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## ARTÍCULO

# Factors Influencing the Operation of Shariah Banking in Indonesia

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**Abstract:** Being the largest Muslim majority country in the world, Indonesia seeks to be the centre for Shariah banking. Its vision is to take Indonesia's Islamic banks to the highest position in the ASEAN, without being deterred by challenges such as the economic crisis of 1998-99. The present examined different banking and environmental factors that made an impact on the efficiency of Islamic banks in Indonesia through a panel data observed between 2002 and 2013. This study adopted the quantitative paradigm and analyzed secondary data obtained primarily from Bank Indonesia and 120 other Islamic (Sharia-compliant) banks in Indonesia. Research procedure involved identifying research variables and descriptive factors that affected the efficiency of Islamic Commercial Bank (BUS) in Indonesia. The analysis included a study of factors that affect BUS's efficiency such as fixed effect and robust standard errors. The results indicated that capital adequacy ratio, return on assets, return on equity and gross domestic product have a positive association with the banks' efficiency while non-performing loans, net interest margin and inflation have a negative association with the efficiency of the banks. These findings are useful for regulators and law makers to formulate laws and regulations related to banks' efficiency and factors that enhance it.

## 1. Introduction

The 1998 economic crisis was a milestone in the history of Islamic banking in Indonesia. The crisis which had paralyzed many conventional banks due to a high rate of interest was also fatal for the country's economic development. However, on the contrary, the crisis did not make much impact on the Islamic banks; rather Islamic banking showed a relatively better performance than conventional banking. Despite critical economic condition, Islamic banks were able to hold their grounds. There was relatively low distribution of non-performing loans and there was no sign of negativity in any of its operations. The ability of Islamic banks to sustain their exemplary performance in spite of crises attracted attention of many bankers.

Studies in the domain of Islamic banking, both in operational and academic levels, begin to emerge. For instance, several universities worldwide carried out studies in Islamic banking (Ishak & Asni, 2020; Safiullah & Shamsuddin, 2018). In the United Kingdom, it was University of Durham, and University of Portsmouth that examined the success elements of Islamic banking. In the United States, it was University of Harvard and in Australia, it was University of Wollongong which investigated the real factors that strengthened Islamic banking. These studies have contributed a lot in bringing in the forefront the strengths of Islamic banking and its role in world's economy. In Indonesia, too, research studies on Islamic (Sharia-based) banking and its role in the nation's economy have been conducted frequently. In fact, considering that Indonesia is a nation with the highest Muslim population globally, Islamic banks prove almost like a savior by practicing *riba* (not taking interests from transactions) that their religion Islam forbids.

Akber and Dey (2020) state that in current times Islamic banking has grown into a kind of bank that can compete very well with conventional banks which are involved in taking interests from creditors, both from businesses and general public. On the other hand, with its profit-loss sharing system, Islamic banks operate without having to worry about increase in the interest rate. This allows Islamic banking to provide investment capital for general public or businesses with a relatively capital cost lower than a conventional bank. Although Islamic banking has been able to sustain its performance despite the economic crisis in Indonesia, its performance efficiency is still essential to improve banking operation. Such empirical analyses are required so that Islamic banking sustains its existence and provide optimum services in the national economy.

This is also in line with the Islamic banking goals of creating a competitive and efficient Islamic banking system characterized by banking players that can compete globally; effective strategic alliances, and cooperative mechanism with other supporting institutions. To achieve this, Islamic banks need to create an operational system different from that of conventional banks. It is important that Islamic banks distribute funds efficiently and effectively to their clients. Effectiveness means an appropriate distribution of funds to the people who need it while efficiency means to maintain a congruency between the input used and the output produced.

Efficiency and effectiveness are major indicators of banking performance to assess a bank's 'health'. As the backbone of the national economy, the banking industry, including Islamic banks, should perform both effectively and efficiently. An efficient bank is expected to have optimal profit, more loan/credit fund, and better service quality. Efficiency is analyzed based on the ability to produce maximum output with minimum input. It has been observed that banks' efficiency in Indonesia, based on both the Operational Cost to Operational Income (BOPO) ratio and the Net Interest Margin (NIM), is still not adequate. It is a pitiable condition because the banking

sector covers 78.8% of all of Indonesia's financial market (bisnis.com, 20/05/2014). Low banking efficiency is also experienced by BUS. Operationally, Indonesia's banking efficiency can be measured from the ratio of operational cost to operational income (BOPO). According to Kamarudin et al. (2018), one of the indicators of banking efficiency is BOPO to examine the operational cost. Therefore, it is very important to analyze performance efficiency of banks. Such analysis will allow stakeholders and other interested parties to assess the banking performance and make appropriate decisions should any problem occur in the banking industry.

Considering the low score of banking efficiency, particularly in Islamic banks, the researcher attempted a study of Islamic banking efficiency. The following research problems were framed for this study: First how was Commercial Bank's efficiency in Indonesia during 2002-2013 determined by the selected input-output variables? Second, how did the determining factors (CAR, FDR, NPF, NOM, ROA, ROE, Inflation, GDP, and GWM) affect the efficiency of Islamic Commercial Bank (BUS) in Indonesia during 2002-2013? This study aimed to: 1) measure and analyze the efficiency level of Commercial Bank in Indonesia in 2002-2013 based on the selected input-output variables; and 2) provide empirical evidence about the determining factor variables (CAR, FDR, NPF, NOM, ROA, ROE, Inflation, GDP, and GWM) that affected the efficiency of Islamic Commercial Bank (BUS) in Indonesia during 2002-2013.

## 2. Literature Review

### 2.1. Meaning and significance of Islamic (Sharia-based) Bank

Islamic (Sharia-based) Bank is a financial institution with the primary function of providing credit and other services in payment and money circulation according to Sharia principles (Khan, Khan, & Tahir, 2017). Al-Harbi (2020) provides a broader definition of Islamic Banks. He states that the Islamic bank is a financial institution that operates without depending on interest with its primary function of providing funding and other services based on Islamic (Sharia) principles (Al-Harbi, 2020). Akber and Dey (2020) categorize Sharia bank into two categories, first, the Islamic banks and second, banks operating under Islamic Sharia principles. Islamic banks operate strictly according to the rules outlined in Al-Quran and Hadits. On the other hand, bank operating under Islamic Sharia principles are not Islamic bank but they adopt Islamic Sharia rules in their operations. Islamic Sharia rules include avoiding any practices or activities that contain the element of *riba* (taking profit from interest). In this type of banks, banking activities only involve investments based on profit-loss sharing and trade funding (Al-Harbi, 2020).

A Quranic verse that discusses *riba* is: "O, believers! Devour not interest, doubled and redoubled; and fear Allah, in the hope that you may get prosperity". In addition, the Hadits emphasizes upon the prohibition of *riba*. It narrates how the Prophet Muhammad (SAW) despised not only the giver and receiver of interest in a transaction, but also the record keeper and the witnesses of such a transaction. Prophet Muhammad (SAW) said, "All of them take part in a sin" (HR. Muslim, Tirmidzi).

In order to practice these verses and hadits, the Indonesia Islamic Council (Majelis Ulama Indonesia/MUI) discussed and created a financial institution that is free from the practice of *riba*. Its first Islamic (Sharia-based) bank was called Bank Muamalat. Looking at its success and considering the importance of Islamic banking without *riba*, the Indonesian Government set forth Regulation No. 7/1992 on banking, which implicitly provided an opportunity for banking activities to operate under the principle of profit-loss sharing. This

principle was described further in detail in the Decree No. 72/1992 on Bank based on Profit-Loss Sharing Principle. These regulations henceforth became the legal basis for Sharia-based (Islamic) banks in Indonesia, and marked the beginning of the dual banking system in Indonesia. From 1992 to 1998, Islamic Commercial Bank (BUS) in Indonesia experienced rapid growth as evident in the establishment of one Islamic Commercial Bank (BUS) and 76 Sharia-based Public Credit Banks (BPRS).

Islamic and Sharia-based Banks have grown rapidly during the last two decades. Until the end of 2006, the Islamic banks had experienced a high level of expansion due to the high demand and popularity of Islamic bank services. Such growth was also supported by the monetary condition and flexible banking policies in the country. This is reflected significantly in indicators such as the growing number of banks and their office networks, the creation of third-party funds, and disbursement of funds to businesses and general public (Akber & Dey, 2020). In terms of operation, the BUS is different from BUK (Conventional Commercial Bank). In the regulations set forth by Bank Indonesia, the primary principles of BUS consist of *mudharabah*, *musyarakah*, *murabahah*, *ijarah*, *ijarah wa iqtina*, *salam*, *istisha'* and *qard*. *Mudharabah* is the investment of funds from the fund owner to the manager of the fund to organize certain business ventures. *Musyarakah* means investing fund from the fund/capital owners and mixing their fund/capital with certain business ventures, with the profit-sharing based on a previously agreed ratio. *Murabahah* is an act of trading (selling and purchasing) of goods in their original price plus an agreed sum of profit. *Ijarah* is the transaction of renting goods and paying wages for services for a certain period through the system of rent or wage payment. *Ijarah wa iqtina* is the act of depositing fund or goods from the owner to a party that stores fund or goods, in which the receiver of the deposited fund/goods must return them at a moment notice. *Salam* is a transaction of trading goods with the system of pre-order, with certain conditions, and pre-payment in full. *Istisha'* is a transaction of trading goods with a system of ordering the production of those goods under certain criteria and conditions and with an agreed payment system. Finally, *Qard* is a transaction of lending funds without interest, in which the borrower (the creditor) pays the loan in full or in instalments in a certain period.

The determination or calculation of result or the economic output in a business venture is quite uncertain. Although there are economic measurements and calculation techniques that can be implemented to predict a possible profit, but still it is difficult to make precise calculations about profit/loss. The agreement about profit/loss sharing in a business venture is like a shield that protects both the client and the institution, if there is any drastic change in the interest rate. For this reason, the BUS has a high level of sustainability or endurance in the face of economic 1998 crisis. The BUS survived despite drastic rise in interest rates because it practiced a profit/loss sharing system until the completion of the business. Its operating system was not affected by the rising interest rates because it was an operational system that prioritized a partnership or family-like relationship among investors (savers of the fund), borrowers of the fund, and the institution.

## 2.2. Efficiency and the Banking system

Efficiency is defined as the comparison of output and input or the amount of output produced from a single input. A company is considered efficient if it uses a smaller number of input units, compared with other companies' use of input units, and produces the same amount of output; or if a company uses the same amount of input as other companies but produces a greater output. Alexander and Vladislav (2016) points out at three scenarios of efficiency. These include: 1) when the same amount of input can produce greater output; 2) when a smaller amount of input can produce the same amount of output; and

3) when the greater amount of input can produce an even greater amount of output.

A central assumption in the fundamental theorem of a prosperous economy is that there is competition. Without competition, there will be a market failure in the form of monopoly that exploits customers by producing too few products and assigning too high prices (Kontodimopoulos, Moschovakis, Aletras, & Niakas, 2007). Thus, efficiency is highly beneficial for people. When goods and services are produced more efficiently with minimum resources, they will satisfy a more significant amount of their needs and wishes. Bergen and Mester (1997) assert that efficiency and productivity growth of the banking industry are way higher than import, in relation to the whole function of the economy. According to Deb (2012), banks are forced to monitor their performance in an increasingly competitive environment because their survival depends on productive efficiency.

Saha and Ravisankar (2000), too, note that the need to study banking efficiency emerges due to several reasons: First, measurement of efficiency provides an indicator of success or failure of a bank in a competitive market; it may even reflect the potentials of failure (or success) of the banking institution. Studies show that banks with efficient operation have a better chance to sustain their business in the future. Second, the efficiency index can be used to evaluate the effect of changes in policies and market condition on bank performance. Furthermore, the efficiency measurement mechanism helps banks identify the weak areas in their institutions and formulate appropriate strategies to improve their market position. It can also provide a framework for regulators to evaluate individual banks' health to avoid a systemic failure of the banking industry.

Tobin mentions four factors that create efficiency in a financial institution. The first factor is efficiency due to the arbitrage of information (Tobin, 1982). The second factor relates efficiency with accurate assessment of assets. The third affirms that efficiency is due to bank's or financial institution's ability to anticipate risks. Finally, the fourth is functional efficiency, which is related to the administration and payment mechanism implemented by financial institutions. Included in functional efficiency are risk pooling, general insurance, and administration and mobilization of public funds.

Stavarek (2003) opines that modern banking system operates with three basic functions, settlement of payment, efficient intermediation between savers and investors, and provision of appropriate liquidity system using the indirect monetary policy instrument. Rajha (2016) mention two types of efficiency used in non-parametric measurement: technical efficiency and allocation efficiency. Technical efficiency refers to optimally utilizing available resources, both by producing maximum output for certain given input and using minimal input to produce a certain output. Allocation efficiency refers to the ability to achieve optimum combination of input and output at certain level.

Efficiency measurement is a widely adopted concept used to evaluate the efficiency level of a financial institution. Bergen and Mester (1997) distinguish three basic conceptual approaches to build a financial sector (banking) efficiency model: cost efficiency approach, standard profit efficiency approach, and alternative profit efficiency approach. They found and exposed disagreement among the researchers in terms of the factors of banking efficiency, both internal and external, that affect banking efficiency. This is in line with Bokpin (2013) who have related banking efficiency with internal as well as specific and external factors.

Various researches have investigated factors affecting the banking efficiency but with no consensus. Due to this disagreement about factors that affect banking efficiency, the

researcher used several variables as determining factors in this study. The first group of variables was directly related to financial performance, i.e. CAR, LDR/FDR, NPL/NPF, NIM/NOM, ROA, and ROE. The second group of variables consisted of macro economy and regulations like Inflation, GDP, and statutory reversal (GWM).

### 3. Research Methodology

The study adopted the quantitative research method that attempted to explain the existing phenomenon based on the theories related to banking efficiency. The study's main objective was to examine the operations of commercial banks registered in Bank Indonesia and which employ Sharia (profit-loss sharing) principles. The secondary data shows that there are 120 Islamic (sharia-based) commercial banks in Indonesia. Data was collected from the archives of financial report publications of Islamic Commercial Banks, published by BI during 2002-2013. In addition to data from BI, the secondary data was also gathered from Indonesia's Banking Statistics (SPI), Indonesia Banking Data (DPI), Sharia Banking Statistics (SPS), and Data on inflation growth and Gross Domestic Product (GDP) published by Central Bureau of Statistics (BPS).

The research procedure of this study involved the process of identifying and describing the factors that affected BUS's efficiency. The variable of determining factors was the independent variable. To explain and measure the Commercial Banks' efficiency, the following method was used: Efficiency ratio = Noninterest Expenses/ (Operating Income - Loan Loss Provision) and which included CAR, NPL, NIM, ROA, ROE, Inflation, and GDP. The data analysis of variables included analyzing the determining factors that affect BUS's efficiency using fixed and robust stand error method.

The general research model performed in this study is displayed in the following equation (1).

$$[BE]_{it} = \alpha_0 + \beta_1 [CAR]_{it} + \beta_2 [NPL]_{it} + \beta_3 [NIM]_{it} + \beta_4 [ROA]_{it} + \beta_5 [ROE]_{it} + \beta_6 [INF]_{it} + \beta_7 [GDP]_{it} + e_{it} \quad (1)$$

Where;

BE = Bank Efficiency

i = Bank

t = Time Period

CAR = Capital Adequacy Requirement

NPL = Non-performing loans

NIM = Net Interest Margin

ROA = Return on Assets

ROE = Return on Equity

INF = Inflation

GDP = Gross Domestic Product

This study adopted the fixed effect model because it is the best model for the check by using the Hausman test. The REM has the characteristics of taking them into account "individuality" of each cross-section unit. The FEM estimation is the extension of regression shown below:

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + u_{it} \quad (2)$$

Where

i = ith Cross-sectional Unit

t = tth Time Period

Another model used in this study was named as robust standard error method because the data set had cross-sectional dependence (Hoechle, 2007). When the regression assumption violation occurred, the robust standard error could be commonly used (Hoechle, 2007).

### 4. Results and Findings

The present study's findings exposed the descriptive statistics that described the variables in terms of mean, standard deviation, minimum and maximum values, and correlation matrix that showed the correlation among variables. In addition, the results also included the Hausman test that showed the appropriateness of the model among random and fixed model along with fixed effect and robust standard error that showed the testing of hypotheses.

Firstly, descriptive statistics reveal that bank efficiency ratio had 1.618 mean values along with .567 standard deviation and -.179 minimum and 3.437 maximum values. CAR has 1.191 mean values along with 1.771 maximum values while NPL has 8.554 mean values and 9.986 maximum values. The mean, standard deviation, minimum and maximum values of all other variables are also mentioned in Table 1.

Table 1: Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
BE	1.618	.567	-.179	3.437
CAR	1.191	.205	.021	1.771
NPL	8.554	.643	5.699	9.986
INF	.249	.256	.120	.846
NIM	.158	.214	.140	.983
ROA	1.009	1.898	-9.18	5.116
GDP	4.974	.841	2.862	6.399
ROE	1.564	23.847	-3.023	5.89

The results also exposed the correlation matrix that showed the correlation among the variables and all the figures were less than 0.90, which indicated that there was no multicollinearity in the variables. In addition, NPL and INF had a negative association with BE while CAR, ROA, GDP, ROE and NIM had a positive association with BE. These values have been presented in Table 2.

Table 2: Correlation matrix

Variables	BE	CA R	NPL	INF	NIM	RO A	GD P	RO E
BE	1.000							
CAR	0.251	1.000						
NPL	-0.292	0.200	1.000					
INF	-0.003	0.069	0.472	1.000				
NIM	0.166	0.174	0.548	0.120	1.000			
ROA	0.408	0.032	0.165	0.084	0.259	1.000		
GDP	0.132	-0.402	0.579	0.370	0.102	0.167	1.000	
ROE	0.539	0.001	0.081	0.001	0.160	0.806	0.271	1.000

In addition, the results also showed the variance inflation factor (VIF) that exposed the relationships among items and identified whether multicollinearity existed or not. The VIF values were

less than 5.0 which meant there was no multicollinearity issue among the variables. These values are shown in Table 3.

**Table 3:** Variance inflation factor

	VIF	1/VIF
NPL	3.619	.276
ROE	3.148	.318
ROA	3.124	.32
NIM	2.253	.444
GDP	2.202	.454
INF	1.819	.55
CAR	1.24	.806
Mean VIF	2.487	.

The findings also show the Hausman test that exposed the model's appropriateness among fixed and random model. The value of probability was measured less than 0.05, that meant fixed effect model was appropriate. These values are shown in Table 4.

**Table 4:** Hausman test

	Coef.
Chi-square test value	31.165
P-value	.000

The results also show the relationship between the variables. Statistics show that CAR, ROA, GDP, and ROE positively associate with BE. However, the figures also show that NPL, INF and NIM have a negative association with BE. These are shown in Table 5.

**Table 5:** Fixed effect model

BE	Beta	S.D	t-value	p-value	L.L.	U.L.	Si g
CAR	1.106	.178	6.21	.000	.755	1.457	***
NPL	-.832	.11	-7.55	.000	-1.049	-.615	***
INF	-.672	.313	-2.15	.033	-1.29	-.055	**
NIM	-.552	.299	-1.85	.066	-1.141	.037	*
ROA	.102	.025	4.08	.014	.029	.307	**
GDP	.27	.122	2.21	.028	.029	.511	**
ROE	.332	.078	4.26	.000	.006	.015	***
Constant	6.153	.739	8.33	.000	4.697	7.608	***
R-squared	0.582		Prob > F		0.000		

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

The results also show the robust standard error about the links among variables and statistics show that CAR, ROA, GDP and ROE have a positive association with BE. However, the figures also show that NPL, INF and NIM have a negative association with BE. These are shown in Table 6.

**Table 6:** Robust standard error

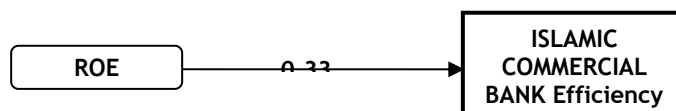
BE	Beta	S.D.	t-values	P>t	L.L.	U.L.
CAR	1.106	0.184	6.010	0.000	0.722	1.490
NPL	-0.832	0.092	9.080	0.000	1.023	0.641
INF	-0.672	0.171	3.930	0.001	1.029	0.316
NIM	-0.552	0.341	1.620	0.121	1.263	0.159
ROA	0.220	0.016	13.75	0.023	0.013	0.354
GDP	0.270	0.033	8.18	0.031	0.217	0.757
ROE	0.333	0.093	3.580	0.002	0.004	0.017
_cons	6.153	1.235	4.980	0.000	3.577	8.729

## 5. Discussions

The national average of Efficiency Estimation Score of Commercial Banks in Indonesia based on yearly calculation for the period 2002-2013 was 49.19%. The finding indicates a low efficiency of commercial banks, confirmed by [Barry, Dacanay, Lepetit, and Tarazi \(2011\)](#), and [Tahir, Mongid, and Haron \(2012\)](#). These studies also found that the efficiency of commercial banks in Indonesia was below that of banks in other ASEAN countries. This phenomenon leads to an increase in BOPO (Operational Cost to Operational Income) ratio and NIM of national banks.

This finding can be related to the gap between intermediary theory and agency theory. In the perspective of the correlation between the bank and the customers, which can cause asymmetric information, particularly adverse selection and moral hazard, the commercial banks in Indonesia face big problems of asymmetry of information. The reason is that commercial banks do not perform their intermediary function optimally, as indicated by the far-from-optimal LDR and the low fee-based income ratio. It can also be concluded that variables like CAR, NPL, NIM, ROA, INF, GDP, and ROE significantly affect BUS's efficiency.

Having analyzed the direct influence of determining factors variables on the Islamic Commercial Bank's (BUS) efficiency model, these results can be formulated into a research model. This research model is displayed in the following Figure 1. It is observed that the variable of ROE has a positive and significant influence on the efficiency of the BUS. It means that the higher the ROE ratio is, the more efficient BUS in Indonesia will be. The finding on the ROE variable is congruent with the research hypothesis that ROE positively influences BUS efficiency. This finding confirms [T. Hassan, Mohamad, and Bader \(2009\)](#) who believe that ROE significantly correlates with Islamic Banks efficiency. In line with that, [Ahmad and Noor \(2011\)](#), in their study on Determinants of Efficiency and Profitability of World Islamic Banks, state that Return on Equity (ROE) is one of the most important of all fundamental ratios in profitability measurement.



**Figure 1.** Research model

Results also reveal that banking institutions perform their work well and receive profits from their typically Shariah compliant operations. They have a competitive advantage, a feature that usually translates into superior returns for investors. This condition creates a beneficial environment for BUS, from the

perspective of financial intermediary. This finding's policy implication is that BUS needs to retain high income through investments in assets, not through credit/loan contract. Therefore, ROE is crucial in banking management since it represents marketing management, assets management, and liabilities management in a bank. Furthermore, according to David Cole's formula of ROE for Bank, ROE is a function of Profit Margin, Asset Utilization, and Equity Multiplier; in which Profit Margin is the proxy of marketing management's performance. Moreover, ROE is also determined by Asset Utilization, a proxy of asset management's performance, and Equity Multiplier, a proxy of liability (capital) management's performance. The variable of NPL also significantly affects BUS's efficiency. In other words, NPL has only a weak and negative influence on the efficiency of the BUS. The finding indicates that BUS often operates with a high NPL level, as can be seen in the average NPL in 12 years. NIM variable also significantly affects BUS efficiency. NOM variable is the primary indicator of the BUS group's health because high NOM means that BUS is healthy. However, on the other hand, a high level of NOM also indicates that the BUS is not efficient.

The variable of ROA is significant in affecting BUS efficiency, which is in line with the finding of [Yudistira \(2004\)](#) who studied 18 cases of efficiency in Islamic banks during 1997-2000, using DEA and OLS Regression methods. It was found that KA and profitability are significant in determining the efficiency of Islamic banks. The finding of ROA in this study is contrary to the finding of [K. M. Hassan \(2006\)](#), who studied 43 Islamic Banks using DEA and Regression models and found that higher efficiency correlates with higher profitability. [Ahmad and Noor \(2011\)](#), studying the efficiency of 78 Islamic banks, found a significant correlation of equity, NPL, and GDP, and a positive correlation of profitability (ROA), with efficiency level. [Sufian \(2009\)](#) investigated the cost-efficiency of conventional and Islamic commercial banks in Malaysia and found that the quality of credit (NPL) of Islamic banks showed a negative and significant correlation with efficiency, while profitability (ROA) showed a negative correlation with bank efficiency.

The findings on Inflation and GDP's environmental variables also show that both variables are significant in affecting BUS's efficiency. These findings indicate that the efficiency of BUS in Indonesia is sensitive to environmental determining factors. It is contrary to what [Ahmad and Noor \(2011\)](#) who found that the positive correlation between banking efficiency and GDP is statistically significant. It means that the demand for financial services tends to grow as the economy develops, and society becomes more prosperous. It also suggests that the banking business will grow with every per cent of GDP growth because both variables positively correlate and are highly dependent on each economic situation in which the Islamic banks operate.

## 6. Study Implications

The current study has both theoretical and empirical implications. Theoretically, the paper is of great importance as it contributes to the domain of financial management. The study sheds ample light on the influences of seven variables: capital adequacy requirement, non-performing loans, net interest margin, return on assets, return on equity, inflation, and gross domestic products on the rate of bank efficiency. It clarifies that capital adequacy requirement, return on assets and equity, and gross domestic product make good impact on banking efficiency and improve it. In contrast, non-performing loans, net interest margin, and gross domestic product negatively impact banking efficiency and should be kept under control. Empirically, the study will prove to be a guideline for the banking management on how to improve the bank's efficiency by improving capital adequacy requirement, return on assets and equity, and gross domestic product. It also guides the banking management by declaring how to increase bank

efficiency by reducing non-performing loans, net interest margin and inflation rate.

## 7. Conclusion and Limitations

The study concludes that capital adequacy requirement has a positive relationship with banking efficiency and that the improvement in the capital adequacy ratio leads to improvement in banking efficiency. The study discovers that non-performing loans are negatively linked with banking efficiency, but can be improved by minimizing the non-performing loans. Similarly, net interest margin is also negatively related with banking efficiency, and with the control of net interest margin, banking efficiency can be improved. Moreover, the current study also examines that the return on assets puts positive influence on banking efficiency. The more the return on assets, the greater is the banking efficiency. Likewise, the current study implies that the return on equity also put positive impacts on banking efficiency. While the study concludes that the inflation rate is negatively associated with banking efficiency as the increase in inflation rate badly affects banking efficiency. Besides, the study also sheds light on the point that gross domestic product has a positive association with banking efficiency. The improvement in the gross domestic product leads to improvement in banking efficiency.

The study has several limitations despite the detailed description of the positive role of four variables of the study namely capital adequacy requirement, return on assets and equity, and gross domestic product and negative role of these three factors such as non-performing loans, net interest margin, and the inflation rate in the achievement of improvement in the banking efficiency. Many other factors either positively or negatively affect the banking efficiency but are not under consideration by this study. Future scholars in their studies should address the influences of these factors on banking efficiency. Moreover, this study cannot be taken as a generalized study since it observes the change in banking efficiency with reference to Indonesian banks while future scholars should improve the generalizability of their study by examining the banking efficiencies in more countries except Indonesia.

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