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Efficiency Analysis of State-Owned Enterprise Bank Using Stochastic Frontier Analysis (SFA) Approach

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Abstract

The purpose of the study was to determine the level of efficiency of state-owned banks for the 2019-2021 period. This research is a descriptive study with a quantitative approach that uses secondary data from the Financial Statements of State-owned Banks for the 2019-2021 period on the research object of PT. Bank Negara Indonesia Tbk., PT. Bank Rakyat Indonesia Tbk., PT. Bank Tabungan Negara Tbk., and PT. Bank Mandiri Tbk., obtained from the website of the Financial Services Authority. The data processed is data for the quarter of 2019 to the third quarter of 2021. The efficiency calculation is carried out using the Parametric Approach Stochastic Frontier Analysis which is processed using STATA 17. The results of the study using calculations show that state-owned banks in the 2019-2021 period have an average efficiency level of 0.9955 or close to 1. The results of these calculations indicate that state-owned banks are efficient in managing inputs into optimal output. State-owned banks that have the highest efficiency scores are Bank BRI and Bank Mandiri, followed by Bank BNI, then Bank BTN. State-owned banks still need to supervise managers and evaluate the allocation of deposits to productive assets to obtain greater profits to improve the overall economy.

Keywords: *Stochastic Frontier Analysis, Efficiency, Banking Sector*

Abstrak

Tujuan dari penelitian ini adalah untuk mengetahui tingkat efisiensi bank-bank BUMN periode 2019-2021. Penelitian ini merupakan penelitian deskriptif dengan pendekatan kuantitatif yang menggunakan data sekunder dari Laporan Keuangan Bank-bank BUMN Periode 2019-2021 pada objek penelitian PT. Bank Negara Indonesia Tbk., PT. Bank Rakyat Indonesia Tbk., PT. Bank Tabungan Negara Tbk., dan PT. Bank Mandiri Tbk., diperoleh dari website Otoritas Jasa Keuangan. Data yang diolah adalah data triwulan tahun 2019 hingga triwulan III 2021. Perhitungan efisiensi dilakukan dengan menggunakan Parametric Approach Stochastic Frontier Analysis yang diolah menggunakan STATA 17. Hasil kajian menggunakan perhitungan menunjukkan bahwa bank BUMN pada periode 2019-2021 memiliki tingkat efisiensi rata-rata sebesar 0,9955 atau mendekati 1. Hasil perhitungan tersebut menunjukkan bahwa bank BUMN efisien dalam mengelola input menjadi output yang optimal. Bank BUMN yang memiliki skor efisiensi tertinggi adalah Bank BRI dan Bank Mandiri, disusul Bank BNI, dan Bank BTN. Bank BUMN masih perlu melakukan pengawasan secara manajerial dan mengevaluasi alokasi simpanan ke aset produktif sehingga efisiensi bank dapat meningkatkan perekonomian secara keseluruhan.

Kata kunci: Analisis Stochastic Frontier, efisiensi, Sektor Perbankan

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INTRODUCTION

Indonesia's economic conditions during the Covid-19 pandemic, based on the Consumer Survey report by Bank Indonesia, were in the pessimistic zone. The Covid-19 pandemic has had an impact on the economy, including the banking sector (Wu & Olson, 2020). The Covid-19 pandemic is a threat because the banking sector will experience several possible risks that arise, such as the risk of bad loans, the risk of asset decline, market risk and so on, which in turn will affect banking performance and profitability. (Wahyudi, 2020). The banking intermediation function has begun to grow positively, although it is not yet strong in the midst of the Covid-19 pandemic, which is still being controlled by the government. This improvement was driven by the start of improving credit demand in line with the continued recovery in performance and activities of corporations, households and MSMEs (Daniel, 2021). As a bank whose majority shares are owned by the government, state-owned banks have a large market share, also play a role in economic development in Indonesia, and even economic stability. The large role managed by the government makes state-owned banks are expected to have a positive influence on the national economy through maximum performance improvement, the good or bad performance of this state-owned bank affects the performance of the banking sector because of its market share and its large role in the Indonesian economy (Febriyanti et al., 2020).

Efficiency is one of the performance parameters that theoretically underlies the entire performance of a company (Sa'diyah & Hilabi, 2022). The bank's ability to produce maximum output with available inputs is a measure of the expected performance. If a bank is efficient, then there is an expectation of increased profitability, greater amount of funds disbursed, better price and quality of service for consumers, and greater safety and health if some efficiency savings are implemented to improve capital buffers to absorb risk. Methods in measuring banking efficiency can be done with 3 approaches, namely: Data Envelopment Analysis (DEA), Stochastic Frontier Analysis (SFA), and Distribution Free Analysis (DFA). The SFA approach is a frontier approach which has the advantage that it can calculate many inputs and outputs. The SFA approach is better or significantly more informative than the DEA approach. It is said to be better because this approach is based on more economic optimization than technical optimization (Ismail, 2015). Several studies that have been conducted regarding the measurement of the level of banking efficiency mentioned above, the majority examine the comparison between domestic banks and foreign banks, as well as examine Islamic commercial banks. In Indonesia, research that focuses on state-owned commercial banks to measure their efficiency is still rare. Based on the phenomena that occur, the purpose of the study was to determine the level of efficiency of state-owned enterprise banks for the 2019-2021 period.

LITERATURE REVIEW

According to Law no. 10 of 1998, a bank is a business entity that collects funds from the public in the form of savings and distributes them to the public in the form of credit funds or other forms to improve the standard of living of many people. According to Kasmir (2014), in general, the function of the bank is to collect and distribute public funds. Its activities include raising funds, channeling funds, or credit, providing other services such as remittances, clearing, collections, and others.

A banking company can be said to be efficient if it is able to produce more output than the input issued. There are three factors that can cause a bank to be categorized as efficiency. The first was if the bank can use the same input and the resulting output value is greater. Second, if a bank uses smaller inputs, it can produce the same output. Third, if a bank uses larger inputs, the amount of output produced is also greater, with a larger percentage when compared to the number of inputs added (Hidayat, 2014). Efficiency

in banking is one of the performance parameters that is widely used because it has answers to difficulties in calculating bank performance measures. The level of efficiency of a bank can be seen from various indicators, one of which is the financial report of the bank concerned. A number of financial ratios that can be used to predict and anticipate the future (Bisri, 2016). From a banking perspective, there are three kinds of efficiency, namely Technical Efficiency (TE), Allocative Efficiency (AE) and Economic Efficiency (EE). Banking efficiency is classified into technical efficiency, namely the company's ability to achieve an optimal level of output by using certain inputs for technical and operational relationships; allocative efficiency, which is about choosing between a combination of technically efficient use of inputs to produce the maximum possible output; and economic efficiency, which is a combination of operational efficiency and allocative efficiency (Bogetoft & Otto, 2011).

According to Silkman (1986), There are three approaches to measure banking efficiency, namely the ratio approach by calculating the ratio of the output and input used, the regression approach using a model of a certain level of output as a function of certain inputs, and the frontier approach. This research uses a frontier approach, namely a parametric approach with the Stochastic Frontier Analysis (SFA) method. Stochastic Frontier Analysis was developed by Aigner, Lovell, & Schmidt in 1977. The application of this model can be done through the specification of the Cobb Douglas function, where all observations are required to be below the frontier using data from several company samples. SFA has advantages over other models, namely first, the inclusion of a disturbance term that represents disturbances, measurement errors and exogenous shocks that are out of control. Second, environmental variables are easier to treat, allow hypothesis testing using statistics, and outliers are easier to identify.

The stochastic frontier production function model used in this study is the Cobb-Douglas production function model as follows, while En is the error term (Rahim, 2016):

$$\ln Q1 = \beta_0 + \beta_1 ln(X_1) + \beta_2 ln(X_2) + .. + \beta_n ln(X_n) + \mathrm{E_n} \quad (1)$$

According to Candra and Yulianto (2015), there are three approaches that are commonly used to define the relationship between inputs and outputs in the financial activities of a financial institution, namely the asset approach, the production approach, and the intermediation approach. Berger & Mester (1997) stated that the intermediation approach is the approach that is considered more appropriate to evaluate banking performance, because of the characteristics of banking as a financial intermediation which collects funds from surplus units and distributes them to deficit units.

The theoretical framework is structured to make it easier to understand the relationship between the variables studied. This study involves input variables consisting of Total Savings, Total Costs, and Capital, and the output variable is Total Credit. The preparation of the theoretical framework refers to the existing theoretical basis and the results of research that has been done by previous researchers. The steps for measuring the level of efficiency can be seen in the flow as in the image below (Kautsar & Sadalia, 2018).

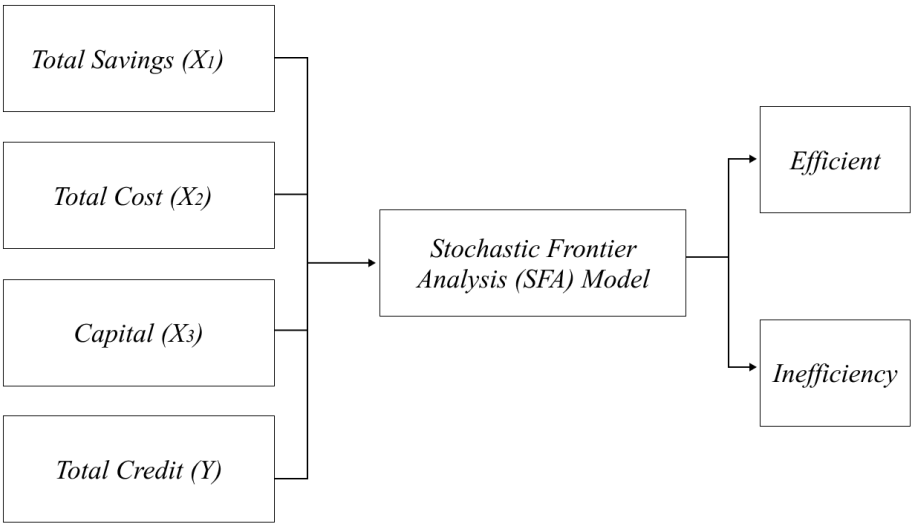

Figure 1. Research Framework

Data on total savings, total costs, capital, and total loans are obtained from financial reports which are then tabulated using Microsoft Excel to create row data. Then, enter data into the STATA 17 application to obtain a Stochastic Frontier Analysis (SFA) model, after obtaining the SFA model, the efficiency level of state-owned banks for the 2019-2021 period can be searched.

RESEARCH METHODS

The type of research in this research is descriptive research with a quantitative approach. The population in this study were 4 State-Owned Commercial Banks for the period 2019-2021. The sample in this study is PT. Bank Rakyat Indonesia (Persero) Tbk., PT. Bank Negara Indonesia (Persero) Tbk., PT. Bank Mandiri (Persero) Tbk., dan PT. Bank Tabungan Negara (Persero) Tbk. The type of data used in this study is quantitative data and the source of data in this study is secondary data. The data collection technique used is the documentation technique obtained from the Otoritas Jasa Keuangan (OJK) site. The data used in this study is data on the financial statements of state-owned banks consisting of total credit, total deposits, total costs, and capital. With the following steps:

1. Identify data on total credit, total deposits, total costs, and capital in the financial statements of state-owned banks that are the object of research.
2. Then enter the input and output variables into the SFA model equation using the STATA 17 tool to get the following equation results (Bogetoft & Otto, 2011):

$$LnTK = bo + b_1 lnTS + b_2 lnTB + b_3 lnM + e \quad (2)$$

Information:
lnTK = Total Credit
lnTS = Total Savings
lnTB = Total Cost
lnM = Capital
e = Error

3. Calculating the level of efficiency of state-owned banks that are the object of research using the STATA 17 tool.
4. Analyzing and interpreting the results of the data processed at the state-owned bank company which is the object of research. If the value of the efficiency level is close to 1, then the BUMN Bank can be said to be efficient, but if it is close to 0 then the BUMN Bank is said to be inefficient (Farrel, 1957).
5. Draw conclusions on the efficiency level of state-owned banks for the 2019-2021 period.

RESULTS AND DISCUSSION

The data used in this study are financial reports from quarters 1 to 4 for the 2019-2021 period PT. Bank Rakyat Indonesia (Persero) Tbk., PT. Bank Negara Indonesia (Persero) Tbk., PT. Bank Mandiri (Persero) Tbk., dan PT. Bank Tabungan Negara (Persero) Tbk. In the process of calculating the data analysis using the excel program, which is then input into the STATA 17 application to perform an efficiency analysis using the Stochastic Frontier Analysis (SFA) approach. The variables used in this study are inputs in the form of Total Savings, Total Costs and Capital, and the output used is Total Credit.

1. Identification of State-Owned Bank Financial Statements for the 2019-2021 Period
   This study uses the bank's financial statements by taking data on Total Credit, Total Deposits, Total Costs, and Capital from Bank BNI, Bank BRI, Bank Mandiri, and Bank BTN. The financial statements can be seen in detail in the appendix and are briefly presented as follow:

Table 1. Bank BNI Financial Report 2019-2021 Period

(in million rupiah)

Year	Total Credit	Total Savings	Total Cost	Capital
2019-Q1	Rp490,803,207	Rp537,821,992	Rp15,911,558	Rp26,401,687
2019-Q2	Rp516,388,092	Rp559,443,889	Rp26,139,986	Rp26,401,687
2019-Q3	Rp525,552,922	Rp544,194,736	Rp39,229,282	Rp26,401,687
2019-Q4	Rp522,750,099	Rp571,075,697	Rp53,872,048	Rp26,401,687
2020-Q1	Rp545,693,336	Rp591,482,326	Rp14,287,872	Rp26,322,238
2020-Q2	Rp543,900,121	Rp619,564,173	Rp29,401,653	Rp26,322,238
2020-Q3	Rp548,613,540	Rp660,102,327	Rp44,678,831	Rp26,322,238
2020-Q4	Rp551,786,774	Rp632,212,284	Rp63,495,147	Rp26,322,238
2021-Q1	Rp558,070,101	Rp639,713,173	Rp13,675,512	Rp31,387,355
2021-Q2	Rp568,536,688	Rp450,411,357	Rp28,805,266	Rp31,387,354
2021-Q3	Rp569,568,199	Rp668,987,669	Rp41,239,952	Rp31,259,329
2021-Q4	Rp581,497,289	Rp729,547,155	Rp55,603,453	Rp31,259,328

Source: Otoritas Jasa Keuangan (OJK) Financial Reports, Processed data

It can be seen in the table of Bank BNI's Financial Statements during the first quarter to the fourth quarter of the 2019-2021 period, showing that Total Loans grew by 18%, Total Deposits grew by 35%, and Capital grew by 18%, while Total Costs grew by 18%. issued tends to fluctuate.

Table 2. BRI Bank Financial Report 2019-2021 Period

(in million rupiah)

Year	Total Credit	Total Savings	Total Cost	Capital
2019-Q1	Rp896,526,155	Rp1,033,256,311	Rp25,400,250	Rp9,544,886
2019-Q2	Rp912,082,842	Rp1,079,072,481	Rp52,947,647	Rp10,082,152
2019-Q3	Rp931,051,034	Rp1,121,024,389	Rp80,448,269	Rp10,084,716
2019-Q4	Rp859,570,852	Rp 969,750,006	Rp109,913,989	Rp10,087,281
2020-Q1	Rp884,269,043	Rp 978,326,372	Rp29,667,843	Rp11,064,001
2020-Q2	Rp869,055,785	Rp1,013,155,583	Rp58,041,881	Rp11,655,142
2020-Q3	Rp877,560,684	Rp1,062,702,079	Rp90,024,779	Rp11,033,908
2020-Q4	Rp880,685,363	Rp1,052,663,870	Rp121,249,454	Rp12,318,549
2021-Q1	Rp896,526,155	Rp1,033,256,311	Rp16,676,720	Rp11,607,989
2021-Q2	Rp912,082,842	Rp1,079,072,481	Rp 62,546,639	Rp13,327,322
2021-Q3	Rp931,051,034	Rp1,121,024,389	Rp91,637,280	Rp107,437,791
2021-Q4	Rp943,702,693	Rp1,127,848,716	Rp121,299,207	Rp10,065,485

Source: Otoritas Jasa Keuangan (OJK) Financial Reports, Processed data

It can be seen in the table of BRI's Financial Statements during the first quarter to the fourth quarter of the 2019-2021 period, showing that Total Loans had experienced a decline in the 4th quarter of 2019, but after that it grew by 5%, Total Deposits had also decreased in the third quarter. 4th year in 2019, but after that it grew by 9%. In the 3rd quarter of 2021 Capital gets a very large income. However, Capital and Total Costs tend to fluctuate.

Table 3. Laporan Keuangan Bank BTN Periode 2019-2021

(in million rupiah)

Year	Total Credit	Total Savings	Total Cost	Capital
2019-Q1	Rp219,695,414	Rp197,498,007	Rp6,303,456	Rp11,208,814
2019-Q2	Rp227,875,681	Rp199,978,794	Rp12,577,726	Rp11,208,814
2019-Q3	Rp233,626,024	Rp209,860,839	Rp20,120,090	Rp11,208,814
2019-Q4	Rp232,212,539	Rp225,400,514	Rp27,583,269	Rp11,208,814
2020-Q1	Rp229,334,925	Rp204,296,494	Rp6,347,185	Rp11,208,814
2020-Q2	Rp227,959,190	Rp209,454,507	Rp12,657,118	Rp11,208,814

Year	Total Credit	Total Savings	Total Cost	Capital
2020-Q3	Rp230,558,136	Rp273,332,928	Rp19,186,480	Rp11,208,814
2020-Q4	Rp235,052,116	Rp279,135,068	Rp26,079,117	Rp11,208,814
2021-Q1	Rp235,868,233	Rp294,913,750	Rp5,126,376	Rp12,811,172
2021-Q2	Rp239,043,512	Rp298,378,993	Rp12,378,696	Rp12,811,172
2021-Q3	Rp273,492,070	Rp291,264,197	Rp18,865,642	Rp12,811,172
2021-Q4	Rp247,285,433	Rp295,975,826	Rp25,781,131	Rp11,208,814

Source: Otoritas Jasa Keuangan (OJK) Financial Reports, Processed data

It can be seen in the table of Bank BTN's Financial Statements during the first quarter to the fourth quarter of the 2019-2021 period, showing that Total Loans grew by 12.5%, Total Deposits grew quite rapidly at 49.8%. At Bank BTN, the capital owned tends to be fixed, while the Total Cost tends to fluctuate.

Table 4. Bank Mandiri Financial Statements for the 2019-2021 Period

(in million rupiah)

Year	Total Credit	Total Savings	Total Cost	Capital
2019-Q1	Rp778,954,674	Rp947,786,184	Rp16,782,974	Rp31,476,308
2019-Q2	Rp805,204,153	Rp924,758,238	Rp35,131,721	Rp31,476,308
2019-Q3	Rp808,863,845	Rp963,733,160	Rp54,007,621	Rp31,476,308
2019-Q4	Rp792,351,117	Rp815,105,541	Rp74,034,613	Rp31,476,308
2020-Q1	Rp786,108,510	Rp819,929,656	Rp19,015,193	Rp31,461,728
2020-Q2	Rp754,846,865	Rp853,413,414	Rp39,306,485	Rp31,325,413
2020-Q3	Rp751,156,414	Rp894,159,907	Rp58,200,072	Rp31,325,413
2020-Q4	Rp763,603,416	Rp908,938,306	Rp80,063,763	Rp31,325,413
2021-Q1	Rp778,954,674	Rp947,786,184	Rp18,649,680	Rp31,325,413
2021-Q2	Rp805,204,153	Rp924,758,238	Rp36,698,879	Rp31,325,413
2021-Q3	Rp808,863,845	Rp963,733,160	Rp54,447,236	Rp31,325,413
2021-Q4	Rp828,113,863	Rp1,026,297,272	Rp71,323,597	Rp32,790,655

Source: Otoritas Jasa Keuangan (OJK) Financial Reports, Processed data

It can be seen in the table of Bank Mandiri's Financial Statements for the first quarter to the fourth quarter of the 2019-2021 period, showing that Total Credit, Total Deposits, and Total Costs tend to fluctuate. Meanwhile, capital has a fixed value.

2. Stochastic Frontier Analysis Parametric Equation Model

By using the parametric Stochastic Frontier Analysis model, the efficiency level of the 4 sample banks can be measured using Total Credit as output, and Total Savings, Total Costs and Capital as inputs. The following are the results of the analysis using the SFA parametric method.

Table 5. Results of the analysis using the SFA method

tk	Coefficient	Std. err.	z	P>|z|	[95% conf. interval]	
Frontier						
ts	0.907215	0.0405437	22.38	0.000	0.8277507	0.9866793
tb	0.026804	0.247733	1.08	0.279	-0.0217508	0.0753588
m	0.0382349	0.0406105	0.94	0.346	-0.0413603	0.1178301
_cons	-6.3373	216.7368	-0.03	0.977	-431.1336	418.459
Usigma						
_cons	-3.556789	35.94749	-0.10	0.921	-74.01258	66.899
Vsigma						
_cons	-4.803885	0.2176762	-22.07	0.000	-5.230523	-4.377247
Sigma-u	0.1689091	3.035929	0.06	0.956	8.848	3.360
Sigma-v	0 .0905419	0.0098544	9.19	0.000	0.0731487	0.1120709
lambda	1.865535	3.036627	0.61	0.539	-4.086145	7.817215

Based on the results of the analysis using the SFA above, it produces an equation model as follows:

$$lnTk = -6.3373 + 0{,}907215 lnTS + 0{,}026804 lnTB + 0{,}382349 lnM + e \qquad (3)$$

Where :
TK = Total Credit
TS = Total Savings
TB = Total Cost
M = Capital
e = Error

Referring to the equation of the SFA model above which has a constant of -6.3373 which means it has a negative impact on inefficiency, in other words, it has a positive impact on efficiency. If the total cost, total savings, and capital are held constant, it means that there will be a total credit growth of 6.3373%.

The total savings variable has a regression coefficient of 0.907215, indicating that if total deposits grew by one unit and total costs and capital were held constant, then total loans would grow by 0.907215%. The table above shows that the input component in the form of Total Savings has a significance value of 0.000. Because the significance value of the Total Savings variable is smaller than the confidence level used, which is 5%, it means that there is a significant effect on total credit. The total cost variable has a regression coefficient of 0.026804 indicating that if the total cost grows by one unit and the value of capital and total savings is considered constant, then the total credit value will grow by 0.02804%. In the table, the significance value of Total Cost is 0.279, because the

significance value of the Total Cost variable is greater than the confidence level used, which is 5%, meaning that the total cost has no significant effect on total credit.

The capital variable has a regression coefficient of 0.382349 indicating that if capital grows by one unit and it is assumed that the total cost and total savings are considered constant, the total credit will grow by 0.382349%. In the table, the significance value of Capital is 0.346, because the significance value of the Capital variable is greater than the level of confidence used, which is 5%, meaning that total costs have no significant effect on total credit. Based on the results of the calculation of the efficiency level using the Stochastic Frontier Analysis (SFA) parametric model, the efficiency level values obtained from state-owned banks consisting of Bank Negara Indonesia, Bank Rakyat Indonesia, Bank Tabungan Negara, and Bank Mandiri during the 2019-2021 period are as follows:

Table 1. State-owned Bank Efficiency Level 2019-2021

	BNI	BRI	BTN	Mandiri
2019	0.995562	0.995565	0.995789	0.995557
2020	0.995437	0.995533	0.995504	0.995553
2021	0.995538	0.995469	0.995214	0.995455

Source: Processed Data

The results of the efficiency level analysis above show that the average efficiency of the 4 sample banks is 0.9955 or close to 1. The most efficient state-owned banks during 2019-2021 are Bank BRI and Bank Mandiri with an efficiency value of 0.995522, then there is Bank BNI with an efficiency value of 0.995512, and the one with the lowest efficiency is Bank BTN with an efficiency value of 0.995502. This can be seen in the following graph.

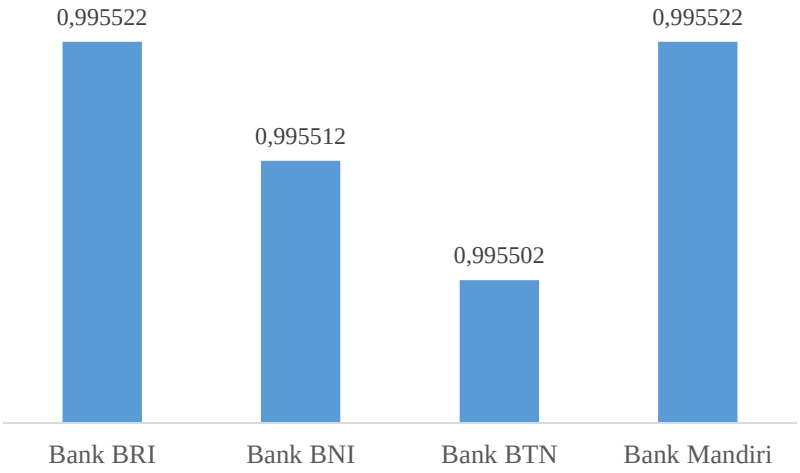

Figure 2. Graph of Comparison of Efficiency Levels of State-Owned Banks for the 2019-2021 Period

Based on these results, it can be said that the performance of state-owned banks during 2019-2021 has worked optimally because it has an efficiency level that is close to 1. State-owned banks can still maintain their efficiency.

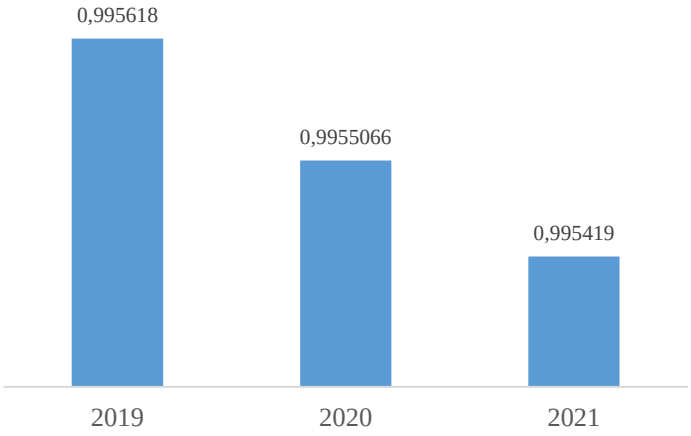

Figure 3. Comparison Graph of Efficiency Levels for the 2019-2021 Period

The results of the analysis explain that the total number of loans and total deposits of state-owned banks tends to grow from year to year, while the total amount of costs and capital tends to fluctuate during the observation period. From the SFA model equation that has been obtained, it can be assumed that total savings, total costs, and capital have a positive influence on total credit, so it can be assumed that each total savings, total cost, and capital experience growth, then total credit will experience growth, as well as on the other hand, if total savings, total costs, and capital decrease, the total credit will also decrease.

At a time when Indonesia experienced economic paralysis caused by the COVID-19 pandemic, banks tended to be more efficient, so that the costs incurred decreased (Widagdo & Sa'diyah, 2022). This was done because during the crisis the bank's function as a financial intermediary did not run normally, as a result the bank's income decreased, while costs continued to increase for banking operational needs. State-owned banks are assumed to be able to maintain their efficiency despite the economic paralysis due to the Covid-19 pandemic because they have an efficient performance. This shows that efficient state-owned banks are characterized by the maximum role of inputs in producing output. State-owned banks still need to supervise managerially in managing the use of deposits, capital, and costs (Sa'diyah, 2021). State-owned banks can also evaluate the allocation of deposit inputs to productive assets to obtain greater profits, so that they can channel greater credit to the community. State-owned banks must also have capital adequacy because the bank's ability to meet its capital will provide a large enough opportunity for a bank to expand credit (maximize output) which will affect the efficiency level of the bank.

This result is in accordance with the theory put forward by Hidayat (2014) that a banking company can be said to be efficient if it is able to produce more output than the input issued. This is also supported by a statement from Coelli et al., (2005) that if the resulting efficiency value is close to 1 then the bank is said to be efficient. These results strengthen the research conducted by Kadirisman (2021) that state-owned banks have an efficiency level close to 1. These results strengthen the research conducted by Kautsar dan Sadalia (2018) that Total Savings has a positive and significant effect on Total Credit. These results also strengthen the research conducted by Rahmawati (2015) that total cost has a positive effect on total credit. These results also strengthen the research conducted by Ulansari dan Septiarini (2020) that Capital has a positive influence on total credit.

CONCLUSION

Based on the results of the analysis and discussion that has been carried out to analyze the level of efficiency, it can be concluded that state-owned banks for the 2019-2021 period are said to be efficient with an efficiency value of 0.9955 or close to 1. The highest efficiency level occurred in 2019 and the lowest efficiency level in 2021. The state-owned banks that have the highest efficiency scores are Bank BRI and Bank Mandiri, followed by Bank BNI and the last one is Bank BTN. Suggestions for state-owned banks are to evaluate the management of deposits and supervise their management so that the company's efficiency can be maintained and increased again. Companies also still have to monitor the management of deposits, use of costs and capital so that efficiency can be maintained properly. Then the customer is expected to analyze the level of efficiency this can be a consideration for the customer because when the company is said to be efficient, the greater the credit distribution that will be given. As for the next researcher, to use the results of this study as a reference for the development of further research related to the analysis of the level of efficiency by using the Stochastic Frontier Analysis method in the next period.

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