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Comparison of Efficiency of Islamic Commercial Banks Using The Data Envelopment Analysis (DEA) Method (Studies on Pt. Bank Mega Syariah Indonesia, Pt. Bank Central Asia Syariah and Pt. Bank Muamalat Indonesia 2014-2021)

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Abstrak

This article discusses the comparison of the efficiency of PT. Bank Mega Syariah Indonesia, PT. Bank central Asia Syariah and PT. Bank Muamalat Indonesia in 2014-2021 using the data envelopment analysis (DEA) method. The efficiency will be tested using quantitative research using the DEA method which is interpreted as a non-parametric method based on a linear program used to compare efficiency. The DEA model used in this study is the Variable Return to Scale (VRS) model and is assisted by technical software with DEAP Version 2.1 software with Windows OS. The results of the test are (1) Bank Mega Syariah, BCA Syariah and BANK Muamalat are always in an efficient condition from 2014-2021. Overall, the efficiency performance achieved by the three banks above has included a projection summary of each input and output which consists of original input and output values, radial movement, slack movement, and projected value. If the value of the radial movement and salck movement is 0, 000, it means that each input or output variable is in an optimal and efficient state.

Introduction

The current development of Islamic banking in Indonesia based on Sharia Banking Statistics for the period of December 2021, the number of Islamic Commercial Banks in Indonesia is 12

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sharia public banks, this number decreased from the previous year which was 14 sharia public banks. This was due to the merger process between BRI Syariah Banks, BNI Syariah Banks, and Islamic Banks. The three Islamic banks (PT. Bank Mandiri Syariah, PT. Bank BRI Syariah and PT. Bank BNI Syariah) were merged into Bank Syariah Indonesia, the licenses of which were approved by the OJK through KDK OJK Number 4/KDK.03.2021 dated January 27, 2021 concerning Permits for Merger of BRI Syariah Banks, BNI Syariah Banks, and Syariah Banks and Change of Name to PT Bank Syariah Indonesia as a result of the merger.

Three Regional Development Banks are included as Sharia Commercial Banks, namely Aceh Sharia Bank, Sharia West Nusa Tenggara (NTB) Bank and Sharia BJB Bank. Only Bank Syariah Indonesia is a BUMN (Badan Usaha Milik Negara or State-Owned Enterprises) that is classified as sharia public bank, the other eight banks are banks whose majority ownership is owned by private parties. To get the ideal research object or research sample, the researcher limits that: (1) The object of research must be in the form of a sharia public bank during the research period,
(2) The object of research does not undergo a merger during the research period., (3) The object of research is not a Sharia BPD and (4) Never record losses. From the provisions of 1-3 above, those that meet the criteria are the first Mega Syariah Bank, the second Victoria Syariah Bank, the third Muamalat Bank, the fourth BCA Syariah Bank, the five Dubai Panin Syariah Bank and Bukopin Syariah KB Bank.

The profit for the current year recorded by Bank Mega Syariah in 2014 was Rp.
23.34 billion, then decreased in 2015 so that the profit achievement was only Rp. 16.73 billion, in 2016 Bank Mega Syariah was able to generate profit for the current year at that time of Rp. 110.73 billion, but decreased to Rp. 72.56 billion in 2017 and decreased again in 2018 where the current year's profit (loss) achieved by Bank Mega Syariah was only Rp. 46.58 billion, in 2019 it increased to Rp. 49.15 billion, in 2020 there was an increase in profit for the current year achieved by Bank Mega Syariah, the amount of which was more than three times the previous year or Rp. 173.32 billion, and a very significant increase occurred again in 2021. Bank Mega Syariah managed to record a profit for the year reaching Rp. 705.86 billion so that the total profit for the current year obtained by Bank Mega Syariah in 2014-2021 is Rp. 1,198,237 trillion or if rounded to Rp. 1.2 trillion.

Victoria Syariah Bank in 2014 suffered a loss of Rp. 25.05 billion and in 2015 suffered another loss of Rp. 31.98 billion or Bank Victoria Syariah losses increased by Rp 6.9 billion. In 2016 Bank Vicoria Syariah also experienced a loss of Rp.
27.88 billion or a decrease of Rp. 4.1 billion compared to the previous year. In 2017, Bank Victoria Syariah finally recorded a profit for the year of Rp. 6.02 billion after the 2014-2016 period suffered a loss. In 2018 the profit for the year increased again to Rp. 6.36 billion increased by Rp. 316 million when compared to the previous year. In 2019 there was a decrease in current year profit of Bank Victoria Syariah which only recorded a profit for the year of 1069 or decreased by Rp. 5.26 billion when compared to the previous year. In 2019 suffered a loss of Rp. 215 million, in the following year Bank Victoria Syariah recorded a profit for the year of Rp. 4.52 billion if the total profit and loss for the current year during the period 2014-2021 Bank Vicoria Syariah experienced a loss for the current year of Rp. 67,188 billion.

Bank Muamalat recorded a profit for the year 2014 of Rp. 99.04 billion, and in 2015 posted a profit for the year of Rp. 108.91 billion or an increase of Rp. 9.8 billion from the previous year. In 2016, Bank Muamalat's profit for the year was Rp. 116.46 billion or an

increase of Rp. 7.55 billion from the previous year. In 2017 there was a decrease in profit for the year experienced by Bank Muamalat, there was a decrease in profit for the year by Rp. 56.19 billion so that the current year's profit achievement was only Rp. 60.26 billion, in 2018 the current year's profit record was only Rp. 46 billion and in 2019 Rp. 16.32 billion and decreased again in 2020 so that the current year's profit achievement was only 12.51 billion. In 2021, there was another decline in Bank Mumalat's current year profit so that the current year's profit achievement was only Rp. 15.02 billion. The total profit for the current year of Bank Muamalat in 2014-2021 is Rp. 474.54 billion.

The profit for the year of Bank BCA Syariah in 2014 was Rp. 17.49 billion. In 2015, the profit for the year achieved by Bank BCA Syariah was Rp. 31.89 billion or an increase of Rp. 14.40 billion from the previous period. During the 2016 period, Bank BCA Syariah again recorded an increase in profit for the year of Rp. 49.24 billion or an increase of Rp. 17.34 billion from the previous period. In 2017 Bank BCA Syariah recorded a profit for the year of Rp. 62.19 billion or an increase of Rp. 13 billion from the previous year. In 2017, the current year's profit achievement of Bank BCA Syariah was Rp. 72.39 billion and in 2018 it was Rp. 83.29 billion. In 2020, the current year's profit of Bank BCA Syariah is Rp. 92.60 billion and in 2021 it is Rp. 114.81 billion. Total profit for the year 2014-2021 Bank BCA Syariah is Rp. 523.93 billion.

The profit for the year of Panin Dubai Syariah Bank in 2014 was Rp. 95.72 billion, in 2015 to Rp. 75.37 billion or a decrease in current year's profit of Rp. 20.35 billion, in 2016 the profit for the year was only Rp. 19.54 billion or a decrease of Rp. 55.83 billion from the previous year. During the 2017 period, Bank Panin Dubai Syariah experienced a very large current year loss of Rp. 974.80 billion, and in 2018 the profit for the year of Dubai Panin Syariah Bank moved positively to Rp. 23.34 billion and in 2019 earned a profit for the year of Rp. 21.41 billion. For the 2020 period, the profit for the year achieved by Dubai Panin Syariah Bank was only Rp. 6.73 billion, in 2021 Bank Panin Dubai Syariah suffered a loss for the current year of Rp. 818.32 billion. The total profit (loss) for the current year of Bank Dubai Panin Syariah in 2014-2021 is a loss of Rp. 1.5 trillion.

Profit (loss) for the year of Bank KB Bukopin Syariah of Rp. 12.55 billion in 2014. For the 2015 period, the profit for the year was Rp. 40.66 billion or an increase of Rp. 28.11 billion. In 2016, Bank KB Bukopin Syariah experienced a loss for the year of Rp. 85.99 billion. In 2017, the profit for the year of Bank KB Bukopin Syariah was Rp. 1.6 billion. In 2018 the profit for the current year is Rp. 1.5 billion and in 2019 Rp. 2.5 billion, in 2020 Rp. 6.3 billion while in 2021 experienced a significant loss of Rp. 297.15 billion so that the total profit (loss) for the current year of Bank KB Bukopin Syariah is a loss of Rp. 317.89 billion.

Data on profit (loss) for the year, Bank Victoria Syariah, Bank Dubai Panin Syariah and Bank KB Bukopin Syariah experienced a loss for the year, only Bank Mega Syariah, Bank Muamalat and Bank BCA Syariah made a profit. The highest profit was obtained by Bank Mega Syariah, the 2nd position was occupied by Bank BCA Syariah and the 3rd position was Bank Muamalat. Therefore, the researcher took the object of research from Bank Mega Syariah, Bank BCA Syariah and Bank Muamalat because according to the provisions used by researchers such as the object of research must be in the form of a sharia public bank during the research period, the object ofresearch did not undergo a merger during the research period, the object of research was not BPD Syariah, not never recorded a loss.

Efficiency is the most important issue in the world of banking and the economy of a

country. The majority of countries have experienced a banking crisis at least once. In developing countries, including Indonesia, banking efficiency is an important issue, especially since the 1997 crisis (Huda and Mustafa, 2014: 5). After the 1997 crisis, the global economy was hit by a crisis in 2008 which caused financial institutions to suffer losses until bankruptcy. Differences in the resilience of a bank in facing a crisis indicate the unequal operational performance of each bank. Banks with good performance can be observed, one of which is on the efficiency side in using inputs to produce the expected output (Novandra, 2014: 22).

The concept of efficiency stems from the concept of micro economic theory, namely producer theory and consumer theory. The producer theory is maximizing profit with minimal burden while the consumer theory is maximizing the level of satisfaction. In producer theory there is a production frontier line, the line shows the input and output bonds of an activity in production. This line shows a maximum output value from the efficiency of each input use in the company (Huda and Mustafa, 2014: 10). Efficiency in financial institutions is grouped into four types, namely scale, scope, technical, and allocation. Scale efficiency is achieved if the bank concerned is able to work with consistent returns to scale. Coverage efficiency is achieved if the bank can operate in a variety of locations. Allocation efficiency can be met if the bank can determine which output generates maximum profit. While technical efficiency is achieved by using a certain amount of input to produce maximum output or vice versa Wahyuni, 2019: 175). Efficiency is one of the important things in achieving success in banking. Efficiency is used in measuring performance in banking.

Efficiency measurement in the banking world usually uses the BOPO ratio which is generated by comparing operating expenses with operating income. Ease of calculating efficiency is the advantage of using the BOPO ratio. However, the negative side of the BOPO ratio cannot describe the condition of the bank in real terms because of the complexity of a bank in running its business so that it cannot be seen only from operating expenses and operating income (Qurniawati, 2013: 21). Steps to overcome the lack of the BOPO ratio require an approach that can describe the real condition of the bank (Sari and Nanda, 2018: 17). A better approach can be taken, namely by cost frontier analysis by measuring the maximum amount ofburden that can be minimized by banks in order to produce financial service products in the same number and combination of outputs. The possibility of minimizing costs is called cost-inefficiency (Qurniawati, 2013: 24).

Measuring efficiency in banking can use a frontier approach that can be done using parametric and non-parametric methods. The parametric methods are Stochastic Frontier Analysis (SFA), Distribution Free Approach (DFA), and Thick Frontier Approach (TFA) while the non-parametric method uses Data Envelopment Analysis (DEA). By using Data Envelopment Analysis (DEA) we can find out the input or output that is the source of inefficiency. This is what distinguishes the Data Envelopment Analysis (DEA) method when compared to other methods.

Based on this, the researcher wants to analyze the efficiency comparison between Bank Mega Syariah, Bank BCA Syariah and Bank Muamalat, this is looking at the dependence of the community on banking for economic activities and the development of the Islamic finance industry from year to year. Mega Syariah, Bank BCA Syariah and Bank Muamalat and are able to produce maximum output with certain inputs using data from the quarterly Financial Statements issued by each bank in the period 2014-2021. Based on the findings and background

above, it is necessary to conduct a study entitled **Comparison of Efficiency of Islamic Commercial Banks Using the Data Envelopment Analysis (DEA) Method (Studies on Mega Syariah Banks, BCA Syariah Banks and Muamalat Banks 2014-2021).**

Material and Methode

Study design and sampling procedure

The research design in this article is a type of quantitative research. Quantitative approach is research on the collection of numerical data to explain certain phenomena (Paramita, et.al, 2021: 10). The approach used in this type of research is descriptive research, which means this research is intended to describe precisely and accurately (Paramita, et.al, 2021: 13). This study uses a sample consisting of three sub samples or categories (Bank Mega Syariah, Bank BCA Syariah, and Bank Muamalat) referring to the sample size provisions stated by Roscoe above, the sample size in this study is 32 (4 x 8 = 32) in each bank or if the three banks are added together, the total sample is 96 samples. Details of sample size are (1) Bank Mega Syariah Quarterly Financial Report 2014-2021, totaling 32, (2) BCA Syariah Bank Quarterly Financial Report 2014-2021, totaling 32, (3) Bank Muamalat Quarter Financial Statement 2014-2021 which is 32.

Data collection instrument and procedure

This study uses secondary data, secondary data itself is data that has been collected by other parties so that researchers only take from the data source (Nuriansyah, 2016: 37). The data is sourced from the Quarterly Financial Reports of Bank Mega Syariah, Bank BCA Syariah and Bank Muamalat for the period 2014-2021. This study uses an instrument in the form of input and output of a Decision Making Units (DMU) to measure its efficiency by using Data Envelopment Analysis (DEA).
Data entry and analyze

Data entry and analyze

Analisis data dalam penelitian ini menggunakan metode *Data Envelopment Analysis (DEA)* yang berupa analisis non parametrik yang biasa digunakan untuk mengukur efisiensi relatif untuk penelitian kesehatan, pendidikan, transportasi, pabrik, maupun perbankan. *Data Envelopment Analysis (DEA)* adalah metode non parametrik berdasarkan program linier yang digunakan untuk membandingkan efisiensi. Model DEA yang digunakan dalam penelitian ini yaitu model *Variable Return to Scale (VRS)* dan dibantu dengan *software* secara teknik dengan *software DEAP Version 2.1* dengan *OS Windows*

Result

1. Bank Mega Syariah Input and Output Variables

Based on the stages of collecting data sourced from the quarterly reports of each Islamic bank, three input data were found, namely total assets, total equity, and labor costs and two output data, namely financing provided and income after profit sharing expenses. Details of the input and output data are listed in the tables below:

Tabel 1: Data for Input Variable 1 (Total Assets) of Bank Mega Syariah 2014-2021 (in millions of rupiah)

Quarterly	2014	2015	2016	2017
I	8.475.470	6.136.584	5.561.738	6.011.953
II	8.451.433	5.382.671	5.478.501	6.536.423
III	8.097.090	5.050.808	5.763.548	6.306.950
IV	7.042.486	5.559.820	6.135.241	7.034.300

Quarterly	2018	2019	2020	2021
I	6.637.732	7.327.159	8.173.359	17.355.334
II	6.644.658	7.511.173	8.622.345	17.926.533
III	6.628.968	7.507.025	9.524.784	19.131.717
IV	7.336.342	8.007.676	16.117.927	14.041.751

Source: Data processed.

According to table 1 above, in general, the input variables for the total assets of Bank Mega Syariah have increased and decreased throughout the year. Bank Mega Syariah recorded the highest assets in the third quarter of 2021 with a nominal value of Rp. 19,131,717,000,000 and the lowest asset in the third quarter of 2015 with a nominal value of Rp. 5,050,808,000,000. Very good record in 2020, namely throughout the year the acquisition of total assets increased from the first quarter to the fourth quarter.

Tabel 2: **Data for Input Variable 2 (Total Equity) of Bank Mega Syariah 2014-2021 (in millions of rupiah)**

Quarterly	2014	2015	2016	2017
I	794.840	768.283	940.658	1.090.169
II	811.317	765.678	963.073	1.105.180
III	784.854	772.801	1.037.017	1.143.773
IV	787.449	794.809	1.060.889	1.203.016

Quarterly	2018	2019	2020	2021
I	1.215.773	1.225.121	1.288.596	1.866.561
II	1.217.135	1.247.661	1.305.783	1.993.929
III	1.175.261	1.264.685	1.415.072	1.921.562
IV	1.203.378	1.290.180	2.019.249	1.960.751

Source: Data processed.

In general, input variable 2 (total equity) fluctuated in 2014, 2015, and 2018 while in 2016, 2019, 2020, 2021 it increased from the first quarter to the fourth quarter. The highest total equity in the fourth quarter of 2021 is Rp. 1.960751 and the lowest total equity in the second quarter of 2015 was Rp. 765,678.

Table 3: Data for Input Variable 3 (Manpower Expenses) for Bank Mega Syariah 2014-2021 (in millions of rupiah)

Quarterly	2014	2015	2016	2017
I	83.363	81.243	46.309	36.856
II	167.805	155.491	89.996	73.491
III	256.976	218.549	131.828	109.615
IV	343.992	265.509	160.897	144.874

Triwulan	2018	2019	2020	2021
I	37.223	37.779	41.474	39.303
II	75.310	76.283	81.532	82.649
III	113.349	115.726	118.847	126.370
IV	147.619	154.841	154.627	168.771

Source: Data processed.

The highest input variable 3 (labor load) of Bank Mega Syariah in the fourth quarter of 2021 is Rp. 168,771,000,000 and the lowest was in the first quarter of 2018 which was Rp. 37,223,000,000 and there is always an increase from the first quarter to the fourth quarter each year.

Table 4: Data for Output Variable 1 (Financing Disbursed) for Bank Mega Syariah 2014-2021 (in millions of rupiah)

Quarterly	2014	2015	2016	2017
I	6.783.740	4.836.808	4.987.329	5.292.124
II	6.528.439	5.318.633	4.796.543	5.291.711
III	6.128.856	5.113.936	5.147.006	5.012.238
IV	6.840.314	6.016.398	5.370.672	5.114.456

Quarterly	2018	2019	2020	2021
I	5.108.291	5.794.465	6.662.178	5.207.895
II	5.112.516	6.142.652	6.214.007	5.653.837
III	5.259.207	6.205.826	5.328.168	6.485.066
IV	5.664.727	6.566.544	4.946.543	7.239.515

Source: Data processed.

Output variable 1 in 2018, 2019, and 2021 always experienced an increase from the first quarter to the fourth quarter, while for 2014, 2015, 2016, 2017, 2020, it fluctuated. The highest achievement was recorded in 2021 at Rp. 7,239.515,000,000 and the lowest achievement was recorded in 2020, which was Rp. 4,946,543,000,000.

Tabel 5: Data Variable Output 2 (Income After Profit Sharing Expenses) Bank Mega Syariah Year 2014-2021 (in millions of rupiah)

Quarterly	2014	2015	2016	2017
I	266.556	193.755	119.670	94.144
II	417.913	299.469	222.036	188.534
III	599.011	428.998	319.769	281.559
IV	783.174	537.027	417.144	377.688

Quarterly	2018	2019	2020	2021
I	93.809	88.569	113.817	189.908
II	185.848	182.252	219.230	469.329
III	277.104	284.436	340.249	707.936
IV	363.993	390.993	500.630	850.077

Source: Data processed.

The development of output variable 2 from year to year continued to decline in 2015, 2016, 2017, and 2018. Then the trend began to increase sequentially in 2019. 2020, and 2021. The lowest income was recorded in 2018 and the highest income was in 2018. year 2021.

2. BCA Syariah Bank Input and Output Variables

Based on the stages of collecting data sourced from the quarterly reports of each Islamicbank, three input data were found, namely total assets, total equity, and labor costs and two output data, namely financing provided and income after profit sharing expenses. Details of theinput and output data are listed in the tables below:

Tabel 6: **Data Variabel *Input* 1 (Total Aset) Bank BCA Syariah Tahun 2014-2021 (dalam jutaan rupiah)**

Quarterly	2014	2015	2016	2017
I	2.026.365	3.042.395	4.406.552	5.368.251
II	2.224.415	3.390.818	4.343.456	5.430.155
III	2.532.146	3.690.180	4.637.703	5.648.875
IV	2.994.449	4.349.580	4.995.607	6.961.174

Quarterly	2018	2019	2020	2021
I	6.117.212	6.957.112	8.353.839	9.194.594
II	6.439.838	7.035.909	8.516.962	9.736.870
III	6.644.158	8.122.533	8.583.874	9.762.566
IV	7.064.008	8.634.374	9.720.254	10.642.338

Source: Data processed

Based on table 6 above, in 2016 the input variable 1 (total assets) decreased once in the second quarter, besides that in 2014 it increased every quarter. The year 2015 also experienced the same thing, namely increasing every quarter. In 2017 it also experienced an increase in each quarter and this trend continued in 2018, 2019, 2020, and 2021.

Tabel 7: Data for Input Variable 2 (Total Equity) of Bank BCA Syariah 2014-2021 (in millions of rupiah)

Quarterly	2014	2015	2016	2017
I	333.123	644.762	1.059.906	1.109.434
II	331.122	635.191	1.069.642	1.119.780
III	636.027	1.041.938	1.078.620	1.133.420
IV	640.909	1.052.552	1.099.067	1.136.111

Quarterly	2018	2019	2020	2021
I	1.149.406	1.271.934	2.344.971	2.761.099
II	1.162.928	1.286.133	2.371.014	2.783.790
III	1.174.122	2.300.384	2.401.118	2.802.311
IV	1.261.335	2.328.294	2.752.143	2.840.792

Source: Data processed

Based on table 7 above, during the period 2014-2021, each quarter continued to experience a stable increase. The highest increase in input variable 2 occurred in the third quarter of 2019, which increased by Rp. 1,014,251,000,000 from the previous quarter of the same year.

Tabel 8: Data for Input Variable 3 (Labor load) Bank BCA Syariah 2014-2021 (in millions of rupiah)

Quarterly	2014	2015	2016	2017
I	9.995	14.477	23.360	23.360
II	23.175	30.531	41.894	41.894

III	36.647	46.596	60.959	60.959
IV	51.596	63.314	79.112	79.112

Quarterly	**2018**	**2019**	**2020**	**2021**
I	23.360	22.739	30.552	31.135
II	41.894	39.586	55.665	62.215
III	60.959	65.953	84.278	92.995
IV	79.112	96.516	109.326	123.329

Source: Data processed

Based on table 8 above, input variable 3 recorded the highest value in the fourth quarter of 2021, which was Rp. 123,329,000,000 and the fourth quarter of 2020, which is Rp. 109,326,000,000. While the lowest was in the first quarter of 2014 which was Rp. 9,999,000,000.

Tabel 9: Output Variable Data 1 (Financing Disbursed) Bank BCA Syariah Year 2014-2021 (in millions of rupiah)

Quarterly	**2014**	**2015**	**2016**	**2017**
I	1.751.656	2.800.838	2.800.838	4.111.138
II	1.837.511	2.995.613	2.995.613	4.562.324
III	2.030.995	3.138.896	3.138.896	4.589.480
IV	2.496.023	3.526.869	3.526.869	4.926.491

Quarterly	**2018**	**2019**	**2020**	**2021**
I	5.027.790	5.515.886	6.152.085	5.725.896
II	5.484.503	5.664.552	6.451.366	5.912.464
III	5.555.177	5.824.137	5.465.365	5.863.162
IV	5.711.610	6.454.061	5.569.233	6.248.459

Source: Data processed.

Based on table 9 above, the output variable 1 in the period 2020 and 2021 experienced fluctuations in value. In addition to that year, the value of the output variable 1 continued to increase. The highest output variable value 1 was recorded in 2019 which was Rp. 6,454,061,000,000 and the lowest in 2014 was Rp. 2,496.023 million.

Tabel 10: Data Variable Output 2 (Income after profit sharing expense) Bank BCA Syariah Year 2014-2021 (in millions of rupiah)

Quarterly	**2014**	**2015**	**2016**	**2017**
I	29.117	54.681	48.975	50.862
II	40.817	72.790	103.159	105.540
III	65.126	111.898	156.658	164.980
IV	94.429	163.115	210.222	227.196

Quarterly	**2018**	**2019**	**2020**	**2021**
I	64.480	72.742	97.663	112.099
II	133.899	142.645	200.400	224.876
III	202.895	232.865	301.024	348.359
IV	276.537	324.589	402.810	482.445

Source: Data processed.

Based on table 10 above, the number of output variables 2 in the I-IV quarters of the 2014-2021 period continued to experience a stable and positive increase. The lowest number of output variables of Bank BCA Syariah is Rp. 29,117,000,000 in the first quarter of 2014 and the highest in the fourth quarter of 2021 at Rp. 482.445 million.

3. Bank Muamalat's Input and Output Variables

Based on the stages of collecting data sourced from the quarterly reports of each Islamicbank, three input data were found, namely total assets, total equity, and labor costs and two output data, namely financing provided and income after profit sharing expenses. Details of theinput and output data are listed in the tables below:

Tabel 11: Data for Input Variable 1 (Total Assets) of Bank Muamalat 2014-2021 (in millions of rupiah)

Quarterly	2014	2015	2016	2017
I	54.790.981	56.062.164	53.712.592	54.827.513
II	58.488.595	55.859.682	52.695.732	58.602.532
III	59.331.645	56.501.886	54.105.544	57.711.079
IV	62.413.310	53.712.592	52.167.651	61.696.920

Quarterly	2018	2019	2020	2021
I	57.283.526	55.151.654	49.428.095	51.775.158
II	55.202.239	54.572.539	48.650.565	51.621.796
III	54.850.713	53.507.715	48.785.792	52.064.160
IV	57.227.276	50.555.519	51.241.304	58.899.174

Source: Data processed.

Table 11 above describes input variable 1 at Bank Muamalat which fluctuates. The highest achievement of input variable 1 was in 2014 and 2017. While the lowest was in 2019. When described in more detail, in 2015-2016 there was a decrease in the number of input variable 1 (total assets) owned by Bank Muamalat. However, in 2017 Bank Muamalat was able to improve the record so that the number of input variable 1 (total assets) at that time exceeded Rp. 61,696,920 but in 2018 and 2019 it decreased again. Only in 2020 and 2021 the total assets of Bank Muamalat have increased successively.

Tabel 12: Input Variable Data 2 (Total Equity) Bank Muamalat 2014-2021 (in millions of rupiah)

Quarterly	2014	2015	2016	2017
I	4.555.076	4.106.953	3.577.029	3.628.722
II	4.623.992	4.136.280	3.583.489	3.768.179
III	4.324.856	4.135.304	3.599.175	3.793.838
IV	4.023.952	3.577.029	3.618.747	5.545.367

Quarterly	2018	2019	2020	2021
I	4.110.154	3.942.492	3.950.639	3.964.658
II	3.966.346	3.945.936	3.953.538	3.979.192
III	3.971.240	3.945.909	3.957.268	3.982.265
IV	3.921.667	3.937.178	3.966.710	3.986.349

Source: Data processed.

Table 12 above shows that the input variable 2 (Total Equity) owned by Bank Muamalat tends to fluctuate during the period 2014-2017, only in 2018-2021 consistently from year to year continues to increase even though the increase is quite small.

Tabel 13: Data for Input Variable 3 (Labor load) Bank BCA Syariah 2014-2021 (in millions of rupiah)

Quarterly	2014	2015	2016	2017
I	215.893	241.343	267.667	181.064
II	430.506	476.489	534.150	370.620
III	652.780	700.753	707.179	553.158
IV	860.329	267.667	880.812	802.493

Quarterly	2018	2019	2020	2021
I	184.878	183.724	170.584	157.111
II	417.165	360.118	339.372	316.534
III	611.088	532.489	504.217	503.397
IV	845.632	770.739	703.032	685.063

Source: Data processed.

Table 13 above the number of) input variable 3 (labor expense) owned by Bank Muamalat year on year experienced an up-and-down trend in 2014-2017 only in 2018 to 2021 input variable 3 (labor load) always decreased.

Tabel 14: Data Variable Output 1 (Financing Disbursed) Bank Muamalat Year 2014-2021 (in millions of rupiah)

Quarterly	2014	2015	2016	2017
I	29.345.846	48.821.745	45.849.806	45.789.667
II	51.817.097	48.054.542	45.451.195	47.578.581
III	53.194.753	47.203.655	45.435.427	48.083.661
IV	50.403.479	46.848.398	45.927.269	48.623.236

Quarterly	2018	2019	2020	2021
I	49.256.991	38.400.930	24.880.963	28.615.708
II	43.925.632	18.762.068	33.640.294	28.075.711
III	41.575.186	36.002.207	28.763.784	27.825.239
IV	39.569.145	35.013.880	29.084.008	18.041.234

Source: Data processed.

Table 14 above shows the ability of Bank Mumalat to produce output 1 (provided financing). Bank Muamalat's highest ability to produce output 1 was in 2014. However, in the following years, it continued to decline compared to 2014. Even in 2018-2021 it continued to experience a consistent decline from year to year.

Tabel 15: Data Variable Output 2 (Income after profit sharing expense) Bank Muamalat 2014-2021 (in millions of rupiah)

Quarterly	2014	2015	2016	2017
I	696.888	672.062	440.225	314.457
II	1.258.438	1.122.151	866.666	625.028
III	1.691.398	1.627.431	1.219.906	921.409
IV	2.176.138	2.095.466	1.498.723	1.168.507

Quarterly	2018	2019	2020	2021
I	313.990	103.349	124.504	147.228
II	637.541	203.340	283.398	292.239
III	953.040	522.504	403.903	528.370
IV	978.453	382.970	821.560	753.274

Source: Data processed.

Table 15 above shows that Bank Muamalat experienced a decrease in output variable 2 (income after profit sharing expense) this is shown in the tendency of a decline during that period except that in 2020 it experienced an increase compared to the previous year and decreased again in the following year.

Discussion

Efficiency Analysis of Bank Mega Syariah, Bank BCA Syariah, and Bank Muamalat Year 2014-2021 Using Data Envelopment Analysis (DEA) Method

This study uses the Data Envelopment Analysis (DEA) method of Variable Return toScale (VRS) model. For the Decision Making Unit (DMU) in this study in the form of a Sharia Bank consisting of Bank Mega Syariah, Bank BCA Syariah, and Bank Muamalat if the DEAscore is equal to 1,000 then it is said to be efficient if it is less than 1,000 then it is not efficient.

Efficiency Summary = 1, 000 maka diartikan efisien.
Efficiency Summary < 1, 000 maka diartikan tidak efisien

Tabel 16: Accumulated Efficiency Calculation Results for Bank Mega Syariah in 2014-2021 Using the Data Envelopment Analysis Method

Years	Quarterly	*Efficiency Summary*	Information
2014	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2015	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2016	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2017	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2018	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**

	IV	1, 000	**Efisien**
2019	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2020	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2021	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**

Source: Data processed with DEAP Version 2.1 application VRS model.

The table above can be seen that Bank Mega Syariah gets a stable (efficient) efficiency score every year. In addition to the efficiency summary, the results of the calculation of efficiency using the Data Envelopment Analysis method also show the target value that must be achieved if there are inputs or outputs that must be achieved in order to achieve efficiency. The names of these values are radial movement and slack movement. Radial movement itself is the minimum limit value that must be achieved by an input or output in order to be said to be efficient while slack movement is the maximum score that must be evaluated by an input or output in order to achieve a better efficiency value. The details of the measurement results are as follows:

1. 1. In 2014 Bank Mega Syariah in quarters I, II, III, and IV was able to record an efficiency summary score of 1,000, which means that Bank Mega Syariah can be said to be efficient. For the value of radial movement and slack movement at inputs 1, 2, and 3 as well as outputs 1, and 2 in the period I, II, III, IV of 2014 the radial movement value is 0, 000 and the slack movement is 0, 000 which means the value (original value) generated from each input 1, 2, and 3 as well as outputs 1 and 2 of Bank Mega Syariah in 2014 are in optimal and efficient condition so that no evaluation is needed regarding the value of these inputs and outputs.
2. 2. In 2015, Bank Mega Syariah in quarters I, II, III, and IV was able to record an efficiency summary score of 1,000, which means that Bank Mega Syariah can be said to be efficient. Similarly, in 2014 the value of radial movement and slack movement at inputs 1, 2, and 3 as well as outputs 1, and 2 in the period I, II, III, IV 2015 Bank Mega Syariah the value of radial movement is 0, 000 and the slack movement is 0, 000 the results show that the value of each input and output achieved by Bank Mega Syariah in 2015 is in an optimal and efficient condition so that no evaluation is needed regarding the value of the input and output.
3. 3. In 2016, Bank Mega Syariah in quarters I, II, III, and IV was able to record an efficiency summary score of 1,000, which means that Bank Mega Syariah can be said to be efficient. The value of radial movement and slack movement at inputs 1, 2, and 3 as well as outputs 1, and 2 in the period I, II, III, IV of 2016 the value of the radial movement is 0, 000 and the slack movement is 0, 000 which means the value (original value) generated from each input 1, 2, and 3 as well as outputs 1 and 2 of Bank Mega Syariah in 2016 are in optimal and efficient condition so that no evaluation is needed regarding the value of these inputs and outputs.

4. In 2017, Bank Mega Syariah in quarters I, II, III, and IV was able to record an efficiency summary score of 1,000, which means that Bank Mega Syariah can be said to be efficient. the value of radial movement and slack movement at inputs 1, 2, and 3 as well as outputs 1, and 2 in the period I, II, III, IV 2017 Bank Mega Syariah radial movement value is 0.000 and slack movement is 0.000 results This shows that the value of each input and output achieved by Bank Mega Syariah in 2015 is in an optimal and efficient condition so that no evaluation is needed regarding the value of the input and output.
5. 1. In 2018 Bank Mega Syariah in quarters I, II, III, and IV was able to record an efficiency summary score of 1,000, which means that Bank Mega Syariah can be said to be efficient. The value of radial movement and slack movement at inputs 1, 2, and 3 as well as outputs 1, and 2 in the period I, II, III, IV of 2018 the value of the radial movement is 0.000 and the slack movement is 0.000 which means the value (original value) generated from each input 1, 2, and 3 as well as outputs 1 and 2 of Bank Mega Syariah in 2018 are in optimal and efficient conditions so that no evaluation is needed regarding the value of these inputs and outputs.
6. 2. In 2019 Bank Mega Syariah in quarters I, II, III, and IV was able to record an efficiency summary score of 1,000, which means that Bank Mega Syariah can be said to be efficient. The value of radial movement and slack movement at inputs 1, 2, and 3 as well as outputs 1, and 2 in the period I, II, III, IV in 2019 the value of the radial movement is 0.000 and the slack movement is 0.000 which means the value (original value) generated from each of the inputs 1, 2, and 3 as well as the outputs 1 and 2 of Bank Mega Syariah in 2019 are in optimal and efficient conditions so that no evaluation is needed regarding the value of these inputs and outputs.
7. 3. In 2020, Bank Mega Syariah in quarters I, II, III, and IV was able to record an efficiency summary score of 1,000, which means that Bank Mega Syariah can be said to be efficient. The value of radial movement and slack movement at inputs 1, 2, and 3 as well as outputs 1, and 2 in the period I, II, III, IV of 2020, the value of the radial movement is 0.000 and the slack movement is 0.000, which means the value (original value) generated from each of the inputs 1, 2, and 3 as well as the outputs 1 and 2 of Bank Mega Syariah in 2020 are in optimal and efficient conditions so that no evaluation is needed regarding the value of these inputs and outputs.
8. In 2021, Bank Mega Syariah in quarters I, II, III, and IV was able to record an efficiency summary score of 1,000, which means that Bank Mega Syariah can be said to be efficient. The value of radial movement and slack movement at inputs 1, 2, and 3 as well as outputs 1, and 2 in the period I, II, III, IV in 2021 the value of the radial movement is 0, 000 and the slack movement is 0, 000 which means the value (original value) generated from each of the inputs 1, 2, and 3 as well as the outputs 1 and 2 of Bank Mega Syariah in 2021 are in optimal and efficient conditions so that no evaluation is needed regarding the value of these inputs and outputs..

It can be concluded from table 16 above that Bank Mega Syariah has always been in an efficient condition from 2014-2021. This result was obtained after measuring efficiency using the Data Envelopment Analysis method. With these results, it can be used as material for consideration by the management of Bank Mega Syariah in formulating policies that are suitable for the conditions of Bank Mega Syariah so that the results of efficiency measurements can help Bank Mega Syariah to continue to be able to compete in the activities of banking institutions in Indonesia through policies. precise and measurable.

Tabel 17: The Accumulated Results of BCA Syariah Bank Efficiency Calculations for 2014-2021 Using the Data Envelopment Analysis Method

Years	Quarterly	*Efficiency Summary*	Information
2014	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2015	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2016	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2017	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2018	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2019	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2020	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2021	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**

Source: Data processed with DEAP Version 2.1 application VRS model

Overall, it can be seen in the table above that the efficiency performance of Bank BCA Syariah is good or efficient. In addition to the efficiency summary value, the results of data processing using Data Envelopment Analysis also displays the project summary values for each input and output. The project summary value for each input and output is useful for knowing if there is one input or output that causes inefficiency. In the project summary there are radial movements and slack movements, the values of which describe the amount that an input or output must improve in order to be efficient, but if the radial movement and slack movement are worth 0, 000 then it can be said that the condition of each input and output is in a good condition. optimal and efficient. The details of the efficiency values from year to year are as follows:

1. 1. In 2014 quarters I, II, III, and IV, Bank BCA Syariah was able to record a consistent efficiency score of 1,000, which means that Bank BCA Syariah in 2014 was in an efficient condition. For the value of radial movement and slack movement input 1, 2, 3 and output 1, and 2 in the first quarter of 2014 shows that the value of radial movement is 0.000 and the value of slack movement is 0.000, which means that the input variable is 1, 2, and 3 as well as output variables 1, and 2 at Bank BCA Syariah in 2014 in optimal and efficient conditions.
2. 2. In 2015 quarters I, II, III, and IV, BCA Syariah Bank was able to record a consistent efficiency score of 1,000, which means that BCA Syariah Bank in 2015 was in an efficient condition. For the value of radial movement and slack movement input 1, 2, 3 and output 1, and 2 in the first quarter of 2015 shows that the value of radial movement is 0.000 and the value of slack movement is 0.000, which means that the input variable is 1, 2, and 3 as well as output variables 1, and 2 at Bank BCA Syariah in 2015 in optimal and efficient conditions.
3. 3. In 2016 quarters I, II, III, and IV Bank BCA Syariah was able to record a consistent efficiency score of 1,000, which means that Bank BCA Syariah in 2016 was in an efficient condition. For the value of radial movement and slack movement input 1, 2, 3 and output 1, and 2 in the first quarter of 2016 shows that the value of radial movement is 0.000 and the value of slack movement is 0.000, which means that the input variable is 1, 2, and 3 as well as output variables 1, and 2 at Bank BCA Syariah in 2016 in optimal and efficient conditions.
4. 4. In 2017 quarters I, II, III, and IV, BCA Syariah Bank was able to record a consistent efficiency score of 1,000, which means that BCA Syariah Bank in 2017 was in an efficient condition. For the value of radial movement and slack movement input 1, 2, 3 and output 1, and 2 in the I-IV quarters of 2017 shows that the value of radial movement is 0.000 and the value of slack movement is 0.000, which means that the input variable is 1, 2, and 3 as well as output variables 1, and 2 at Bank BCA Syariah in 2017 in optimal and efficient conditions.
5. In 2018 quarters I, II, III, and IV Bank BCA Syariah was able to record a consistent efficiency score of 1,000, which means that Bank BCA Syariah in 2018 was in an efficient condition. For the value of radial movement and slack movement input 1, 2, 3 and output 1, and 2 in the first quarter of 2018 shows that the value of radial movement is 0.000 and the value of slack movement is 0.000, which means that the input variable is 1, 2, and 3 as well as output variables 1, and 2 at Bank BCA Syariah in 2018 in optimal and efficient conditions.
6. 1. In 2019 quarters I, II, III, and IV, BCA Syariah Bank was able to record a consistent efficiency score of 1,000, which means that BCA Syariah Bank in 2019 was in an efficient condition. For the value of radial movement and slack movement input 1, 2, 3 and output

1, and 2 in the I-IV quarters of 2019 shows that the radial movement value is 0.000 and the slack movement value is 0.000, which means that the input variable is 1, 2, and 3 as well as output variables 1, and 2 at Bank BCA Syariah in 2019 in optimal and efficient conditions.

7. 2. In 2020 quarters I, II, III, and IV Bank BCA Syariah was able to record a consistent efficiency score of 1,000, which means that Bank BCA Syariah in 2020 is in an efficient condition. For the value of radial movement and slack movement input 1, 2, 3 and output 1, and 2 in the first quarter of 2020, it shows that the value of radial movement is 0.000 and the value of slack movement is 0.000, which means that the input variable is 1, 2, and 3 as well as output variables 1, and 2 at Bank BCA Syariah in 2020 are in optimal and efficient conditions.
8. 3. In 2021 quarters I, II, III, and IV Bank BCA Syariah was able to record a consistent efficiency score of 1,000, which means that Bank BCA Syariah in 2021 is in an efficient condition. For the value of radial movement and slack movement input 1, 2, 3 and output 1, and 2 in the first quarter of 2021, it shows that the value of radial movement is 0.000 and the value of slack movement is 0.000, which means that the input variable is 1, 2, and 3 as well as output variables 1, and 2 at Bank BCA Syariah in 2021 in optimal and efficient conditions.

It can be concluded from table 17 above that BCA Syariah Bank has always been in an efficient condition from 2014-2021. This result was obtained after measuring efficiency using the Data Envelopment Analysis method. By obtaining an efficient value, it can be said that BCA Syariah Bank has been successful in managing its inputs and outputs, this is because efficiency is one of the benchmarks for the success of a financial institution. With a good efficiency value, it can be said that the financial institution is able to reduce waste to a minimum.

Tabel 18: The Accumulated Results of Bank Muamalat's 2014-2021 Efficiency Calculations Using the Data Envelopment Analysis Method

Years	**Quarterly**	***Efficiency Summary***	**Information**
2014	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2015	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2016	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2017	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2018	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**

2019	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2020	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**
2021	I	1, 000	**Efisien**
	II	1, 000	**Efisien**
	III	1, 000	**Efisien**
	IV	1, 000	**Efisien**

Source: Data processed with DEAP Version 2.1 application VRS model.

The table above shows the overall efficiency performance achieved by Bank Muamalat which is in good or efficient condition. In addition to the efficiency summary value, DEA also contains a projection summary of each input and output which consists of the original input and output values, radial movement, slack movement, and projected value. If the value of the radial movement and salck movement is 0, 000, it means that each input or output variable is in an optimal and efficient state. In detail, the results of the efficiency measurement of Bank Muamalat are as follows:

1. 1. In 2014 consistently in quarters I, II, III, and IV obtained an efficiency summary score of 1,000, which means that Bank Muamalat is in an efficient condition. The value of radial movement and slack movement for input variables 1, 2, and 3 as well as output variables 1, and 2 at Bank Muamalat for the period I-IV quarter 2014 is 0, 000 for radial movement and 0, 000 for slack movement. This value can be interpreted that the input variables 1, 2, and 3 as well as the output variables 1, and 2 of Bank Muamalat in 2014 are in optimal and efficient conditions.
2. 2. In 2015 consistently in quarters I, II, III, and IV obtained an efficiency summary score of 1,000, which means that Bank Muamalat is in an efficient condition. The value of radial movement and slack movement for input variables 1, 2, and 3 as well as output variables 1, and 2 at Bank Muamalat for the period I-IV 2015 is 0, 000 for radial movement and 0, 000 for slack movement. This value can be interpreted that the input variables 1, 2, and 3 as well as the output variables 1, and 2 of Bank Muamalat in 2015 are in optimal and efficient conditions.
3. 3. In 2016 consistently in quarters I, II, III, and IV obtained an efficiency summary score of 1,000, which means that Bank Muamalat is in an efficient condition. The value of radial movement and slack movement for input variables 1, 2, and 3 as well as output variables 1, and 2 at Bank Muamalat for the period I-IV 2016 is 0, 000 for radial movement and 0, 000 for slack movement. This value can be interpreted that the input variables 1, 2, and 3 as well as the output variables 1, and 2 of Bank Muamalat in 2016 are in optimal and efficient conditions.
4. 4. In 2017 consistently in quarters I, II, III, and IV obtained an efficiency summary score of 1,000, which means that Bank Muamalat is in an efficient condition. The value of radial movement and slack movement for input variables 1, 2, and 3 as well as output variables 1, and 2 at Bank Muamalat for the period I-IV 2017 is 0, 000 for radial movement and 0,

000 for slack movement. This value can be interpreted that the input variables 1, 2, and 3 as well as the output variables 1, and 2 of Bank Muamalat in 2017 are in optimal and efficient conditions.

5. In 2018 consistently in quarters I, II, III, and IV obtained an efficiency summary score of 1,000, which means that Bank Muamalat is in an efficient condition. The value of radial movement and slack movement input variables 1, 2, and 3 as well as output variables 1, and 2 at Bank Muamalat for the period I-IV 2018 is 0.000 for radial movement and 0.000 for slack movement. This value can be interpreted that the input variables 1, 2, and 3 as well as the output variables 1, and 2 of Bank Muamalat in 2018 are in optimal and efficient conditions.
6. 1. In 2019 consistently in quarters I, II, III, and IV obtained an efficiency summary score of 1,000, which means that Bank Muamalat is in an efficient condition. The value of radial movement and slack movement for input variables 1, 2, and 3 as well as output variables 1, and 2 at Bank Muamalat for the period I-IV 2019 is 0, 000 for radial movement and 0, 000 for slack movement. This value can be interpreted that the input variables 1, 2, and 3 as well as the output variables 1, and 2 of Bank Muamalat in 2019 are in optimal and efficient conditions.
7. 2. In 2020 consistently in quarters I, II, III, and IV obtained an efficiency summary score of 1,000, which means that Bank Muamalat is in an efficient condition. The value of radial movement and slack movement input variables 1, 2, and 3 as well as output variables 1,

   and 2 at Bank Muamalat for the period I-IV quarter 2020 is 0, 000 for radial movement and 0, 000 for slack movement. This value can be interpreted that the input variables 1, 2, and 3 as well as the output variables 1, and 2 of Bank Muamalat in 2020 are in optimal and efficient conditions.
8. In 2021 consistently in quarters I, II, III, and IV obtained an efficiency summary score of 1,000, which means that Bank Muamalat is in an efficient condition. The value of radial movement and slack movement for input variables 1, 2, and 3 as well as output variables 1, and 2 at Bank Muamalat for the period I-IV 2021 is 0, 000 for radial movement and 0, 000 for slack movement. This value can be interpreted that the input variables 1, 2, and 3 as well as the output variables 1, and 2 of Bank Muamalat in 2021 are in optimal and efficient conditions..

It can be concluded from table 18 above that Bank Muamalat has always been in an efficient condition from 2014-2021. This result was obtained after measuring efficiency using the Data Envelopment Analysis method. These efficient conditions will assist management in formulating appropriate policies to be implemented in the future. In addition, the measurement of efficiency will be useful for preventing a potential loss in operational activities.

Conclusion

Based on the studies that have been carried out, several conclusions are obtained including (1) Bank Mega Syariah is always in an efficient condition from 2014-2021 this resultis obtained after measuring efficiency using the Data Envelopment Analysis method. (2) Bank BCA Syariah is good or efficient. In addition to the efficiency summary value, the results of data processing using Data Envelopment Analysis also displays the project summary values foreach input and output. (3) Bank Muamalat is always in an efficient condition from 2014-2021 this result is obtained after measuring efficiency using the Data Envelopment Analysis method. Overall, the efficiency performance achieved by the three banks above is in good or efficient condition. In addition to the efficiency summary value, DEA also contains a projection summary

of each input and output which consists of the original input and output values, radial movement, slack movement, and projected value. If the value of the radial movement and salck movement is 0, 000, it means that each input or output variable is in an optimal and efficient state.

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