Analyzing the Impact of Bank Syariah Indonesia Merger on Financial Efficiency Using DEA and Tobit Models

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Submitted:
SEPTEMBER 2024

Accepted:
DECEMBER 2024

ABSTRACT

This study examines the impact of the merger of three state-owned Islamic banks—BRI Syariah, BNI Syariah, and Bank Syariah Mandiri—into Bank Syariah Indonesia (BSI) on banking efficiency. The research employs a quantitative approach using secondary data from BSI's financial statements between 2021 and 2024. The study utilizes the **two-stage Data Envelopment Analysis (DEA)** to measure efficiency, followed by the **Tobit regression model** to analyze the influence of financial variables such as asset structure, return on assets (ROA), return on equity (ROE), capital adequacy ratio (CAR), and non-performing financing (NPF) on efficiency levels. The results show that the merger significantly improved banking efficiency, with consistent increases in technical and scale efficiency over time. Furthermore, all independent variables—assets, ROA, ROE, CAR, and NPF—exert a positive and significant influence on BSI's efficiency. The findings also indicate no significant difference between the DEA method and the CAELS method in measuring bank performance. This research provides empirical evidence supporting the strategic impact of mergers in enhancing the performance and sustainability of Islamic banks in Indonesia.

Keywords: Merger, Islamic Banking, Efficiency, Data Envelopment Analysis, Tobit Model

INTRODUCTION

A stable and efficient financial system provides a real foundation for driving economic growth because it plays an important role in allocating financial resources to all economic factors (Nguyen & Pham, 2020). The financial system has a very significant role in supporting economic activities. As part of the economic system, the financial system has a function to allocate capital from parties with a surplus to parties with a deficit. The stability of the financial system is influenced by various turmoil that occurs in the banking sector and financial markets, both internationally and nationally. The international financial crisis that has occurred so far was caused by inequality in the region. The financial sector originates from banking activities, the delay in the banking intermediation function is a factor of instability (Dewi, 2017).

Islamic Bank is one of the Islamic financial services industries that has a role in economic development in Indonesia together with the real sector because banking is an intermediary institution. However, the impact of the Covid-19 pandemic, Islamic banks face major problems to survive due to changes in consumption patterns, lifestyle patterns, and regulations (Ridwan et al., 2021). The Covid-19 outbreak has had a significant impact on Islamic banking, including a decrease in distribution and financial returns. Customers

JIAKES

Jurnal Ilmiah Akuntansi Kesatuan
Vol. 12 No. 6, 2024
pg. 557-566
IBI Kesatuan
ISSN 2337 – 7852
E-ISSN 2721 – 3048
DOI: 10.37641/jiakes.v12i5.3194

who are in debt find it difficult to pay the bank due to reduced income (Hadiwardoyo, 2020). This has an impact on the decline in the operational efficiency of Islamic banking and This has a negative impact on the stability of Islamic banking and reduces its operational efficiency (Disemadi & Shaleh, 2020).

The impact of the weakening in the MSME sector and other sectors also affects the income of deposits and third-party financing in Islamic banks along with the spread of Covid-19" (Ningsih & Mahfudz, 2020). Islamic banking faces two operational risks due to this pandemic: one for customers, and the other for banks. These risks include business closures and decreased profits. Banks then stop functioning as intermediaries, especially those that help those in need of investment capital in the real sector (Ilhami & Thamrin, 2021). To survive, Islamic banks must reduce risks and create creative strategies (Ridwan et al., 2021).

Minister of State-Owned Enterprises (BUMN) Erick Thohir said that the penetration of Islamic banking in Indonesia is far behind compared to conventional banks. Therefore, this is one of the priorities that is carried out so that the Islamic economy in Indonesia can develop. One of the efforts made by the Ministry of BUMN to support this effort is to merge state-owned Islamic banks into one new entity. Later, each state-owned bank will have its own market focus and can support the economy from all sides. Not only becoming a domestic player, this bank in the next five years is also targeted to become one of the 10 best Islamic banks globally. In line with that, the President Director of PT Bank Syariah Indonesia Hery Gunardi, which is the bank resulting from the merger, said that in Indonesia with a population of 200 million people, the Islamic literacy index only reaches 8.12% and its inclusion is only 11.06%. The merger strategy has become increasingly popular since it was first implemented in America in the late 1990s. This transaction quickly spread throughout the world, especially in the banking industry in many countries. In general, mergers in banking are an effective solution to help related parties achieve a number of goals such as efficiency, profit, and synergy. so that only healthy banks can survive and operate normally (Nguyen & Pham, 2020).

In an effort to encourage the development of Islamic banks in Indonesia, the government has issued various regulations such as the implementation of sub-policies and new policies, namely the merger of 3 state-owned Islamic banks. The three Islamic banks are Bank BRI Syariah, Bank BNI Syariah and Bank Mandiri Syariah (Ayuning & Slamet, 2022). The establishment of Bank Syariah Indonesia (BSI) is a government strategy to make Indonesia one of the world's Islamic financial centers (Murniati et al., 2022). The establishment of a large Islamic bank is urgent. The step that is considered the fastest to take is to merge existing state-owned Islamic banks, making it easier for the government to use Islamic banking products and services. The purpose of the merger of state-owned Islamic banks is to make state-owned Islamic banks more efficient in the use of capital, operations, financing, and spending. The merger will make state-owned Islamic banks have bright prospects and enable them to survive the Covid-19 pandemic. Having large and strong assets, has the potential to become a top 10 global Islamic bank based on market capitalization, has mature products and is committed to developing the Islamic economy, and becomes a new pillar of national economic strength, advancing Indonesia to become a global bank. bank. center of Islamic economics and finance (Murniati et al., 2022).

Banks with large assets will be more easily automated, and they can use their resources more freely using new technologies to reduce management costs and increase profits (Firdaus & Hosen, 2013). Return on Assets, which indicates the level of bank profitability, has a positive and significant effect. This is due to the fact that banks that are able to obtain higher profits can be considered effective banks (Firdaus & Hosen, 2013). The level of profitability of an entity is expressed by the Return on Equity ratio. An efficient bank means that the bank can generate higher profits (Firdaus & Hosen, 2013). The results of this study are in line with research conducted by Gupta, Doshit and Chinubhai (2008).

Banks with high CAR values have higher levels of efficiency. CAR can reflect the bank's ability to face unexpected loss risks, and CAR is also considered a factor that

influences the level of bank efficiency. This is in accordance with the studies of Jackson & Meryem (2000) and Gupta, et al. (2008).Non Performing Financing (NPF) is one of the risks that must be borne by banks because there are customers who are unable to repay the credit given to the bank which is classified as substandard credit, doubtful credit and problematic credit. The higher the level of ineffective funding will automatically disrupt bank operations, especially in terms of liquidity. This can cause banks not to use their money properly (Lutfiana and Yulianto, 2015)

From previous studies conducted on banks around the world, most efficiency studies only focus on measuring operational efficiency and conventional bank efficiency research has provided many articles published in foreign and domestic magazines. Meanwhile, this study analyzes the factors that influence banking efficiency, analyzes and compares efficiency measurement methods between the Data Envelopment Analysis (DEA) method and the Data Envelopment Analysis (DEA) method. calculates the health level of CAELS banks, provides Policy implications that can be given as a form of implementation of the measurement results. The level of effectiveness of using the Data Envelopment Analysis (DEA) method is still very limited, especially in Bank Syariah Indonesia (BSI) after the merger and the research is still relatively new.

METHOD

The author uses a quantitative research type using a quantitative descriptive method. Quantitative descriptive research is research that describes variables as they are supported by data in the form of numbers obtained from actual conditions (Aryanti et al., 2023). Sugiyono (2019) stated that quantitative research is a research method based on the philosophy of positivism, as a scientific method because it has met scientific principles concretely or empirically, objectively, measurably, rationally, and also systematically. Quantitative research is research that requires a lot of use of numbers, starting from data collection, interpretation of the data, and the appearance of the results (Syahroni, 2022).

The object of research is something that is of concern in a study, the object of research becomes the target in the study to get answers or solutions to the problems that occur. The object of this study is the selection of input and output variables to calculate the level of efficiency using the Data Envelopment Analysis (DEA) method at the First Stage parametric which was first introduced by Charnes et al. Based on linear programming, the DEA method is used to overcome the problem of calculating relative efficiency for a group of Decision-Making Units (DMUs) using weighted measures of several inputs and outputs (Wanke et al., 2017). The input variables (I) used in this study are third party funds or can be referred to as DPK (I1), total assets (I2), and labor costs (I3). Meanwhile, the output variables (O) used in this study are financing (O1) and operating income (O2). In the second stage, the dependent variable studied using the Tobit model in examining the factors that influence the level of efficiency of an Indonesian Sharia Bank (BSI) in Indonesia is the score of the results of the DEA measurement. Meanwhile, the independent variables used are assets (X1), ROA (X2), ROE (X3), CAR (X4), and NPF (X5).

The subject of this research is Bank Syariah Indonesia (BSI). Operationalization of variables is a method for measuring a concept and how a concept is calculated so that there are variables that can cause other problems from other variables whose situations and conditions depend on other variables. This section will detail the definition of each variable used along with the operational and how to measure it, in this study there is one dependent variable and five independent variables. The dependent variable means a variable that is influenced or can be said to be the result, because of the existence of an independent variable (independent variable). The dependent variable in this study is the efficiency of Islamic banks (Y). While the independent variable means a variable that influences or causes changes or the emergence of the dependent variable (Sugiyono, 2019). The independent variables in this study are assets (X1), return on assets (X2), return on equity (X3), capital adequacy ratio (X4) and non-performing financing (X5).

The unit of analysis is a unit of investigation that examines the background of social phenomena such as individuals, groups, or objects (Sugiyono, 2016). The unit of analysis in this study is Bank Syariah Indonesia (BSI) which is listed on the Indonesia Stock Exchange (IDX) in 2021 - 2024. The population is the entirety of each component studied and has the same characteristics, it can be individuals from a group, an event, or something being studied (Handayani, 2020). The population in this study is Bank Syariah Indonesia (BSI) which is listed on the Indonesia Stock Exchange (IDX) in 2021 - 2024.

This study uses a saturated sampling technique.Saturated sampling technique is a sampling technique when all members of the population are used as samples. Saturated sampling is different from a census because the population census is large while saturated sampling uses a relatively small population even though both use the entire population as samples. The type of data used in this study is secondary data, meaning that the required data is obtained from second-hand sources or not directly from the research subjects (Bungin, 2017). This study uses data sources from the financial reports of Indonesian Islamic banks that have been published on the official website. The data collection method in this study is documentary, meaning that research data is obtained by tracing historical data (Bungin, 2017) through the official website of the Indonesia Stock Exchange (IDX) which is available atwww.idx.co.id in the form of quarterly financial reports from Bank Syariah Indonesia.

Data Analysis Methods

Data Envelopment Analysis

DEA is a non-parametric method for measuring the level of efficiency of Economic Activity Units (UKE). In addition, DEA assesses the efficiency of decision-making units, or work units, which are responsible for a number of inputs. The efficiency of Bank Syariah Indonesia is measured through two stages of data envelopment analysis. DEA is the development of a linear programming method with objective functions and constraints. This study will use a model with the assumption of constant return to scale (CRS), also known as the CCR (Charnes-Cooper-Rhodes) model. Based on Suseno's research (2008: 35-55) on the fact that there is no relationship between the level of efficiency of Islamic Banks (a study of 10 Islamic Banks) and their production scale, this model was chosen. According to the study, because the bank's functions have been integrated with other banks, the economic scale of the banking industry is not comparable to the entity scale. Therefore, the economic scale has changed from entity to functional. For example, in Indonesia, this can be seen from the use of ATM Bersama, credit card services, and marketing. Thus, the level of efficiency can be seen on the functional scale of the domestic banking industry, not only focused on Islamic banking. In addition, this study uses an output-oriented approach to efficiency. This is due to the fact that at the end of the day, the goal of UKE is to optimize the resources it has to gain the greatest profit.

Tobit Analysis

At this point, the variables that affect the efficiency level will be analyzed. In the first stage, the efficiency value will be obtained using the DEA method. Furthermore, this value will be compared with a number of environmental variables to determine the relationship and nature of the relationship between these variables and the efficiency level. Therefore, the second stage of this study is called Two-Stage Data Envelopment Analysis. The Tobit model is used to analyze the components that affect the efficiency level.

CAELS Health Measurement Method and Wilcoxon Signed Ranks Test Method

In addition to providing an explanation of the efficiency level of Bank Syariah Indonesia through two-stage data analysis, this study will also compare the results of the DEA efficiency level measurement method with the CAELS health measurement method. The reason for using the CAELS method rather than the "M" component known as CAMELS is that there are differences in treatment in the CAMELS method used in Indonesia. There are differences in treatment in assessing financial factors that are combined into CAELS and management factors. In addition, so that the results of the DEA method can be integrated into the CAELS method, the results of the DEA method are divided into 5 categories, namely:

- Category 1 : 100% means Very Efficient;
- Category 2: 80% to 99.99% means Efficient;
- Category 3: 60% to 79.99% means Quite Efficient;
- Category 4: 40% to 59.99% means Inefficient;
- Category 5: 0% to 39.9% means Very Inefficient.

The Wilcoxon Signed Ranks Difference Test is another method used to analyze the differences between the results of the DEA method and the CAELS method. This method is a non-parametric test that can be used in situations where the data distribution is not normal and is used to determine whether there is a difference between two paired sample groups (Priyatno 2011: 318).

RESULTS AND DISCUSSION

Results of Descriptive Analysis of Research Data

Financial statement analysis is the process of analyzing financial statements into several parts and examining each part with the aim of getting a good and accurate understanding of the financial statements. Financial statement analysis uses analytical methods and techniques to identify and measure the relationships between items in the financial statements, so that changes in each item can be known when compared. The results of this comparison can be used to determine the level of liquidity, solvency, profitability, and activity ratios that can describe the financial condition and performance of the company (Tyas, 2020).

This financial ratio covers various ratios that can be used, in this study the financial ratios used are the asset structure ratio, the profitability ratio expressed as return on assets and return on equity, the capital adequacy ratio and the inefficient financing ratio. The analysis of each ratio will be described as follows:

1. Asset Structure

   Asset structure is measured by comparing total fixed assets with total company assets.

Table 4.1 Asset Structure Calculation Results

No	Month	2021	2022	2023	2024
1	March	1.27	1.33	1.59	1.28
2	June	1.19	1.34	1.53	-
3	September	1.26	1.56	1.40	-
4	December	1.30	1.59	1.28	-

Source: Processed data, 2025

The assessment criteria for the asset structure are if the resulting figure is below 10.35% then it is considered healthy, if it is between 10.35% and 12.60% then it is considered quite healthy, if it is between 12.61% and 14.85% then it is considered unhealthy, and if it is above 14.85% then it is considered unhealthy. Based on Table 4.1 above, the asset structure of Bank Syariah Indonesia for the period March 2021 to March 2024 can be said to be healthy because the resulting figure is below 10.35%.

2. Return On Asset

ROA is a profitability ratio that measures a company's ability to generate profits from the use of all its resources or assets.

Table 4.2 Return On Asset Calculation Results

No	Month	2021	2022	2023	2024
1	March	0.32	0.36	0.47	0.48
2	June	0.60	0.77	0.90	-
3	September	0.90	1.58	1.31	-
4	December	1.14	1.39	1.61	-

Source: Processed data, 2025

The assessment criteria for return on assets are if the resulting figure is greater than 1.22% then it is considered healthy, if between 0.99% to 1.21% then it is considered quite healthy, if between 0.77% to 0.98% then it is considered less healthy, and if below 0.76% then it is considered less healthy. Based on table 4.2 above, it can be concluded that the months where Bank Syariah Indonesia's ROA is considered healthy are September 2022 & 2023 and December 2022 & 2023. The month where ROA is considered quite healthy is December 2021. The months where ROA is considered less healthy are September 2021 and June 2022 & 2023. The months where ROA is considered unhealthy are March 2021, 2022, 2023 & 2024 and June 2021.

3. Return On Equity

ROE is a ratio that shows the rate of return a business owner earns on the capital invested in the business.

Table 4.3 Return On Equity Calculation Results

No	Month	2021	2022	2023	2024
1	March	3.30	3.80	4.17	4.21
2	June	6.34	8.04	7.86	-
3	September	9.36	16.04	11.30	-
4	December	12.11	12.71	14.72	-

Source: Processed data, 2025

The criteria for assessing return on equity is that if the ROE is above 15%, then the bank is considered very healthy. If ROE is between 12.5% and 15%, then the bank is considered healthy. If ROE is between 5% and 12.5%, then the bank is considered quite healthy. If ROE is between 0% and 5%, then the bank is considered unhealthy. If ROE is between 0% or less than 0% (negative), then the bank is declared unhealthy. Based on Table 4.3 above, it can be concluded that the month in which Bank Syariah Indonesia's ROE is considered very healthy is September 2022. The months in which ROE is considered healthy are December 2022 and 2023. The months in which ROE is considered quite healthy are June 2021, 2022 and 2023, September 2021 and 2023 and December 2021. The months in which ROE is considered less healthy are March 2021, 2022, 2023 and 2024. Bank Syariah Indonesia has never had an unhealthy ROE.

4. Capital Adequacy Ratio

Capital Adequacy Ratio is a ratio that shows the level of risk that all bank assets have.

Table 4.4 Capital Adequacy Ratio Calculation Results

No	Month	2021	2022	2023	2024
1	March	23.10	17.20	20.36	21.35
2	June	22.58	17.31	20.29	-
3	September	22.75	17.19	20.70	-
4	December	22.09	20.29	21.04	-

Source: Processed data, 2025

The assessment criteria for the capital adequacy ratio are if the CAR is greater than 8% then the bank is declared healthy. If the CAR is between 7.9% and 8% then the bank is considered quite healthy. If the CAR is between 6.5% and 7.9% then the bank is declared unhealthy. If the CAR is below 6.5% then the bank is declared unhealthy. Based on Table 4.4 above, it can be concluded that in March 2021 to March 2024, Bank Syariah Indonesia's CAR can be said to be healthy because the value created is more than 8%.

5. Non Performing Financing

Non Performing Financing is the ratio of credit that has been distributed but is unstable, uncertain and stuck or the credit management capability of the bank management is problematic.

The criteria for assessing problematic financing are if the NPF is below 2% then the bank is declared very healthy. If the NPF ratio is 2% to 5% then the bank is declared healthy. If the NPF ratio is 5% to 8% then the bank is considered quite healthy. If the NPF ratio is between 8% to 12% then the bank is considered unhealthy. If the NPF ratio

is greater than 12% then the bank is considered unhealthy. Based on Table 4.5 above, it can be concluded that in March 2021 to March 2024 the NPF of Bank Syariah Indonesia can be said to be very healthy because the value it creates is below 2%.

Table 4.5 Non Performing Financing Calculation Results

No	Month	2021	2022	2023	2024
1	March	0.92	0.90	0.54	0.55
2	June	0.93	0.74	0.62	-
3	September	1.02	0.59	0.61	-
4	December	0.87	0.57	0.55	-

Source: Processed data, 2025

Data Envelopment Analysis Results

Results of Measurement of Efficiency Level of Indonesian Sharia Banks QI 2021- QI 2024 (First Stage)

In this discussion, the efficiency of Bank Syariah Indonesia will be explained using the Data Envelopment Analysis (DEA) method in the first quarter of 2021 to the first quarter of 2024. Input and output variable data to measure efficiency are collected through published reports of Bank Syariah Indonesia. As previously explained, the DEA method will display the results of efficiency measurements through an efficiency score on a scale of 1-100. A score of 100 describes the bank's ability to optimize all of its resources. Meanwhile, if the efficiency score is further away from 100, it can be said that the bank is inefficient in optimizing resources and has not been able to perform well as an intermediary institution.

Table 4.6 Technical Efficiency Results of CRS Model

No	Month	2021	2022	2023	2024
		Score (%)	Score (%)	Score (%)	Score (%)
1	March	91%	84%	100%	100%
2	June	85%	94%	100%	-
3	September	84%	100%	100%	-
4	December	93%	100%	100%	-
Average		88%	94%	100%	100%
Maximum		93%	100%	100%	100%
Minimum		84%	84%	100%	100%

Source: Processed data, 2025

Table 4.7 Technical Efficiency Results of VRS Model

No	Month	2021	2022	2023	2024
		Score (%)	Score (%)	Score (%)	Score (%)
1	March	100%	89%	100%	100%
2	June	94%	99%	100%	-
3	September	100%	100%	100%	-
4	December	100%	100%	100%	-
Average		98%	97%	100%	100%
Maximum		100%	100%	100%	100%
Minimum		94%	89%	100%	100%

Source: Processed data, 2025

Based on the table above, the calculation of technical efficiency with the assumption of Constant Returns to Scale (CRS) produces 7 efficient months and the remaining 6 months are inefficient. The calculation of technical efficiency with the assumption of Variable Returns to Scale (VRS) produces 10 efficient months and the remaining 3 months are inefficient. Therefore, the scale efficiency value, which is the comparison between the CRS and VRS assumptions, states that there are 7 efficient months and the remaining 6

months of scale efficiency operate on the basis of IRS (Increasing Returns to Scale), which means that each additional input ratio will produce more output than the input used. The reason why the average value under the CRS assumption is lower than the VRS value is because the input used under the CRS assumption is lower than the input used under the VRS assumption. Thus, it can be said that CRS can be used as a benchmark for efficiency research because it will show the months of poor performance and improvements can be made.

Table 4.8 Results of Technical Efficiency of Scale Model

No	Month	2021	2022	2023	2024
		Score (%)	Score (%)	Score (%)	Score (%)
1	March	90%	94%	100%	100%
2	June	90%	95%	100%	-
3	September	84%	100%	100%	-
4	December	92%	100%	100%	-
Average		89%	97%	100%	100%
Maximum		92%	100%	100%	100%
Minimum		84%	94%	100%	100%

Source: Processed data, 2025

Results of Analysis of Factors Affecting the Efficiency Level of Indonesian Sharia Banks in the Q1 2021 – Q1 2024 (Second Stage)

In the next stage of this research, an analysis will be conducted on the factors that influence the efficiency of Bank Syariah Indonesia using the Tobit model, so that the entire process in this research is called Two-Stage Data Coverage Analysis. In the process of analyzing the Tobit model in this study, IBM SPSS software was used. The results of the Tobit model analysis are used to conclude the factors that influence the efficiency of Bank Syariah Indonesia. The following are the results of the analysis using the Tobit model.

Table 4.9 Analysis Results Using the Tobit Model

Variable	Coefficient	Std. Error	Z-Statistic	P-Value
ASSET	0.936	0.028	33,877	<.001
ROA	1,000	0.032	31,049	<.001
ROE	0.893	0.039	23,050	<.001
NPF	1,000	0.026	39.120	<.001
CAR	0.946	0.015	62,551	<.001

Source: Processed data, 2025

Based on the analysis results in Table 4.9, it can be seen that all variables have a positive effect. By using this Tobit model, it can be seen that the asset variable has a positive and significant effect on the performance of Islamic Commercial Banks with a p-value of less than α (0.05), which is 0.001 for the total asset value. In the ROA and ROE variables which are representations of a bank's profitability, there is a positive and significant effect as seen from the p-value of less than α (0.05), which is 0.001. The NPF variable, which is a representation of the proportion of bad debts that occur in a bank, shows a positive and significant effect as seen from the p-value of less than α (0.05), which is 0.001. The CAR variable, which describes the bank's capital ability to cover risks, shows a positive relationship between this variable and the level of efficiency of Indonesian Islamic Banks, which is indicated by a p-value of less than α (0.05), which is 0.001.

Results of the DEA Method Test Analysis with the CAELS Method

At this stage, a comparative analysis will be conducted between the DEA efficiency measurement method and the CAELS efficiency measurement method during the research period using the Wilcoxon Signed Rank Test. The purpose of this analysis is to provide an evaluation tool for the CAELS efficiency measurement method which has

been used as a bank performance measurement tool issued by Bank Indonesia and as a consideration for Bank Indonesia to integrate the calculation of the DEA efficiency measurement method into the CAELS efficiency measurement model which will be presented in the next stage.

Table 4.10 Results of the Analysis of the Difference Test of the DEA Method with the CAELS Method

DEA-CAELS	
Z	-.632
Asym. Sig. (2-tailed)	.527

Source: Processed data (2025)

In Table 4.10, it can be seen that the results of the difference test show that there is no significant difference between the results of the two methods. This can be seen in (Asym. Sig. 2-tailed) which shows a number above 0.05, namely 0.527.

CONCLUSION

The purpose of this study is to determine and analyze the impact of the merger of Bank Syariah Indonesia on banking performance through the asset structure ratio, return on assets, return on equity, capital adequacy ratio and non-performing financing. Based on the results of the study that have been presented, the conclusion that can be drawn is that assets have a significant influence on the performance of Bank Syariah Indonesia as seen from the tobit model analysis, it is concluded that the asset variable has a positive and significant influence on the performance of Bank Syariah Indonesia. This is because with a large amount of assets, the company can freely carry out business activities and optimize its resources. ROA has a significant influence on the efficiency of Bank Syariah Indonesia, seen from the ROA variable which is the level of profitability of a bank, has a positive and significant influence. Because banks that are able to generate greater profits can be said to be efficient banks. ROE has a significant influence on the performance of Bank Syariah Indonesia because ROE shows how effectively the bank uses shareholder funds to generate profits. By focusing on increasing this ratio, the bank not only improves its financial performance but also strengthens its position in the eyes of investors.

CAR has a significant influence on the efficiency of Bank Syariah Indonesia because the CAR variable describes the ability of a bank's capital to cover risks, thus indicating a positive influence between the variable and the level of efficiency of Bank Syariah Indonesia. This means that if CAR increases, it will increase the efficiency of Islamic banks. NPF has a significant influence on the efficiency of Bank Syariah Indonesia because the NPF variable shows that the level of bad debts that occur in a bank has a positive and significant influence. This positive relationship is supported by the theory of Berger and Humphrey (1997) which states the existence of a "skimping hypothesis" which explains the positive relationship between efficiency and credit risk. This is suspected because banks implement a policy of limiting spending to conduct credit application analysis.

The difference in efficiency measurement using Data Envelopment Analysis (DEA) with the CAELS method to measure bank health shows that the asset structure ratio, return on assets, return on equity, capital adequacy ratio and inefficient financing provide results that are in accordance with the DEA analysis because the direction of the relationship is positive and statistically significant. The application of efficiency measurement results with the Data Envelopment Analysis (DEA) method can be seen from the general condition of Bank Syariah Indonesia which has fluctuated from year to year and tends to experience increased efficiency. The merger policy of PT Bank Syariah Indonesia from the research results has a positive impact on the level of efficiency and tends to be more stable and efficient with the assumption of CRS or VRS in 2021, 2022 and 2023.

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