

# Islamic Banking: Banking Efficiency Analysis in Indonesia

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**Abstract:** Banking sector has an important role for the Indonesian economy. Indonesia implements the dual banking system, conventional banks and Islamic banks. It provides an excellent opportunity for the growth of Islamic banking industry in Indonesia. Islamic banking industry in Indonesia has improved in number of banks and branches but the performance of Islamic banks has decreased in recent years. In addition, Islamic banking still provides a lower rate of return than conventional banking. This study aims to measure the efficiency of Islamic banking in Indonesia using the intermediation approach and input orientation. The results showed that Islamic Banks (BUS) and Islamic Business Units (UUS) in Indonesia have not been operating efficiently based on Data Envelopment Analysis (DEA) method. The estimation results of data panel regression model showed total financing and CAR have positive and significant impact, whereas the deposits have negative and significant impact to the efficiency of BUS and UUS in Indonesia.

**Keywords:** Data panel, DEA, efficiency, Islamic banking

## 1. Introduction

In recent years, financial institutions have experienced a dynamic, fast-paced, and competitive environment at a cross-border scale. One of the most growing parts is the new paradigm of Islamic Banking, which has remarkably captured the interest of both Islamic and contemporary economists (Sufian 2007). Islamic bank is a bank that is operational and its products are developed based on the principles of Al-Qur'an and Al-Hadits. According to Antonio (2011), Islamic banks are banks that carry out operations following the provisions of Islamic rules.

Islamic banking in Indonesia has experienced growth in institutional terms. Increasing the number of banks and offices over the years have a positive impact on the development of Islamic banking industry. It can be seen from the value of total assets, third party funds, and financing increased during the last three years. This can be seen on Table 1.

**Table 1:** Development financial indicators of BUS and UUS 2013-2015

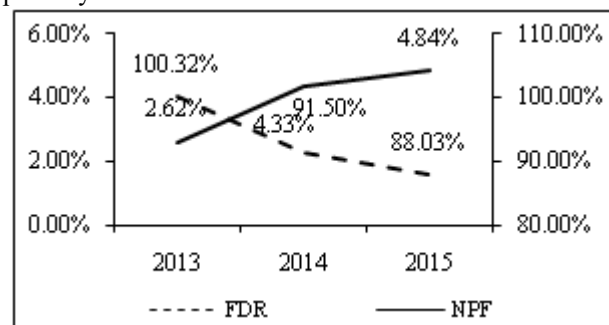
Indicator (billion)	2013	2014	2015
Total Asset	242 276	272 343	296 262
Third party funds	183 534	217 858	231 175
Financing	184 120	199 330	212 996

Source: Otoritas Jasa Keuangan, 2016

Islamic Banks (BUS) and Islamic Business Units (UUS) performance can also be seen through some financial ratios such as Non Performing Financing (NPF) and Financing Deposit Ratio (FDR). Over the past three years, BUS and UUS had a decreasing performance. It can be seen from the increasing of NPF and decreasing of FDR.

NPF ratio improved explaining that Islamic banking is getting bigger in banking financing risks. This is due to the increasing of financing problems on BUS and UUS. The ability of banks intermediary function was seen from the ratio of FDR. Declining of FDR implies financing that channeled by Islamic banks has decreased. It indicates the

performance of Islamic banking is still not running optimally.



**Figure 1:** Performance of BUS and UUS 2013-2015

Source: Otoritas Jasa Keuangan, 2016

Islamic banks as a financial institution need to maintain its performance in order to operate optimally. The efficiency of the banks became one of the indicators to analyze the performance of a bank. According to Wheelock and Wilson (1999), efficiency is an important measure of operating conditions of the bank and one of the key indicators of bank successful.

Ratings of bank efficiency is needed so that banks can act rationally in minimizing the level of risk in undergoing operations. It is necessary for Islamic banks in order to have high competitiveness in the national banking industry and be able to expand its market share. Along with that, Muharram and Puvitasari (2007) explains that the analysis of the efficiency of Islamic banks is important to do because the collection and distribution of expansive financing regardless of the efficiency factor will affect the profitability of a bank.

Efficiency issues should receive serious consideration to encourage the development of Islamic banking industry and existence of Islamic banks. The majority of studies focused only on efficiency measurement, while research continues to analyze factors that affect the performance efficiency is still relatively limited (Berger and Humphrey 1997), especially for Islamic banking. Until now, no study has focused on determinants efficiency of Islamic banking using

intermediation approach and input orientation with 25 sample object of research.

Based on the background described, the goal of this study is to:

- 1) Describe the conditions of BUS and UUS efficiency levels during Q2 2014-Q2 2016.
- 2) Analyze internal factor of BUS and UUS efficiency.

## 2. Data

The data used in this study are secondary data, in the form of quarterly reports of 10 Islamic Banks (BUS) and 15 Islamic Business Units (UUS) during period of Q2 2014 – Q2 2016. The data were obtained from internet, financial reports, and literature at various institutions.

Table 2 Types and sources of data

Data	Source	Literature
Size	Quarterly report	Zamil (2007), Jackson & Fethi (2000)
Deposits wadiah	Quarterly report	Widiarti (2015), Karimah (2016), Sufian dan Noor (2009)
Financing	Quarterly report	Hassan (2006), Widiarti (2015), Karimah (2016), Sufian dan Noor (2009)
CAR	Quarterly report	Zamil (2007), Jackson & Fethi (2000)
FDR	Quarterly report	Lutfiana dan Yulianto (2015)

## 3. Methodology

### Data Envelopment Analysis (DEA)

This study uses software tools MaxDEA with the intermediation approach and oriented input to calculate the level of efficiency. According to Hadad *et al.* (2003), intermediation approach describes the activity a banking institution with the function as an intermediary institution. This study will also use efficiency with input orientation because input is primary decision variable (Coelli *et al.* 1998).

In this study will also use variables wadiah saving, fixed assets, and labor costs as input variables and financing and operating income as output variables. In this study, the approach used is variable return to scale (VRS). The reason using VRS model is this study wanted to know the actual efficiency level (without any restriction).

### Panel data analysis

This study uses quantitative approach with panel data analysis. Panel data analysis is used to determine the internal's bank factors that affect bank efficiency. The level of efficiency have previously been obtained through DEA method. Here is the equation model of the factors that affect the level of efficiency.

$$EFF_{it} = \alpha + \beta_1 \ln SIZE_{it} + \beta_2 \ln Financing_{it} + \beta_3 \ln Swadiah_{it} + \beta_4 CAR_{it} + \beta_5 FDR_{it} + \varepsilon_{it}$$

Information:

EFF	= Efficiency
Size	= Total assets
Financing	= Financing
SWadiah	= Deposits wadiah
CAR	= Capital Adequacy Ratio
FDR	= Financing Deposit to Ratio
$\alpha$	= Intercept
$i$	= Cross Section of $i$ (1,2,...,n), time of $t$ (1,2,3,...,n)
$\varepsilon$	= Standard error or the error rate

## 4. Empirical Results

### The results of efficiency using DEA method

Achievement of the average level of efficiency in each Islamic bank, both BUS and UUS during the study period can be seen in Figure 2. There are six Islamic banks have perfect efficiency in average level during the study period, like BSM, Muamalat, Permata Syariah, BII Syariah, OCBC Syariah, and Yogya Syariah.

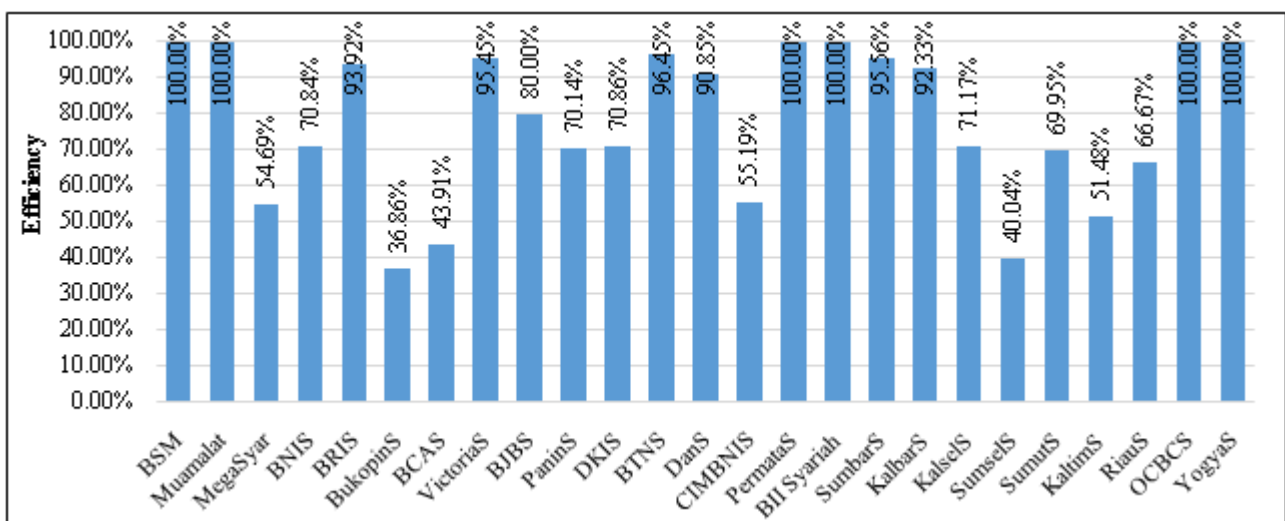


Figure 2: The average efficiency BUS and UUS Q2 2014 – Q2 2016

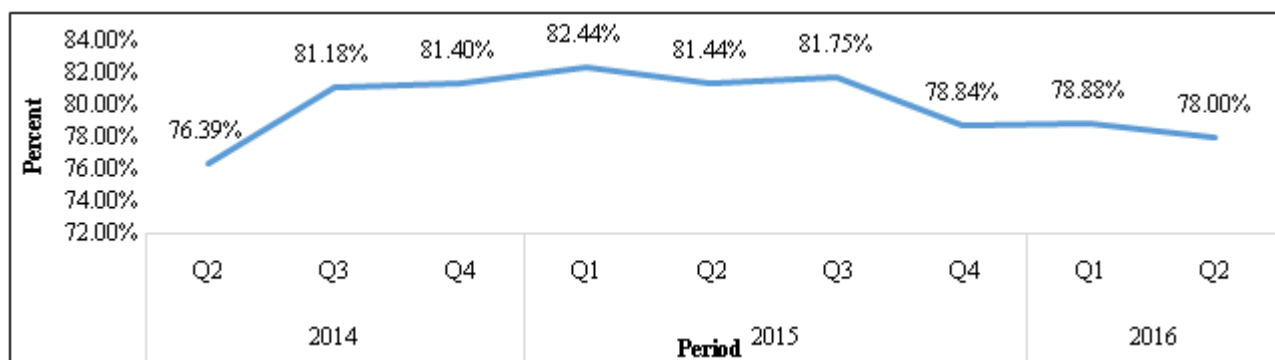
By measuring the input-oriented, there are three BUS like BNI Syariah, Mega Syariah, and Panin Syariah that have an average efficiency of below 75 percent and two BUS like

Bukopin Syariah and BCA Syariah that have an efficiency of below 50 percent. In addition, there are six UUS which have an average efficiency below 75 percent such as DKI

Syariah, CIMB Niaga Syariah, Kalimantan Selatan Syariah, Sumatera Utara Syariah, Kalimantan Timur Syariah, & Riau Syariah and one UUS, Sumatera Selatan Syariah which has an average efficiency below 50 percent.

During the study period, the highest score of BUS and UUS efficiency level achieved in Q1 2015 with the score is 82.44% and the lowest efficiency score achieved when Q2 2014 with the score is 76.39%. Based on this result, the

overall development level of efficiency BUS and UUS has a fluctuating trend. The majority of Islamic regional development banks (BPD) have lower efficiency compared to conventional bank that have Islamic Business Unit (UUS). BUS and UUS in Indonesia is considered inefficient or not optimal in managing its resources. This is according to a study conducted by Endri (2010) and Firdaus & Hosen (2013).



**Figure 3:** The average efficiency of BUS and UUS per period

### Factors that affect the efficiency BUS and UUS

Based on the panel data result, there are three variables that significantly impact on efficiency of BUS and UUS, those variable are deposits wadiah, financing, and CAR. Financing variable has significant impact and a positive coefficient with efficiency of BUS and UUS. Increasing the amount of financing will increase efficiency for greater funding channeled through profit and loss sharing agreement, so that BUS and UUS are more optimal with their function as an intermediary institution and also more efficient in running operations. According to Isik and Hassan (2003), a positive relationship between bank lending and efficiency can be caused by the bank's ability to manage its operations more productive that allow banks to have lower production costs. The results are consistent with study of Sufian and Noor (2009) and Karimah (2016).

Deposits wadiah variable results has significant impact and a negative coefficient on efficiency of BUS and UUS. Increasing in deposits wadiah will reduce the level of technical efficiency BUS and UUS. This condition can be caused by costs of profit-loss sharing that given by BUS and UUS for their customers. The greater amount of deposits wadiah, the greater the cost of profit-loss sharing to be paid by bank.

In practice, Islamic banks use a system of profit-loss sharing (PLS), the customer who has risk averse characteristic will choose wadiah agreement because the amount of funds deposited will not be reduced. To increase the number of customers, BUS and UUS still provide a bonus for customers who save their deposits in wadiah agreement. The results are consistent with research of Sufian and Noor (2009), Widiarti (2015), and Karimah (2006).

CAR variable is positive and significant influence on efficiency of BUS and UUS. When BUS and UUS have sufficient capital, BUS and UUS will be better able to face future risks so that its performance is considered more

efficient. These result were also found by Ramli (2005), Gupta *et al.* (2008) and Subandi & Ghazali (2013).

**Table 3:** Factors that affect the efficiency of BUS and UUS

Variabel	Coefficient	Prob
Ln size	0.038	0.670
Ln financing	0.064	0.072*
Ln deposits wadiah	-0.199	0.000***
CAR	1.190	0.034**
FDR	0.026	0.747
Constanta	1.685	0.194
R-squared	0.709	
Prob(F-statistic)	0.000	

Comparison of the level of technical efficiency between BUS and UUS using non-parametric DEA showed that the BUS has a larger asset is more efficient than UUS which have smaller assets. Banks with the greater assets will give a better performance efficiency in its operations than banks with smaller assets. The results are consistent with the theory that banks with greater assets tend to produce better performance. This is because the large bank will operate on economies of scale, banks can boost output as much as possible at a lower cost. The bigger the company, the broader scope of business or the market share held, which can increase the efficiency. According to Barbosa and Louri (2003), improved efficiency has a positive impact on the profitability of banks. The results are consistent with study conducted by Endri (2010) and Karimah (2016) who found that the total assets of BUS and UUS positively correlated but not significant with efficiency.

The estimation results of the research shows that FDR has positive correlation and no significant effect on efficiency. One assessment ratio liquidity ratio can be reflected from FDR. FDR is a ratio used to measure the performance of the bank intermediary and as an indicator of the quality of bank liquidity.

## 5. Conclusion

Based on the study that has been done, it can be concluded as follow. On the periods of study, BUS and UUS in Indonesia has not fully operated efficiently based on technical efficiency score. Variable financing and CAR have positive and significant impact, while deposits wadiah has a significant negative effect on the efficiency BUS and UUS in Indonesia.

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## Author Profile



**Nadiyah Hidayati** is accepted in Bogor Agricultural University in 2010 at Department of Economics with major Islamic Economics, Faculty of Economics and Management. After graduating in 2014 and experience as a worker in private company for several months, researcher continues her education at School of Business Bogor Agricultural University, at Postgraduate Program of Business Management and focusing on financial.