Analysis Efficiency of BUMN Sharia Banks After the Merger

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Abstract

The purpose of this study is to analyze the efficiency level of BUMN Islamic banking after the merger, analyze the value of input slack and output slack technical efficiency of BUMN Islamic banking after the merger in order to know which input or output causes inefficiency, and analyze the calculation of the ideal input and output values for efficiency. in state-owned Islamic banking after the merger. The data analysis technique in this research is Data Envelopment Analysis (DEA). Bank Syariah Indonesia after the merger at the beginning of its formation was declared inefficient in the period of February 2021 and April 2021. This is because there are obstacles in its input and output. Based on the results of the analysis that has been carried out, it can be seen that the average Technical Efficiency (TE) is 0.988 indicates that the maximum output that can be generated by BSI using available inputs and technology is around 98.8% of the potential of Bank Syariah Indonesia.

Key words : Islamic Bank, DEA, efficiency, input, output

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INTRODUCTION

The history of the bank's journey from time to time shows that the bank is the center for regulating the circulation of money (Sousa et al., 2019). The flow of money must be regulated by financial institutions so that economic development can run smoothly and maintain currency stability (Agovino et al., 2022). In order to achieve smooth economic development and currency stability, banking as one of the rapidly growing financial institutions in Indonesia is required to have good performance (Alandejani, 2022). At present, banks are not only conventional banking, but there are many Islamic banking.

As a country with the largest Muslim population, Indonesia is trying to become a pioneer and mecca for the development of Islamic finance in the world (Tho'in, 2019). According to Tho'in, Indonesia is able to realize Islamic finance in Indonesia as a mecca for the development of Islamic finance in the world because: (i) the large Muslim population is a potential customer for the Islamic finance industry; (ii) bright economic prospects, reflected in relatively high economic growth (range 6.0%-6.5%) supported by solid economic fundamentals; and (iii) upgrading Indonesia's sovereign credit rating to investment grade which will increase investor interest in investing in the domestic financial sector, including the Islamic finance industry.

Indonesia's interest in this is realized by the Minister of State-Owned Enterprises (BUMN), Erick Thohir, who stated that the merger or merger of BUMN Islamic banks so that Islamic banking in Indonesia became a new pillar of national economic strength and pushed Indonesia as the center of the global Islamic economy and finance (Puspaningtyas, 2020). The reason is, the total assets of state-owned Islamic banks will increase and become the largest in Indonesia. The three state-owned Islamic banks that will be merged are BRI Syariah, BNI Syariah, and Bank Syariah Mandiri.

According to Moin (2012), a merger is a merger between two or more companies, in which only one company remains alive as a legal entity, while the other companies stop their activities or finish. The company that is dismissed transfers its assets and liabilities to the company that takes over, so that the company that takes overh experienced an increase in assets (Carceles, 2019).

Bank mergers or mergers are regulated in Government Regulation Number 28 of 1999, Company Law Number 40 of 2007 and Sharia Banking Law Number 21 of 2008. Mergers or other corporate actions aim to increase shareholder value. The merger of BSM, BNIS and BRIS must also be able to increase value for other stakeholders such as the Islamic banking industry, the business world (MSMEs), education, Hajj fund management and for the development of the sharia economic ecosystem in a broad sense (Chaffai, 2019).

The concept of efficiency begins with the concept of production theory. In his book Modern Microeconomics, Koutsoyiannis (1979), explains that the production function describes the technical relationship between input and output factors. The production function describes the process of transforming inputs into outputs in a certain period (Gulati, 2022). The theory of production consists of several analyzes of how an entrepreneur at a certain level of technology should be able to combine various factors of production to produce a certain number of products as efficiently as possible (Izzeldin, 2021). So, the emphasis of the production process in the theory of production is an economic activity that combines various kinds of inputs (inputs) to produce an output (output). In this production process, goods or services have more added value or use (Bitar et al., 2020).

Measurement of operational efficiency of Indonesian banking can be seen from the ratio of operating costs to operating income. Judging from the cost of opinion ratio proposed by Mardanugraha (2019), one of the indicators of banking efficiency in terms of operational costs is the ratio between Operating Costs to Operating Income (BOPO). The lower the BOPO ratio indicates that the bank has made efficiency in issuing its operational costs. Based on the figure below, the BOPO ratio of BUMN Islamic banking after the merger is lower than that of BUMN Islamic banking before the merger (Nurboja, 2017). This indicates that Islamic banking after the merger has become more efficient. However, the BOPO ratio is not enough to be used as a benchmark.
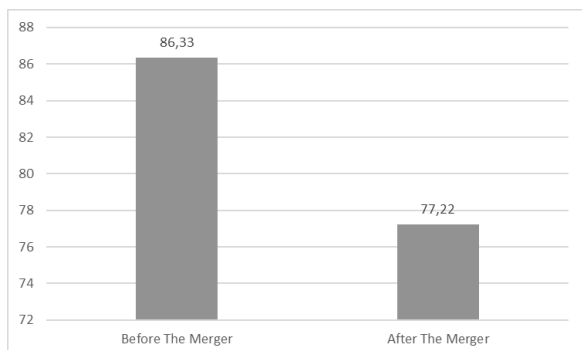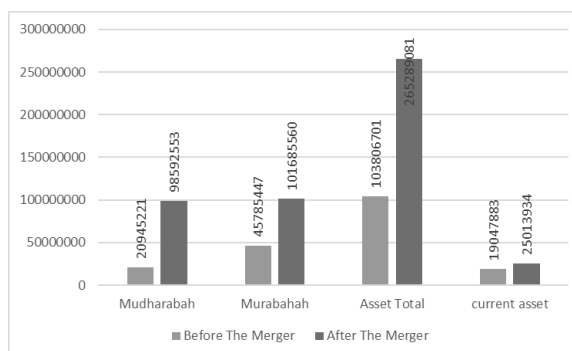

Source: OJK, 2022

Figure 1. BOPO Ratio for State-Owned Sharia Banking Before and After Merger (Percent)

Mudharabah, Murabahah, total assets, and current assets of Sharia BUMNs before and after the merger have very unequal values. Prior to the merger, sharia BUMNs had a mudharabah amount of IDR 20,945,221 million, while after the merger the mudharabah amount was IDR 98,592,553 million. Sharia BUMNs before the merger had a murabahah of IDR 45,785,447 million, while after the merger they had a murabahah of IDR 101,685,560 million. The total assets of Islamic BUMNs before the merger amounted

to IDR 103,806,701 million, while after the merger it amounted to IDR 265,289,081 million. The current assets of sharia BUMNs before and after the merger amounted to IDR 19,047,883 million IDR and IDR 25,015,934 million, respectively.

Source: OJK, 2022

Figure 2. Mudharabah, Murabaha, Total Assets, and Current Assets BUMN Sharia Banking Before and After the Merger (IDR Million)

The importance of research related to the analysis of banking financial efficiency is also shown from the results of various previous studies. The research conducted by Maulida (2021), shows that not all Government Banks and National Private Banks achieve efficiency levels in the study period 2007-2010. Furthermore, based on research conducted by Amirillah (2010), it can be seen that for annual efficiency, in 2005 and 2006 Islamic banking achieved 100% efficiency, in 2007 it reached 99.96% efficiency, in 2008 it reached 99.87% efficiency and in 2009 it reached the lowest efficiency, namely by 99.94%. The average result of the efficiency value for all periods is 99.94%. Based on some of the results of these previous studies,

This research is also based on the research gap in two studies on bank efficiency. The first study was conducted by (Saeed et al., 2018). Assessing the efficiency of Islamic banks in Pakistan after the merger using Ratio analysis techniques and non-parametric Data Envelopment Analysis (DEA) techniques. This study considers 19 banks during the period 2007-2011. The findings show that Islamic banks after

the merger are not good in terms of efficiency and liquidity ratios. However, the results of this study are different from the second study conducted by (Ahmad & Luo, 2020). They examined the efficiency comparison between Islamic banks after the merger in Germany, Turkey, and England during the period 2005-2008 with the DEA method. The results of this study are Islamic banks after the merger are considered more efficient than before the merger.

The level of efficiency is largely determined by the selection of the input and output variables. According to Hadad et al. (2013), Islamic banks have an asset approach to measure the ability of banks to invest or manage funds in the form of financing, securities, other asset management alternatives and current assets held as output. Input is measured from the total assets owned by the bank. While the output consists of Murabaha, Mudharabah, and Current Assets. Islamic Bank. The development of Islamic banking in Indonesia has resulted in the realization of the merger of three existing Islamic banks, namely Bank Syariah Mandiri (BSM), Bank Negara Indonesia Syariah (BNIS), and Bank Rakyat Indonesia Syariah (BRIS). However, in this study, the merger of three Islamic banks had no significant effect on the analysis (Oliver, 2021). This is because Indonesian Islamic banking statistics published by the OJK have provided data for Indonesian Islamic Banks. So, the purpose of this study is to analyze the efficiency level of BUMN sharia banking after the merger, analyze the value of input slack and output slack technical efficiency of BUMN sharia banking after the merger in order to know which input or output causes inefficiency, and analyze the calculation of the ideal input and output values so that efficiency in state-owned Islamic banking after the merger (Prakash, 2021).

Data Envelopment Analysis is a mathematical programming technique used to evaluate the relative efficiency of a collection of decision-making units or Decision Making Units (DMU) in managing resources (inputs) of the same type so that they produce results (outputs) of the same type also, where the form function relationship from input to output does not need to be known. In this model, Data Envelopment Analysis is useful for evaluating the relative efficiency of total assets and third-party funds as input owned by banks. as well as bank funding and income as output owned by the bank.

The importance of research related to the analysis of banking financial efficiency is also shown from the results of various previous studies. In a study conducted by Maulida (2021), it was shown that not all State Banks and National Private Banks achieved the level of efficiency in the study period 2007-2010. Furthermore, based on research conducted by Amirillah (2010), it can be seen that for annual efficiency, in 2005 and 2006 Islamic banking achieved 100% efficiency, in 2007 it reached 99.96% efficiency, in 2008 it reached 99.87% efficiency and in 2009 it reached the lowest efficiency, namely by 99.94%. The average result of the efficiency value for all periods is 99.94%. Based on the results of these previous studies, it can be seen that the calculation of banking efficiency still needs to be done as an effort to find the right solution to increase banking efficiency.

METHOD

The data analysis technique in this research is Data Envelopment Analysis (DEA). DEA is a mathematical programming technique used to evaluate the relative efficiency of a set of decision-making units or Decision Making Units (DMU) in managing resources (inputs) of the same type so that they produce the same type of output (output). where the relationship of the form of the function from the input to the output does not need to be known. The DEA

method was first discovered by (Charnes, Cooper, & Rhodes, 1978). The input-oriented model is based on the assumption of constant returns to scale, so it is known as the CCR model. In the CCR model, each DMU will be compared with all DMUs in the sample with the assumption that the internal and external conditions of the DMU are the same (Zhu, 2019).

But in reality even though the DMU operates with the same resources (input) and produces the same output, the internal and external conditions may be different which can result in a DMU not operating at an optimal scale, for example imperfect competition and financial constraints and many other factors. The CCR model is more appropriate to use to analyze the performance of manufacturing companies, because in this CCR approach it follows the concept of constant returns to scale, meaning that the addition of one input must add one output. If the CCR assumption is still used for DMUs that do not operate optimally, inefficiency will be unclear due to technical efficiency and mixed with scale efficiency.

In connection with the weakness of the CCR assumption, an alternative assumption of return to scale variables emerged, known as the BCC model (Banker, Charnes, & Coopers). The BCC model is a development of the CCR model to meet research needs. The main difference between the CCR model and the BCC is that the first model produces an evaluation of overall efficiency while the second model has been able to separate technical efficiency from scale efficiency. The return to scale variable means that increasing the input x times will not cause the output to increase x times, it can be smaller or larger x times. The BCC approach is relatively more appropriate to use in analyzing the efficiency of performance in service companies, in this case Islamic banks, because in service companies, the role of human resources is more significant than other factors, such as cash, capital, and others.

According to Hadad et al. (2013), Islamic banks have an asset approach to measure the ability of banks to invest or manage funds in the form of financing, securities, alternative asset management and current assets owned as output. Input in this study is measured from the total assets and third-party funds owned by the bank. Total assets are the total assets owned by companies or financial institutions that are used to support the operations of these companies and financial institutions. According to Kasmir (2014), third party funds are funds collected by banks originating from the general public, consisting of demand deposits (demand deposits), savings deposits (saving deposits) and time deposits. While the output consists of bank funding and income. Sources of funds are funds collected by the bank which will later be used by the bank to carry out its functions, the acquisition of these funds can come from the bank itself (in the form of shareholder capital and retained earnings), or from the public (in the form of savings, current accounts, deposits) or from other institutions. Bank revenue is income earned by a bank from the sale of products and other services in the financial sector or other activities aimed at increasing income so that it can provide benefits for the bank.

RESULTS AND DISCUSSION

The first objective in this study is to analyze the efficiency level of BUMN Indonesia Sharia Banks after the merger which is calculated from February 2021 to May 2022. Efficiency is a reflection of banking financial performance, where a bank is said to have high performance if it can improve its efficiency by using appropriate variables to provide maximum results (Sutawijaya & Lestari, 2019). In this study,

technical efficiency analysis was carried out using a Data Envelopment Analysis (DEA) approach with an output orientation of Variable Return to scale (VRS). The data used in this study is data from the Financial Statements of Indonesian Islamic Banks. The output variables used are the amount of funding and income. While the input variables are assets and third party funds. Bank Syariah Indonesia for a certain period as a Decision Making Unit (DMU), is said to be relative efficiency if the dual value is equal to one (efficiency value = 100 percent). On the other hand, if the dual value is less than one, the DMU concerned is considered relatively inefficient (Susilowati, 2014).

Table 1. Estimated Efficiency Calculation of Indonesian Islamic Banks After Merger

Period	CRSTE	VRSTE	SCALE	RTS
February 2021	0.812	1,000	0.818	Irs
March 2021	0.998	1,000	0.998	Crs
April 2021	0.998	1,000	0.996	Drs
May 2021	1,000	1,000	1,000	Crs
June 2021	1,000	1,000	1,000	Crs
July 2021	1,000	1,000	1,000	Crs
August 2021	1,000	1,000	1,000	Crs
September 2021	1,000	1,000	1,000	Crs
October 2021	1,000	1,000	1,000	Crs
November 2021	1,000	1,000	1,000	Crs
December 2021	1,000	1,000	1,000	Crs
January 2022	1,000	1,000	1,000	Crs
February 2022	1,000	1,000	1,000	Crs
March 2022	1,000	1,000	1,000	Crs
April 2022	1,000	1,000	1,000	Crs
May 2022	1,000	1,000	1,000	Crs
Mean	**0.988**	**1,000**	**0.988**	
Min	**0.812**	**1,000**	**0.818**	
Max	**1,000**	**1,000**	**1,000**	

Source: Processed Data, 2022

Information:
CRSTE = Technical Efficiency from CRS DEA;
VRSTE = Technical Efficiency from VRS DEA;
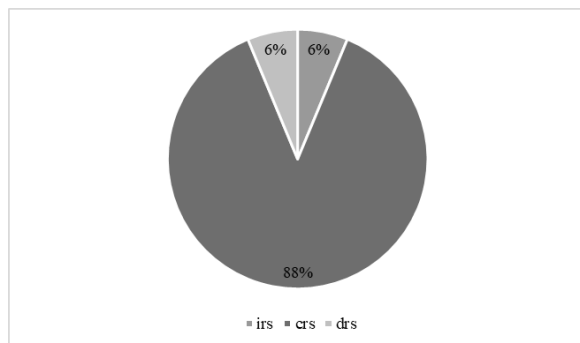SCALE = Scale Efficiency;
RTS = Returns to Scale;
irs = increasing returns to scale;
crs = constant returns to scale;
and drs = decreasing returns to scale

Based on the calculation results above, it can be seen that the average (mean) the technical efficiency of Bank Syariah Indonesia after the merger is 0.999 in the interval of 0.812 to 1,000. Based on the results of the analysis that has been carried out, it can be seen that during the period from February 2021 to May 2022 there are several inefficient conditions in three months that have a technical efficiency value of less than 1, namely in February 2021, March 2021, and April 2021. Meanwhile the three the other twelve months are in an efficient condition with an efficiency value of 1. The first three months are considered less efficient this is because Bank Syariah Indonesia has just started operating.

The results of the efficiency calculation show that the operating period of Bank Syariah Indonesia after the merger is classified asIncreasing Return to Scale (IRS) of 1 period (6%), the operating period of Bank Syariah Indonesia after the merger which is classified as Decreasing Return to Scale (DRS) of 1 period (6%), and the operating period of Bank Syariah Indonesia after the merger which is classified as Constant Return to Scale (CRS) as many as 13 periods (88%). Based on this, it can be seen that the average operating period of Bank Syariah Indonesia after the merger is in a position where the increase in output is equal to the increase in input or called Constant Return to Scale (CRS).

Source: Processed Data, 2022
Figure 1. Returns to Scale of Indonesian Islamic Bank Efficiency After Merger

The second objective of this study is to analyze the value of input slack and output slack technical efficiency of BUMN Indonesia Sharia

Bank after the merger in order to know which input or output causes inefficiency. The DEA calculation does not only measure the efficiency value of Islamic banks after the merger, but also provides a bank reference or reference for banks that are in an inefficient condition to become efficient (Muharam & Pusvitasari, 2017). The results of this DEA analysis are also used to see the value of Slack in each period. Slack itself shows a disturbance in the analyzed period which causes inefficiency. In other words, a period with a score of 1 which indicates 100% efficiency is definitely not Slack in terms of either input or output. On the contrary, period that has an efficiency value of less than 1 or which indicates inefficiency can be ascertained to have Slack in its input or output, the Slack input value itself is used to see whether a number of inputs can be reduced or increased by the bank to produce the same level of output. On the other hand, Slack's output indicates whether a number of outputs can be increased without the need for additional inputs. The value of Slack input and Slack output can later be used to revise which input variables can be improved in order to increase efficiency in the next period. On the other hand, Slack's output indicates whether a number of outputs can be increased without the need for additional inputs. The value of Slack input and Slack output can later be used to revise which input variables can be improved in order to increase efficiency in the next period. On the other hand, Slack's output indicates whether a number of outputs can be increased without the need for additional inputs. The value of Slack input and Slack output can later be used to revise which input variables can be improved in order to increase efficiency in the next period.

Based on the table below, it can be seen that the number of DMUs that experienced

Slack input was 2 periods in February 2021 and April 2021. DMUs that did not experience Slack input were 14 periods. This shows that in the period of February 2021 and April 2021, Bank Syariah Indonesia after the merger experienced inefficiency. This inefficiency is indicated by the presence of excess or shortage of inputs such as assets and third-party funds that are budgeted by a financial unit or DMU in seeking the output to be achieved.

Table 2. Input Slack Efficiency of Indonesian Islamic Banks After Merger

Period	Asset	Third-party funds
February 2021	-29226	-7725938
March 2021	0.000	0.000
April 2021	-30512	-8219211
May 2021	0.000	0.000
June 2021	0.000	0.000
July 2021	0.000	0.000
August 2021	0.000	0.000
September 2021	0.000	0.000
October 2021	0.000	0.000
November 2021	0.000	0.000
December 2021	0.000	0.000
January 2022	0.000	0.000
February 2022	0.000	0.000
March 2022	0.000	0.000
April 2022	0.000	0.000
May 2022	0.000	0.000

Source: Processed Data, 2022

Input resistance (Slack input) itself is needed to see the weakness of a financial unit or DMU of Bank Syariah Indonesia in a certain period that results in inefficiency, to be further corrected in the future, namely by reducing or increasing the input budget that is experiencing obstacles. Based on the results of the analysis, it can be seen from the presence of excess input or lack of input that becomes an input barrier (Slack input). In the assets of Bank Syariah Indonesia after the merger, the asset input in February 2021 is IDR 29,226 million and in April 2021 the asset input was IDR 30,512 million. Meanwhile, the input of third-party funds in February 2021 was IDR 7,725,938 million and

April 2021 IDR 8,219,211 million. This indicates that in February 2021, what caused the input inefficiency in that period was the occurrence of an asset input barrier of IDR 29,226 million and a third-party funding barrier of IDR 7,725,938 million. Meanwhile, what caused BSI inefficiency in the April 2021 period was the occurrence of obstacles to assets of IDR 30,512 million and third-party funds of IDR 8,219,211 million.

In calculating efficiency using the DEA frontier approach, only the location of a financial unit or DMU that is experiencing inefficiency and major obstacles is shown (Slack) on the input and output only, while the factors that cause inefficiency are not explained. For this reason, the analysis is studied again based on the possible causes of inefficiency. In this case, the possible cause of inefficiency is the emergence of the issue of Islamic bank mergers caused by the issue of conventional banks which are considered as the parent company of Islamic banks leaving their subsidiaries (Islamic banks). This issue states that many conventional banks that establish subsidiaries in the form of Islamic banks actually develop themselves and leave their subsidiaries to survive on their own. This raises the issue of the need for a merger of several Islamic banks which actually reduces the credibility of Bank Syariah Indonesia.

Table 3. Output Slack Efficiency of Indonesian Islamic Banks After Merger

Period	Funding Amount	Income
February 2021	7,052,220	12,052,320
March 2021	0.000	0.000
April 2021	8,152,321	13,150,321
May 2021	0.000	0.000
June 2021	0.000	0.000
July 2021	0.000	0.000
August 2021	0.000	0.000
September 2021	0.000	0.000
October 2021	0.000	0.000
November 2021	0.000	0.000
December 2021	0.000	0.000
January 2022	0.000	0.000
February 2022	0.000	0.000
March 2022	0.000	0.000
April 2022	0.000	0.000
May 2022	0.000	0.000

Source: Processed Data, 2022

Based on the table above, it can be seen that the number of DMUs that experienced Slack output was 2 periods and DMUs that did not experience Slack output were 14 periods. In addition, it can also be seen that DMUs that have Slack output values are DMU units of Bank Syariah Indonesia for the period of February 2021 and April 2021. This shows that in the period of February 2021 and April 2021 there was a waste of output which caused inefficiency. In the explanation of output constraints (output Slack), inefficiency is also indicated by the presence of a shortage or excess of the amount of Funding and Revenue generated that is not in accordance with the budgeted amount of Third Party Assets and Funds.

The output resistance value (Slack output) in the period of February 2021 the obstacle is the amount of funding IDR 7,052,220 million and income IDR 12,052,320 million. Meanwhile, in April 2021 the total funding amounted to IDR 8,152,321 million and income IDR 13,150,321 million. It can be concluded that in February 2021 and April 2021 it can be said that Bank Syariah Indonesia after the merger has not been able to maximize the value of its inputs and outputs. This means that the input and output values achieved by inefficient banks have not been able to achieve the actual target (Muharam & Pusvitasari, 2007). This indicates that in February 2021, what caused the output inefficiency in that period was the occurrence of output constraints in the amount of funding of IDR 7,052,220 million and income barriers of IDR 12,052,320 million. Meanwhile, what caused BSI's inefficiency in the April 2021 period was the occurrence of obstacles to funding of IDR

8,152,321 million and revenues of IDR 13,150,321 million.

In this case, the possible cause of the inefficiency is the merger of Islamic state-owned banks caused by conventional banks which are considered to be the holding companies of Islamic banks leaving their subsidiaries (Islamic banks). This states that many conventional banks that establish subsidiaries in the form of Islamic banks actually develop themselves and leave their subsidiaries to survive on their own. This raises the issue of the need for a merger of several Islamic banks which actually reduces the credibility of Bank Syariah Indonesia.

The third objective of this research is to analysis of the calculation of the ideal input and output values for efficiency in BUMN Indonesia Sharia Banks after the merger. In addition to showing the efficiency conditions and Slack inputs and Slack outputs, the DEA estimation results also show the projected input and projected output values. Projected Value is the value of input and output needed to achieve efficiency in a financial unit. This projected value is the value of inputs and outputs that should be achieved by a business unit in efficient conditions. This projected value is used to improve inputs and outputs in financial units that experience slack (constraints or obstacles) in their inputs and outputs. The projected input and projected output values are input and output predictions needed in order to obtain technical efficiency in the performance of Bank Syariah Indonesia after the merger in the future.

Table 4. Projected Input Efficiency of Indonesian Islamic Banks After Merger

Period	Asset	Third-party funds
February 2021	16761000,000	57093000,000
March 2021	17339000,000	57697000,000
April 2021	17253000,000	58811000,000

Period	Asset	Third-party funds
May 2021	1704000,000	59193000,000
June 2021	18649000	63581000
July 2021	18160000,000	62249000,000
August 2021	17495000,000	62087000,000
September 2021	20280000,000	61521297,000
October 2021	206580000	61531000,000
November 2021	23298000,000	62151000,000
December 2021	23890291,000	62289172,000
January 2022	24192831,000	61928719,000
February 2022	24920293,000	63102917,000
March 2022	25027312,000	62981221,000
April 2022	16761000,000	55174000,000
May 2022	25027312,000	63581000,000
Minimum	20195515,133	60520457,875
Maximum	16761000,000	57093000,000
Average	17339000,000	57697000,000

Source: Processed Data, 2022

The projected input data above shows the input value of assets and third-party funds that must be fulfilled by Bank Syariah Indonesia to obtain efficient conditions for each DMU. From these results, it can be seen that to make BSI more efficient after the merger, a total asset of IDR 16,761.000 million in February for the next period and third-party funds of IDR 57,093,000 million. Bank Syariah Indonesia after the merger can add assets of IDR 20,195,515,133 million and third-party funds of IDR 60,520,457,875 million to make April for the next period to remain efficient.

Data projected output above shows the value of the amount of funding and income that must be met by Bank Syariah Indonesia to obtain efficient conditions for each DMU. From these results, it can be seen that to make BSI more efficient after the merger, a total funding of IDR 1,143,221 million is required in the next February period and an income of IDR 1,138,405 million. After the merger, Bank Syariah Indonesia can increase funding by IDR 94,002

million and income by IDR 96,408,590 million to make the next April period more efficient.

Table 5. Projected Output Efficiency of Indonesian Islamic Banks After Merger

Period	Funding Amount	Income
February 2021	1,143,221,000	1138405,000
March 2021	114128,000	103875,500
April 2021	94002,000	96408,590
May 2021	114891,000	99866,810
June 2021	114891,000	98037,250
July 2021	115602,000	101571,300
August 2021	117371	102888
September 2021	115979,000	106194,300
October 2021	116268,000	109683,100
November 2021	116878,800	107271,300
December 2021	117210,000	115137,400
January 2022	117777,000	113986,100
February 2022	118912,000	114019,000
March 2022	119014,000	115091,000
April 2022	12023,000	109293,000
May 2022	121476,000	110293,000
Minimum	**94,0002,000**	**96408,590**
Maximum	**1,143,221,000**	**1138405,000**
Average	**179,852,738**	**166966,420**

Source: Processed Data, 2022

Based on the analysis of Data Envelopment Analysis, Bank Syariah Indonesia is said to be efficient if the ratio of output to input ratio is equal to one, meaning that the BSI unit for that period is no longer wasteful in the use of its inputs and or has been able to utilize the potential of its production capabilities optimally, so that able to achieve an efficient level of output (Coelli, et al., 2015). Efficient output itself is a condition where in financial performance BSI produces maximum output by utilizing existing inputs. Determination of input and output variables in the efficiency analysis of Bank Syariah Indonesia itself uses the Value Added Approach. Therefore, The input variables based on the Value Added Approach for Bank Syariah Indonesia after the merger are assets and third party funds. Meanwhile, the output variables in the Value Added Approach for Bank Syariah Indonesia are determined by the amount of funding and income.

Based on the results of the analysis that has been carried out, it can be seen that the average Technical Efficiency (TE) of 0.988 indicates that the maximum output that can be generated by BSI using available inputs and technology is around 98.8% of the potential of Bank Syariah Indonesia. These results indicate that BSI only requires an increase in input of 1.2% to obtain 100% efficiency conditions.

Furthermore, regarding Slack input and Slack output, it can be seen that the number of DMUs experiencing Slack is 2 units (12%) and DMUs who do not experience Slack are 14 periods (88%). The DMU (BSI financial period) that has a Slack value is the DMU unit of Bank Syariah Indonesia for the period February 2021 and April 2021. This shows that in the February 2021 period, Bank Syariah Indonesia experienced inefficiency. Phan, et al. (2019), says that bank size and market concentration can positively affect bank efficiency. The merger of Islamic banks owned by the Government of Indonesia has implications for increasing bank size and capitalization. Banks with high capitalization are more stable (Miah & Uddin, 2017; Tan & Floros, 2013) as well as banks with better capitalization among banks in the public sector have lower risk Sarkar et al. (2019), thereby promoting increased stability. The results of this study are in line with the findings of Sufian & Kamarudin (2017), that the Malaysian banking sector has shown a higher level of total factor productivity during the post-merger period which is associated with technological advances. The condition of increasing BSI stability indicates an increase in efficiency after the merger. The increase in BSI stability is also a consequence of the growth and increase in income levels after the merger which supports the research of (Hassen, et al., 2018). The increase in BSI stability after the merger could be due to increased income diversification and in the short term reduced competition.

CONCLUSION

Bank Syariah Indonesia after the merger at the beginning of its formation was declared inefficient in the period of February 2021 and April 2021. This is because there are obstacles in its input and output. Based on the results of the analysis that has been carried out, it can be seen that the average Technical Efficiency (TE) of 0.988 indicates that the maximum output that can be generated by BSI using available inputs and technology is around 98.8% of the potential of Bank Syariah Indonesia. These results indicate that BSI only requires an increase in input of 1.2% to obtain 100% efficiency conditions. There are several steps that can be taken to improve the efficiency of Bank Syariah Indonesia after the merger.

The novelty (originality) of this research is that researchers use an asset approach in measuring the efficiency of BUMN Islamic banking after the merger. Input is measured from the total assets and third party funds owned by the bank. While the output consists of bank funding and income. The results of the research will provide quantitative information on the level of efficiency of BUMN Islamic banking after the merger, analysis of input slack and output slack values of technical efficiency of BUMN Islamic banking after the merger, and analysis of input and output predictions required on the technical efficiency of BUMN Islamic banking after mergers in the future. come.

The recommendation according to the findings are; (1) Implementing a new vision for the development of Bank Syariah Indonesia; (2) The new imaging program of Bank Syariah Indonesia which includes aspects of positioning, differentiation, and branding; and (3) a new mapping program more accurately to the market potential of Indonesian Islamic Banks which generally directs Islamic banking services as universal services or banks for all levels of society and all segments in accordance with the strategy of each Islamic bank.

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