Efficiency Analysis of Islamic Commercial Banks Using a Two-Stage Data Analysis Method

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Abstract. *A measure of company efficiency is also commonly used in banking. The DEA (Data Envelopment Analysis) method, which compares the input and output, is a mathematical program optimization method. This study investigates the efficiency level of Islamic banks in Indonesia from 2018 to 2021. It examines the role of capital and liquidity and their impact on Islamic banking efficiency. The quantitative methods used were nonparametric methods (DEA) and parametric methods using Tobit regression methods to examine capital and liquidity effects. The results show that Indonesia's Islamic Commercial Bank (BUS) is not operating effectively, according to the DEA's average efficiency score of 0.911 from 2018 to 2021. Furthermore, the findings suggest that capital and liquidity can improve the efficiency of Indonesian Islamic commercial banks.*

Keywords: *Efficiency, Islamic Commercial, Two Stage DEA, Tobit Model*

Abstrak. *Pengukuran efisiensi pada suatu perusahaan juga sering digunakan dalam industri perbankan yaitu metode DEA (Data Envelopment Analysis), yang membandingkan variabel input dan output dan merupakan salah satu metode optimasi program matematika. Penelitian ini akan mengkaji tingkat efisiensi perbankan syariah di Indonesia selama periode 2018–2021 dan melihat peran permodalan dan likuiditas, atau pengaruhnya terhadap tingkat efisiensi perbankan syariah. Metode kuantitatif menggunakan pendekatan non parametrik (DEA) dan pendekatan parametrik menggunakan metode Regresi Tobit untuk melihat pengaruh modal dan likuiditas. Hasil penelitian menunjukkan bahwa bank umum syariah (BUS) Indonesia belum beroperasi secara efisien berdasarkan skor efisiensi rata-rata metode DEA dari tahun 2018 hingga 2021, yaitu 0,911. Selanjutnya, hasil penelitian menunjukkan bahwa permodalan dan likuiditas dapat meningkatkan efisiensi bank umum syariah di Indonesia.*

Kata Kunci: *Efisiensi, Bank Umum Syariah, DEA, Model Tobit*

Introduction

Banking performance is one of the fundamental pillars of establishing a nation. The bank's intermediation role controls the flow of money, which is crucial for maintaining economic competitiveness. The internal factors determining a nation's competitiveness include internationalization, macroeconomic stability, finance, education (including science and

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technology), and economics. Two international business professors explain the need for a robust financial system for stability (Angelia & Tono, 2020)

In the last 17 years, Indonesia's Islamic banking sector has grown remarkably quickly. Between 2000 and December 2014, the total assets of the Islamic banking sector expanded by 152 times, from Rp 1.79 trillion to Rp 272 trillion. In Indonesia, Islamic banks are growing at 23.57% annually (Bitar, 2019).

Due to the fast-paced growth of the Islamic banking sector in Indonesia, it is necessary to assess the effectiveness of Islamic banks to evaluate how well they are doing now. A bank's financial performance reveals how healthy it is. According to Bank Indonesia Notice No. 9/24/DPbS, CAMELS (Capital, Asset Quality, Management, Revenue, Liquidity, and Sensitivity to Market Risk) elements impact the bank's rating (Elvira, 2012). Asset quality features like productive asset quality (PAQ), income aspects like return on equity and return on assets (ROA), operational efficiency ratios, and liquidity aspects like financing are all included in the category of capital aspects. The percentage of deposits (FDR).

Assets, financial ratios and quality, and the office network are a few indicators of Islamic banking growth that show this development.

Table 1

Shows the growth of Sharia Banking Assets, Third Party Funds, and Financing in Indonesia between 2018 and 2021 (in billion Rupiah).

Indicators	2018	2019	2020	2021
Assets	424,181	477,327	524,564	593,948
DPK	334,888	371.828	416.558	465,977
Financing	285,695	320.193	355,182	383,944

Source: Sharia Banking Statistics, OJK, April 2021

Additionally, research demonstrates that several financial indicators, such as the financing deposit ratio (FDR) and the non-performing financing ratio (NPF), enhance performance and inevitably aid Indonesia's Islamic

banking industry is expanding (Evceyurt, 2019). Based on this data, efficiency assessment is becoming more and more crucial since it allows us to gauge how effectively Islamic banks can make the most of all of their resources and provide customers and the broader public with more advantages.

Table 2

shows the performance development and network of Islamic banking offices in Indonesia between 2018 and 2021.

Indicator	2018	2019	2020	2021
Non-Performing Financing (%)	3.87%	2.85%	3.11%	3.08%
Financing Deposit Ratio (%)	85.31%	86.11%	85.27%	82.42%
BOPO (%)	89.62%	85.49%	82.52%	83.63%
Number of Office Networks	2.610	2,724	2,917	3.053

Source: OJK, April 2021 Sharia Banking Statistics.

Tables 1 and 2 indicate the rise of several Islamic bank financial ratios and indicators from 2018 to 2021. As seen from the overall assets' 67% growth, third-party funds (DPK) increased by 67%, while financing increased by 55%. Non-Performing Financing (NPF) had a 26% decline. In the same period, the financing deposit ratio (FDR) value decreased over the previous two years, although the number of office networks increased by 15%, or 399. From 82.5% in 2019 to 83.6% in 2020, the value of BOPO increased. The lower the value of BOPO, the more effectively sthe organization performs (Fathony, 2012).

Data Envelopment Analysis (DEA), a non-parametric technique, is famous for assessing a bank's effectiveness (DEA). The DEA is a mathematical optimization technique that evaluates the relative technical efficacy of various types of economic activity and compares them to one another. We can identify the units used as a reference, which is an advantage of employing this non-parametric approach. Following that, several nations continued to conduct studies on the effectiveness of banks or other sectors of the economy. As a result, the Two-Stage Data Envelopment Analysis study method was

developed. There will be two phases of research in this process (First Stage and Second Stage). The Data Envelopment Analysis (DEA) approach will gauge the efficiency level in the first phase. The Tobit model will be used in the second stage to analyze and identify the variables that influence a bank's degree of efficiency.

We already know the CAMELS methodologies for gauging the health of banks and studying their degree of efficiency (Garza, 2012). The six measurement sources used in this procedure provide level units used to determine the bank's state of health. The profit component, which includes the BOPO ratio, is one of the components of this technique of computation (Hanifa, 2014).

As we all know, the BOPO ratio compares operating expenses to operating revenue to evaluate the effectiveness of banks. However, the assessment of this efficiency level makes use of this BOPO by seeing the banking sector as an intermediation organization that employs a variety of inputs and outputs. Since the efficiency level is only partially calculated using the BOPO ratio, it is thought that the ratio does not accurately represent the bank's efficiency level (Hasan, 2009). Additionally, the CAMELS technique only analyzes approximately 5% of the efficiency level, which is of particular significance given how important it is to measure the degree of efficiency in characterizing the work of banks(Havidz, 2015).

A technique for optimizing mathematical operations is the Data Envelope Analysis (DEA) approach for assessing input and output variables, which compares and evaluates the relative efficacy of economic activity units (UKE) or decision-making units. This approach is frequently employed in banking (DMU) (Kamarudin, 2014). DEA is a nonparametric method that uses linear programming to calculate the information ratio to output. DEA procedure includes checkboxes for factors affecting efficiency (Kamarudin, 2019).

Based on the above statements and previous studies, the author is interested in conducting a study titled "Islamic Commercial Bank Efficiency

Using Two-Level Data Envelopment Analysis." This study examines the efficiency of the Indonesian Islamic banking sector from 2018 to 2021.

Literature Review

The efficiency of Islamic commercial banks

The Islamic Commercial Bank is responsible for all banking services and the community, including individual communities and other institutions. Commercial banks serve as creators of giral money and quasi-money, bringing together depositors and investors and organizing efficient payment traffic (Soemitra, 2018).

According to the Encyclopedia of Economics, efficiency is the connection or comparison between the output components of products and services with limited unit labour input or the choice of production technology (effort, labour) (by not wasting time, effort, or cost) (Eduardus, 2012). In general, efficiency refers to the idea of getting the best outcomes possible from the use of already available resources.

One idea that has been used to describe efficiency in Islamic literature is the idea of aiming to get the best outcomes. What is meant by "efficiency" in this context still refers to the shariah as it now exists and as a component of Islamic efficiency, namely the goodness (ihsan) and perfection part (itqan). Therefore, it is possible to consider the concept of efficiency in Islam distinct from traditional economic theory. It is based on Islamic law and encompasses the afterlife and the world, not only the latter.

DEA (Data Envelopment Analysis)

One of the most well-known is DEA methods for assessing how efficient a company is. The best and least efficient enterprises are identified by analyzing inputs and outputs in groups of units (Ojk, 2020), or DMU, which provides a basic overview of available options. The DEA technique has an advantage over regression and ratio analysis in that it can handle a variety of inputs and results (Naufal, 2018).

When comparing a unit to the best-performing team, the best-

performing unit forms an efficiency frontier. The marginal efficiency line is used as a parameter, so a group is said to be efficient if it lies on the marginal efficiency line. Measures of efficiency are expressed in the form of efficiency ratings. Charles et al. proposed a model in which each unit has an appropriate weight. Using linear programming techniques, IT tries to maximize the efficiency level of the team until a 100% efficiency level is reached (Pembuko, 2018). The weakness of DEA itself is that it cannot consider factors related to inefficiency, but can only determine the efficiency level of each DMU. The equation of the DEA method can be expressed as follows:

$$h_S = \frac{\sum_{i=1}^{m} u_i y_{is}}{\sum_{j=1}^{n} v_j x_{jr}}$$

Information:

h   : Efficiency of each unit

m   : Indicates the amount of output observed, while

n   : Indicates the number of inputs observed.

yis   : The amount of output produced by each unit.

xjs   : The number of inputs j that each unit uses.

ui   : The weight of the resulting output unit.

vj   : The result is input weighted per unit.

DEA modeling aims to evaluate an enterprise's relative efficiency compared to other businesses of a similar size. Many studies on business efficiency have been applied globally, particularly in the banking sector (Patria & Ihnatov, 2015). Regression is a statistical method that provides meaningful relationships for decision-makers. However, the main limitation is the ability to analyze one output at a time, so the regression analysis method must be re-performed by adding other criteria. Also, it considers the average value and not the actual value, which may not have happened in the real world. Regression assumes a single method of combining various factors in

all enterprises (Afiezan, 2020).

The DEA takes into account both qualitative and quantitative metrics. These factors serve as a standard for determining whether managers can make fair judgments about resource utilization. The weighted number of outputs divided by the weighted number of inputs is the basis for the DEA's operation. The efficiency value ranges from 0 to 1(Rahim & Rothman, 2013). The DMU with efficiency number 1 in this list is the most effective, while the DMU with efficiency number 0 is the least effective (Puteh & Mawaddah, 2019).

Method

This study employed a quantitative research design. One sort of research whose requirements are systematic, organized, and structured from the beginning to the development of the study design is quantitative research (Syafina, 2019). The nonparametric approach uses the technique of data envelopment analysis (DEA), also known as boundary analysis. Tobit regression is a technique used by parametric systems to study the effects of capital and liquidity (Rosyiqoh, 2015). By identifying the input factors related to the output variables, this study aims to analyze the performance effectiveness of Islamic commercial banks in Indonesia observed through bank accounts (Cedar & Wild, 2019). The next step is to calculate efficiency values using a nonparametric method (DEA method) after defining the input and output variables (first stage) (Sagantha, 2019). Additionally, the Tobit model will examine efficiency values utilizing these variables to understand the link between capital and liquidity factors and efficiency levels (second stage). "Two-stage packaging data analysis" refers to these two steps."

The population for this study is the financial statements of Islamic commercial banks registered with the Jakarta Stock Exchange (IDX) in the table below. Studies to be examined address efficiency through capital and liquidity functions of Islamic commercial banks:

Table 3.

An Islamic commercial bank listed on the Indonesia Stock Exchange

No	Sharia Commercial Banks Co., Ltd.
1	Indonesian Shariah Bank Co., Ltd.
2	Syariah Mandiri Bank Co., Ltd
3	Mega Syariah Bank Co., Ltd
4	BRI Syariah Bank Co., Ltd
5	Syariah Bukopin Bank Co., Ltd
6	Panin Dubai Syariah Bank Co., Ltd
7	Victoria Syariah Bank Co., Ltd
8	BCA Syariah Bank Co., Ltd
9	Jabar Banten Syariah Bank Co., Ltd
10	BNI Syariah Bank Co., Ltd
11	Aceh Syariah Bank Co., Ltd
12	Nusa Tenggara Barat Syariah Bank Co., Ltd
13	TASEN Syariah Bank Co., Ltd
14	Maybank Syariah Indonesia Bank Co., Ltd

At the first stage, it is carried out using the DEA method with the following equation:

$$hs = \frac{\sum_{i=1}^{m} u_i y_{is}}{\sum_{j=1}^{n} v_j x_{js}}$$

Information:

hs   : Each Islamic bank's level of technical proficiency

m   : The volume of observable Islamic bank output

n   : How many Islamic bank inputs were discovered

ui   : The dimensions of the goods made by Islamic banks.

yis   : The volume of output that Islamic banks produce

vj   : The value of the contributions made by Islamic banks

xjs   : The quantity of input j that Islamic banks produced.

The Tobit regression approach is used during the second step. Version 22 of SPSS is the program utilized in this second round. The following is the study's Tobit regression formula:

1Carit + 2TIER = Yit 1CRit + 3SERit + 4FDRit + 5LARit + it

Y, a bound variable, represents the BUS efficiency level in Indonesia as determined by DEA measurements. To ascertain if independent factors have a partial or simultaneous impact on dependent variables, partial and simultaneous tests are run (Candra, 2015).

Results and Discussion

This study will explain how to achieve the efficiency level of any islamic commercial bank (bus) within one semester. According to the efficiency calculation results of dea, the efficiency levels of the 10 buses in the first semester of 2018-2021 are shown in table 6 as follows:

Table 4

Shows the efficiency calculation results with DEA in ten Sharia Commercial Banks (BUS) for 2018-2021

Bank	Periode							
	2018		2019		2020		2021	
	I	II	I	II	I	II	I	II
Muamalat Co., Ltd.	0.919	1.000	0.904	0.940	0.877	0.918	0.797	0.832
Syariah Mandiri Co., Ltd.	0.900	1.000	0.878	0.985	0.847	0.955	0.902	0.905
BNI Syariah Co., Ltd.	0.907	1.000	0.923	1.000	0.853	0.989	1.000	0.972
BRI Syariah Co., Ltd.	0.927	1.000	0.797	0.968	0.755	1.000	0.819	0.965
BJB Syariah	0.849	1.000	1.000	0.958	0.743	0.970	0.876	0.947

|								
Co., Ltd.								
BCA Syariah Co., Ltd.	0.928	0.940	0.881	0.933	0.925	0.919	0.964	0.896
Syariah Bukopin Co., Ltd.	0.915	0.891	0.891	0.830	0.814	0.888	0.811	0.903
Mega Syariah Co., Ltd.	0.901	0.949	0.985	0.905	0.926	0.901	0.994	0.961
Panin Dubai Syarah Co., Ltd.	0.929	0.944	0.958	0.877	0.856	0.892	0.988	0.932
Victoria Syariah Co., Ltd.	0.867	0.927	0.858	0.868	0.768	0.908	0.741	0.871
Maximum	0.929	1.000	1.000	1.000	0.926	1.000	1.000	0.972
Minimum	0.849	0.891	0.797	0.830	0.743	0.888	0.741	0.832
Average	0.904	0.965	0.908	0.926	0.836	0.934	0.889	0.918
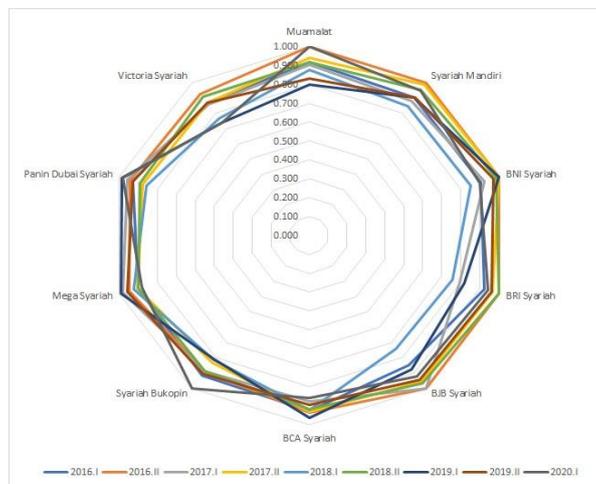
Figure 1

The results of an efficiency calculation using DEA on ten Sharia Commercial Banks (BUS) for 2018–2021

The relative efficiency findings are shown in Table 6 and Figure 1, which also provide the efficiency values for each Sharia Commercial Bank (BUS) for the 2018–2021 timeframe. In the second half of 2018, five buses, Bank Muamalat, Bank Syariah Mandiri, BNI Syariah, BRI Syariah and BJB Syariah, were effectively operating commercially. BUS, BJB Syariah, play major role in

commercial operations in first half of 2019. A BUS, BRI Syariah was effectively operating in the second half of 2018. One BUS, BNI Syariah, was influential in its operations in the first half of 2019; two BUS, Muamalat and Syariah Bukopin, were effectively operating in the first half of 2020 (Sufian & Noor, 2009).

Results Of Tobit Regression

After tobit regression calculation, the following calculation results are obtained:

Table 5

The results of the Tobit Regression Calculation

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.990[a]	.910	.852	.20335

a. Predictors: (Constant), CAR, C, TIER1CR, SER, FDR, LAR

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	6.087	.000		1.150	.009
CAR	17.007	.000	.011	2.850	.420
TIER 1 CR	4.893	.000	.850	2.095	.334
SER	2.189	.000	1.150	2.084	.008
FDR	-.006	.000	-.095	1.998	.031
LAR	-2.049	.000	-.084	3.048	.098

a. Dependent Variable: BUS

The results of the tobit regression equation are as follows, summarized according to the data processing in the above table:

EFISIENSI BUS = 6.087 + 1.707CAR + 4.893TIER1CR + 2.189SER – 0.006FDR- 2.049LAR

The above formula can be interpreted as follows:

Alpha = 6,087 means that when Capital Adequacy Ratio (CAR), Tier 1 Capital Ratio (TIER 1 CR), Equity Ratio (SER), Funding-Deposit Ratio (FDR), Islamic Commercial Banking Efficiency (BUS) shows 6,087 units of Positive Growth and Liquidity Ratio (LAR) both equal to zero (0);

$\beta 1$ = +1.707: In other words, the efficiency of Islamic commercial banks (BUS) will grow by 1,707 units if the Equity Ratio (CAR) rises by one team and all other factors stay the same;

$\beta 2$ = 4.893: In other words, when the Tier 1 Capital Ratio (TIER 1 CR) increases by one tier, the efficiency of the Islamic Commercial Bank (BUS) increases by 4,893 units. Instead, all other variables remain constant;

$\beta 3$ = 2.189: If all other factors remain constant while the shareholders' equity ratio (SER) improves by one unit, the efficiency of Islamic commercial banks (BUS) will increase by 2,189 units;

$\beta 4$ = -0.006: If all other factors remain the same and the financing to deposit ratio (FDR) rises by one unit, the efficiency of Islamic commercial banks (BUS) will fall by 0.006 units;

$\beta 5$ = 2.049: If the Ratio of Liquid Instruments (LAR) increases by units while all other variables remain, the Islamic Commercial Banks' (BUS) efficiency will increase by 2,049 units.

The following are the findings of the significance test on the factors influencing the effectiveness of Islamic commercial banks (BUS):

a. The capital adequacy ratio (CAR) variable is partly invalid since the probability/p-value on the CAR variable is 0.420, which is less than the initial confidence level (0.420 > 0.05). Therefore, H0 is allowed. Bank commercial (BUS).

b. The probability/p-value is 0.334. If a probability value greater than or equal to 0.334 > 0.05 H0 is accepted, the Tier 1 Capital Ratio (TIER 1 CR) variable does not affect Islamic commercial efficiency. Banking (BUS).

c. The variable SER has a probability/p-value of 0.008 < 0.05, accepting H0 to conclude that variable shareholder ratio (SER) does not affect the efficiency of Islamic commercial banks (BUS).

d. The probability/p-value for the variable funds deposit ratio (FDR) is 0.031. If the probability value is less than or 0.031 < 0.05, reject H0 and conclude that the variable financing deposit ratio (FDR) partially affects the efficiency of Islamic commercial banks (BUS).

The probability/p-value is 0.098. If the probability value is less than or 0.098 > 0.05, accept H0 and conclude that the variable liquidity ratio (LAR) component does not affect the efficiency of Islamic commercial banks (BUS).

ANOVA[a]

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	83203.482	8	10425.435	4.776	.000[b]
Residual	.000	0	.		
Total	84203.482	8			

a. Dependent Variable: BUS

b. Predictors: (Constant), CAR, TIER1CR, SER, FDR, LAR

The simultaneous F-test determines whether the independent variable is simultaneously significant against the dependent variable. In this case study, the overall model to be tested is a random effect model with personal effects. Get the p or sig value from the results of the analysis. 0.000<0.05, then it is

known that H0 is rejected. At a confidence level of 95%, you can conclude that at least one (constant or coefficient of a free variable) has a significant influence on the model.

Discussion

Impact of Capital Adequacy Ratio (CAR) on the Efficiency of Islamic Commercial Banks (BUS)

According to the findings of hypothesis testing, the Capital Adequacy Ratio (CAR) variable partly influences the effectiveness of Islamic commercial banks if the probability value produced is more significant than or equal to $0.420 > 0.05$ (BUS). One of the bank's performance measures, CAR, assesses the capital necessary to sustain assets with or at risk of loss, including disbursed funding. A bank's reduced CAR ratio will improve the performance of the BUS. The BUS version will become progressively less effective if a bank's CAR ratio is large. Due to the lack of alternative sources of extra capital used by Islamic banks, capital expansion cannot keep up with the increase of productive assets, which will affect bank profitability.

Tier 1 Capital Ratio (TIER 1 CR) Islamic Commercial Bank (BUS)

The result of the hypothesis test yields a probability or p-value of 0.334. Probability values higher than $0.334 > 0.05$ vs. 5%. It is worth noting that variable Tier 1 capital ratio (TIER 1 CR) does not affect the efficiency of Islamic commercial banks as H0 is acceptable. After all, the probability value is greater than or equal to $0.3066 > 0.05$. (BUS). The primary measure of standard Basel III capital is the one-capital ratio, and banks must maintain a Tier 1 ratio of at least 6% to cover unforeseen risks. The bank's ability to handle the potential risk of unexpected losses is reflected in the Tier 1 Capital Ratio. Since a bank has a level 1 capital ratio, it can influence how the market perceives a bank's level of security. This problem can also impact the market acceptability of banks, which is reflected in the interest rates on loans that need to be paid.

Impact of Equity Ratio (SER) on the Efficiency of Islamic Commercial Banks (BUS)

Based on the hypothesis test results, a probability value, or p-value, of 0.008 was obtained. For probability values less than 0.008 < 0.05 vs 5%, H0 is rejected, so it can be concluded that the Variable Equity Ratio (SER) partially affects the efficiency of the Islamic Commercial Bank (BUS). The equity ratio is a ratio that shows how much a company generates in its equity capital, excluding debt. The lower the equity ratio, the more borrowed capital is used to build wealth.

Impact of Funds to Deposit Ratio (FDR) on the Efficiency of Islamic Commercial Banks (BUS)

Based on the results of the hypothesis test, the resulting probability or p-value is 0.031. Compared with 5%, if the probability value is less than 0.031 < 0.05, reject H0 because the probability value is less than or equal to 0.05, and conclude that the variable financing deposit ratio (FDR) affects the efficiency of Islamic financing. Commercial Banks (BUS). The standard FDR ratio used by Bank Indonesia is 80% to 110%. If the bank's FDR ratio is below 80%, say 60%, it can be concluded that the bank can only distribute 60% of the funds received.

Impact of Liquidity Ratio (LAR) on the Efficiency of Islamic Commercial Banks (BUS)

Based on the hypothesis test results, the probability value, or p-value, is 0.098. Probability values greater than 0.098 > 0.5 compared to 5%. Therefore, H0 is accepted because the probability value is greater than or equal to 0.05, so it can be judged whether the variable current asset ratio (LAR) does not affect Sharia efficiency.

Impact of Capital Adequacy Ratio (CAR), Tier 1 Capital Ratio (TIER 1 CR), Shareholder Equity Ratio (SER), Funding Deposit Ratio (FDR) and Liquid Assets Ratio (LAR) on the Efficiency of Islamic Commercial Banks (BUS)

H0 was rejected due to hypothesis test results that also provided a value (sig.) of 0.000 < 0.05, which means that the simultaneous independent variable has a significant effect between the dependent variable or the simultaneous capital adequacy ratio (CAR). Tier 1 Capital Ratio (TIER 1 CR), Shareholder

Equity Ratio (SER), Funding Deposit Ratio (FDR) and Liquid Assets Ratio (LAR) affect the efficiency of Islamic Commercial Banks (BUS).

Conclusion

According to the previous calculation and analysis, the average efficiency value derived from the DEA technique from 2018 to 2021 is 0.911, which indicates that the Islamic Commercial Bank (BUS) in Indonesia is not functioning properly. However, they sometimes represent a production environment. For example, five Shariah Commercial Banks (BUS) - Bank Muamalat, Bank Syariah Mandiri, BNI Syariah, BRI Syariah and BJB Syariah - managed their businesses effectively in the second half of 2018. BUS, BJB Syariah, played an important role in commercial operations in the first half of 2019. BUS, BRI Syariah, play major role in business activity in second half of 2018.

One BUS, BNI Syariah, affected its trading operations in the first half of 2019. Two BUS Bank Muamalat and Bukopin Syariah successfully launched retail operations in the first half of 2020. The effectiveness of Indonesian Islamic Commercial Bank (BUS) is not affected by Capital Adequacy Ratio (CAR), Tier 1 Capital Ratio (TIER 1 CR) and Liquidity Ratio (LAR). Both affect the Funds on Deposit Ratio (FDR) and Equity Ratio (SER). However, capital and liquidity ratios affect the efficiency of Indonesian Islamic commercial banks.

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