficiency factors in determining bank financial performance in Indonesia. The samples are taken using purposive sampling method and data analysis of this research are quantitative using descriptive and statistical inference, and SPSS. The statistical inference used is the structural equation model using the Wrap PLS version 06 software. The findings of this research are: 1) the efficiency factors mediate the correlation between adversely classified assets and financial performance, 2) the efficiency factors mediate the correlation between net interest margin and financial performance, and 3) the efficiency factors mediate the correlation between non-performing loans and financial performance.**

**Keywords:-** *Adversely classified assets, Net Interest Margin, Non-Performing Loans, Efficiency Factors, Financial Performance, Wrap PLS.*

## I. INTRODUCTION

The economic crisis that hit Indonesia in the past few years has also affected the Indonesian Banking. A number of banks experienced liquidation but other banks could survive even expanded rapidly after the crisis. Starting from the 1998 economic crisis, there have been many banks in Indonesia were forced to disband because they could no longer operate. In the period of global financial crisis in 2008, although Indonesian banks faced difficulties in their operational activities, they could survive. The survival of a bank in facing economic and financial crisis is because of the level of bank health as measured by the bank financial performance.

Unlike the 2008 global financial crisis period, the number of conventional commercial banks (CB) in Indonesia faced difficulties and experienced a decline in their performance even though they were liquidated. However, Islamic banking could still survive from the global financial crisis. In contrast to CB which experienced difficulties during the 2008 financial crisis, Islamic commercial banks (IB) are more protected. Willison and Yılmaz (2009) state that the 2008 financial crisis caused difficulties in many CB throughout the world. IB, on the other hand, are mostly protected from the crisis.

Banks which are capable to survive in an economic crisis is due to their financial performance. Several previous researches were done addressing financial performance, such as Paul et al.'s (2013) research that evaluated profitability and liquidity. Hardianto (2016) also examined the comparison of mediation level, fee service activities and leverage of CB and IB in Indonesia in 2011-2013. The findings of this study revealed that the efficiency level of IB was higher than CB. Yahya et al. (2012), examined different efficiency factors between Islamic and conventional banking in Malaysia using data envelopment analysis and the results showed no significant difference existed.

Johnes et al. (2012) investigated the efficiency of IB and CB in the Gulf Cooperation Council (GCC) (2004-2007) using financial ratio analysis (FRA) and data envelopment (DEA) analysis. FRA showed that IB were less efficient in cost and more efficient in income and profits than CB. The results of the DEA decision provide evidence that difference of gross efficiency is high, on average, between CB and IB. Further, technical efficiency is one important difference for both types of banks.

Meanwhile, Ahmad and Abdul (2012) tested the effectiveness of Islamic Trading Bank (IB) and CB in Malaysia from 2003-2007 using DEA analysis. This finding also reveal that CB can be more efficient than IB in management and technological improvement.

According to Rivai (2010), the financial performance of both IB and CB is always measured through CAMEL, namely the capital adequacy ratio (CAR), management, equity, and liquidity ratios even though the two types of banks have different principles.

Based on the above problems, bank financial performance is very essential and thus this research is expected to be able to explain the factors that determine bank financial performance in Indonesia as well. Numerous empirical studies on bank financial performance have been carried out by previous authors, but there are still differences in the results. This encourages the researchers to review financial performance indicators that can be used to measure bank financial performance in Indonesia using the indicators previously examined in past studies. This research also attempts to expand previous research, not only by

investigating bank financial performance indicators, but also by studying the mediating role of efficiency factors in determining bank financial performance using different indicators from previous studies. The bank financial performance indicators used in this research are earning asset quality (represented by adversely classified assets), net interest margin, non-performing loans and efficiency factors in the observation period from 2007 to 2016.

In general, the purpose of this study is to analyze the effect of financial performance indicators on bank financial performance mediated with efficiency factors in both CB and IB.

## II. DEVELOPMENT OF HYPOTHESES

According to Gitman (2012), financial performance is the annual report of a public company provided to shareholders; summarizing and documenting the company's financial activities during the last one year. Kasmir (2014) adds that financial performance is a report that shows a company's current financial condition or the financial condition in a certain period.

Financial management theories provide various indexes to measure bank financial performance. One of them is by analyzing financial ratios. According to Robbins (2007), company financial performance is very important for many different groups and individuals. In banking industry, measuring bank performance is necessary since banks' main business is making money and profits and thus they are easily affected by such changes as interest rates and exchange rate factors. Improving bank financial performance needs numerous factors, one of which is the efficiency factor. According to Veithzal (2013), efficiency ratio is the ratio used to measure the level of efficiency and ability of a bank in carrying out its operations. Therefore, to analyze the effect of financial performance indicators on bank financial performance mediated with efficiency factors in both CB and IB, several hypotheses are developed as follows:

### A. *The Correlation of Adversely Classified Assets, Efficiency Factors and Financial Performance*

When the number of adversely classified assets increases, it shows large number of assets are substandard and loss, and the less optimal use of productive assets in the management of bank's productive assets. This can be interpreted that banking performance in terms of handling productive assets is not good. This will cause lower bank income and increase bank efficiency factors. If the bank's efficiency factors increase, this means that bank managers have not yet managed maximally their productive assets that will decline return on assets and return on equity. In turns, this shows that the financial performance is also decreasing. In other words, the higher the adversely classified asset ratios, the efficiency factors get increasing. This will result in decreased bank financial performance, indicated by a decrease in return on assets and return on equity.

H1: the efficiency factors mediate the correlation between the adversely classified assets and financial performance

### B. *The Correlation of Net Interest Income, Efficiency Factors and Financial Performance*

Net interest income is strongly influenced by changes in interest rates and the earning asset quality. Banks need to be more careful in providing loans in order to maintain the earning asset quality because good quality of loans can increase net interest income and in turn increase bank profitability. If the income from the interest rate is higher than the interest payment to investors, the efficiency factors decrease. If the banks are able to reduce the efficiency factors by increasing profits from bank assets management, it will result in return on assets and return on equity, which means that the bank financial performance increases.

H2: The efficiency factors mediate the correlation between net interest income and financial performance

### C. *The Correlation of Non-performing loans, efficiency factors and financial performance*

Non-performing loans can show the ability of bank in managing non-performing loans provided by banks. Thus, the more non-performing loans, the quality of bank loans worse. In this case bank can be in an increasingly problematic situation. Meanwhile, bank efficiency factors are used to measure the level of bank efficiency. Smaller efficiency factors shows savings in the bank financial management. If the efficiency factors decrease, it means that expenditure is smaller. Banks become more efficient in managing bank assets to get more profits.

H3: the efficiency factors mediate the correlation between non-performing loans and financial performance

## III. METHOD

The research design used was analyzing cause and effect relationship. It relates to the relationship between events. Goodman et al. (2009) declare that the world consists of a collection of causal systems, in each which there is a set of observed causes and effects variables. The method used to study this causality was using PLS Wrap analysis.

This research employed all banks in Indonesia as the research population. Further, those that were chosen to be samples were the banks grouped on the basis of the operational activities consisting of conventional commercial banks (CB) and Islamic commercial banks (IB) during the period of observation (from 2007-2016) due to predetermined criteria. Besides, data analysis of this research was quantitative analysis.

The data analysis technique applied in this research was Partial Least Square (PLS). According to Ghazali (2014), PLS is a method of building a model that can be predicted when there are too many factors. The PLS approach is 'free distribution' (does not assume that certain data is spread, can be nominal, category, ordinal, interval

and ratio). The structural model of this research can be written as follows:

$$\eta_1 = \gamma_{11}\xi_1 + \gamma_{21}\xi_2 + \gamma_{31}\xi_3 + \zeta_1 \dots\dots\dots(1)$$

$$\eta_2 = \beta_{11}\eta_1 + \gamma_{12}\xi_1 + \gamma_{22}\xi_2 + \gamma_{32}\xi_3 + \dots\dots\dots(2)$$

Where  $\eta$  is the dependent variable consisting of financial performance  $\eta_1$ ,  $\xi_1$  is earning asset quality,  $\xi_2$  is net interest margin,  $\xi_3$  is non-performing loans, and  $\xi_4$  is efficiency factors as independent variable.  $\gamma$  is a coefficient path that connects independent and dependent predictors,  $\beta$  is the coefficient path that connects the tentative dependent predictor, while  $\zeta$  is an internal residual variable.

**IV. RESULT**

The total samples taken in this research were 31 banks with a 10-year observation year to obtain 310 data. Of the 310 data, there were several data found as ‘outliers’ and heteroskedastic after the test was done, thus they were eliminated. The final results of data to be processed were 178 data.

Based on the processing of Wrap PLS, 5 have been done, the results obtained are displayed in Figure 1.

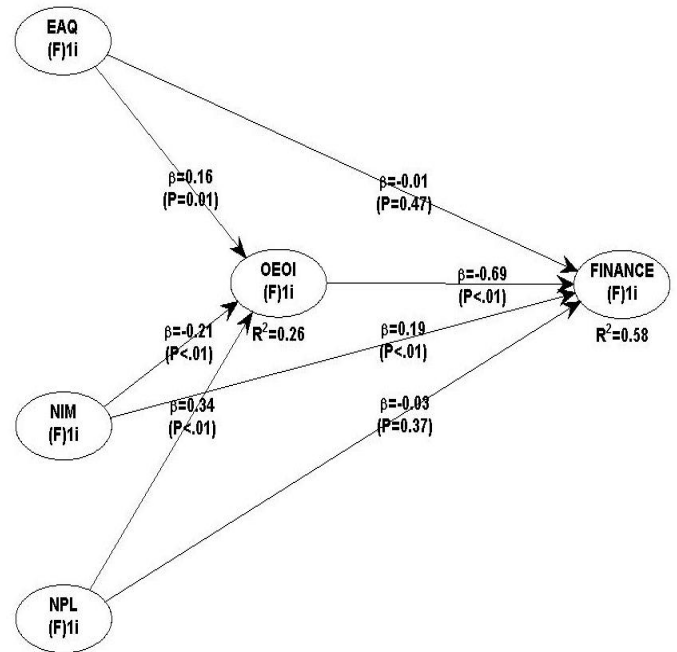


Fig 1:- Hypothesis Testing Results

Remarks:

- EAQ = The adversely classified assets
- NIM = Net Interest Margin
- NPL = Non-Performing Loan
- OEI = Operating Expense to Operating Income
- Finance = Financial Performance

➤ *The First Hypothesis Test Results*

The first hypothesis (H1) developed is that the efficiency factors mediates the correlation between adversely classified assets and financial performance. To prove this hypothesis, the researchers use the method of 'variance accounted for' (VAF), which is calculated from the 'path coefficient' value. The VAF calculation is presented in Table 1 as follows.

	Path Coef.	Effect Size	P-Value	Tentative conclusion
EAQ -> Efficiency factors -> Financial performance	-0.113	0.03	0.015	<b>Significant Mediation</b>

	A	B	C	axb - (1)	(1) + c - (2)	VAF = (1) / (2) X 100%	Conclusion
EAQ -> Efficiency factors -> Financial performance	0.164	-0.686	-0.173	-0.113	-0.286	39%	<b>Partial Mediation</b>

Table 1:- Calculation of 'Variance Accounted For' (VAF) – The Efficiency Factors Mediate the Correlation between Adversely Classified Assets and Financial Performance

Source : Processed Secondary Data, Wrap PLS Version 5. 0 (2018)

\* : Statistically significant at alpha level 5% (α: 0.05)

Based on the results of VAF calculation as shown in Table 1 above, it is found that the first hypothesis (H1) is supported statistically. This can be seen from the correlation between adversely classified assets and efficiency factors with the values of (0.015) and 'path coefficient' (-0.113), and VAF is 39% (20% <39% <80%), meaning that it is 'partial mediation'. Thus, the efficiency factors mediate the correlation between adversely classified assets and financial performance. Increased adversely classified assets shows that there are a number of issues such as substandard and loss, which indicates poor operational activities of bank. Besides, adversely classified assets mean that the banking management will face obstacles since their productive assets cannot be used in

banking operations. Ultimately, this will cause lower bank income and result in high bank efficiency factors. Increased bank efficiency factors indicate that banks are poor at managing their productive assets, and result in a decline in their financial performance.

➤ *The Second Hypothesis Test Results*

The second hypothesis is that the efficiency factors mediate the correlation between net interest margin and financial performance. To prove this hypothesis, the researchers use the method of VAF, which is calculated from the 'path coefficient' value. VAF calculation is presented in Table 2 as follows:

	Path Coef.	Effect Size	P-Value	Tentative conclusion
NIM -> Efficiency factors -> Financial performance	0.147	0.056	0.002	<b>Significant Mediation</b>

	A	B	C	axb - (1)	(1) + c - (2)	$\frac{VAF = (1)}{(2) \times 100\%}$	Conclusion
NIM -> Efficiency factors -> Financial performance	-0.214	-0.686	0.406	0.147	0.553	27%	<b>Partial Mediation</b>

Table 2:- Calculation of ' Variance Accounted For' (VAF) - Efficiency Factors Mediate the Correlation between Net Interest Margin and Financial Performance

Source : Processed Secondary Data, Wrap PLS Version 5 .0 (2018)

\* : Statistically significant at alpha level 5% (α: 0.05)

The results of VAF calculation in Table 2 show that the second hypothesis (H2) is supported statistically. It can be seen from the correlation between net interest margin and efficiency factors is significant (0002) with the 'path coefficient' value of (0147), the VAF is approximately 27% (20% <27%), indicating partial mediation.

impact in measuring the efficiency and capability of the banks in managing their operational activities. The application of good risk management in the bank management can illustrate that the banks have reduced their operating costs that make them able to increase the company's revenue.

The efficiency factors mediate the correlation between net interest margin and financial performance. This means that the quality of credit managed by the banks is accumulated in a good group, and it can increase net interest income then ultimately affects the profitability of the banks. If the income from the interest rate is higher than the interest payment to investors, the efficiency factors decrease. If the banks manage to reduce the efficiency factors by increasing profits from managing bank assets, it results in a return on equity, meaning that the financial performance of banks increases.

The efficiency factors mediate the correlation between non-performing loans and financial performance. This occurs because the costs are smaller that causes the banks are more efficient in managing bank assets to get more profits. Bank income comes from bank credit interest. Thus, if there is a non-performing loan, the income also decreases. This can make the bank financial performance unhealthy. If it continues for a long time then the banks will go bankrupt. In banking, efficiency factors also have a large

**V. CONCLUSIONS, LIMITATIONS AND SUGGESTIONS**

*A. Conclusion*

First of all, efficiency factors mediate the correlation between adversely classified assets and financial performance. When adversely classified assets elevate, such as inadequate, questionable or obsolete assets, this indicates that the bank operations are not good. A great number of adversely classified assets means poor banking management, thus there are a lot of productive assets will not be able to use in banking operations. This will result in lower income from the banks and increase bank efficiency. Increased bank efficiency factors indicate that the banks are not good at managing their productive asset causing them reducing their financial performance. To conclude, the higher the ratio of adversely classified assets, the higher is the efficiency factors. This will lead to a decrease in financial performance.

Second of all, the efficiency factors mediate the correlation between net interest margin and financial performance. This means that the quality of credit managed by the banks is accumulated in a good group, thus it can increase high interest income and finally affects the profitability of the banks. If the income from the interest rate is higher than the interest payment to investors, the efficiency factors decrease. If the banks manage to reduce the efficiency factors by increasing profits from bank asset management, it will elevate return on equity which also means that bank financial performance also elevate.

Third of all, the efficiency factors mediate the correlation between non-performing loans and financial performance. This happens because the costs are smaller and makes the banks tend to be more efficient in managing bank assets to gain more profit that results in increased profitability. Bank income comes from bank loan interest. If there is a non-performing loan, the income also decreases, and this can cause bank's financial performance less active. If this situation goes on in a long time, it is possible that the banks will be collapse. In banking, the efficiency factors also have a large impact in measuring the efficiency and capability of the banks in managing their operational activities. The implementation of good risk management in bank management can be an illustration that the banks have been able to carry out their competitiveness that they can reduce their operating costs, making it possible to increase company's revenue.

#### *B. Limitations*

This research only analyzes the financial performance of banks before and after the global economic crisis in the period of 2007-2016. The bank samples in this research are Islamic commercial banks (IB) and conventional commercial banks (CB) in Indonesia. This research uses secondary data obtained from the Indonesia Stock Exchange, the Financial Services Authority (OJK) and Bank Indonesia (BI) based in Jakarta. The data used is the financial data for the ten years of observation from 2007 to 2016. Further, this research only examined the financial performance of IB and CB during the years of observation quantitatively by analyzing the correlation among bank financial performance indicators such as adversely classified assets, net interest margin, non-performing loans and bank financial performance, mediated by bank efficiency factors.

#### *C. Suggestion*

Since this research only analyses quantitatively, it is not possible to further investigate differences in bank financial performance. Therefore, it is recommended for future research also involve qualitative analysis. Qualitative methods are expected to be able to find the most powerful financial performance indicators that affect financial performance and will also find other factors that affect bank financial performance and financial performance indicators as investigated in this research.

In this research, analysing bank financial performance is conducted using financial performance indicators, namely adversely classified assets, net interest margin, non-performing loans, efficiency factors and their correlation with bank financial performance. It is suggested for future studies to also analyse other financial performance indicators such as capital adequacy ratio, loans to deposit ratio, total asset income and others.

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