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ANALYSIS EFFICIENCY OF ISLAMIC BANK IN INDONESIA AND SAUDI ARABIA WITH DATA ENVELOPMENT ANALYSIS APPROACH

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Abstract:

This study aims to measure the level of performance efficiency of Islamic banks in Indonesia and Saudi Arabia from 2018 to 2020; and Analyzing improvement targets that can be carried out by Islamic banks in Indonesia and Saudi Arabia to achieve optimum performance using the Data Envelopment Analysis (DEA) method. Data analysis was carried out using the MaxDEA program version 8.2. The sampling technique in this study was done by purposive sampling. The object of this research is the 4 largest Islamic banks in each country. Input and Output Variable data are obtained from financial reports from 2018 - 2020. The results show that the average efficiency value of Indonesian Islamic Banks is higher than the average efficiency of Saudi Arabian Islamic Banks in the 2018 and 2019 periods. using both the CRS and VRS models. As for the 2020 period, the opposite applies where the average efficiency value of Saudi Arabian Islamic Banks outperforms Indonesian Islamic Banks with the same two measurement models. As a whole, the average efficiency value of Saudi Arabian Islamic Banks is superior to the CRS model, while the Indonesian Islamic Bank's VRS model has a higher average efficiency value.

A. INTRODUCTION

Islamic banking as an intermediary institution based on Islamic law has an important role in supporting the development of the economic sector in Indonesia, especially in financing the Small, Micro and Medium Enterprises (MSME) sector. As a country with a majority Muslim population, Indonesia has great potential to develop the Islamic banking sector. The existence of an Islamic Banking system that is integrated with the national banking system is expected to be able to encourage the progress of the country's economy. (Yanis, 2015). The development of the Islamic Banking Sector in Indonesia began to stretch after the enactment of the Law of the Republic of Indonesia No. 21 of 2008 concerning Islamic Banking. Then it was strengthened again in 2013 through the Sharia Economic Movement, as tangible evidence of government support for the progress of Islamic Financial Institutions including Islamic banking. (Imama, 2015).

However, some of these efforts have not yielded significant results. This is reflected when looking at the increase in market share asset Islamic Banking, from 4.87% in 2015 only increased to 6.24% as of September 2020. (OJK, 2020). These data show that there are still many things that need to be evaluated from a technical, management point of view. Several issues related to the development of the Islamic banking sector have been highlighted and contained in the 2020-2025 Islamic Banking Development Roadmap launched by the Financial Services Authority. The roadmap has 3 aspects that are the main focus in developing the Islamic Banking Industry in Indonesia, namely 1). Strengthening Sharia Identity; 2). Sharia Economic Ecosystem Synergy; and 3). Strengthening Licensing, Regulation & Monitoring. (OJK, 2020). These 3 aspects include several other aspects that are derivatives and rungs of the ladder in improving the Islamic banking sector in terms of quality and quantity.

Among the interesting things that can be seen from the Islamic banking sector is the shift in financing priorities when there is an increase in assets, where the shift is not to the non-MSME sector, but to the consumption sector. (Darsono, 2017). This is certainly a challenge for Islamic banking in managing customer funds so that the allocation can be more effective and efficient for the common good. Increasing the efficiency and effectiveness of financing and other Islamic banking products will

encourage asset growth and profitability of Islamic banking, so that it is expected to be able to compete with conventional banking.

In addition, other things that are in the spotlight in the development of the Banking Sharia sector is a regulatory aspect that integrates Islamic law and positive Indonesian law, synergy with various institutions, as well as improving the quality of Human Resources (HR) supported by strict supervision of sharia aspects by the entire Sharia Supervisory Board or National Sharia Council. (Hakim & Anwar, 2017). These aspects are important points so that the quality and effectiveness of financing in Islamic banking continues to increase, both from an industrial perspective, while maintaining sharia values in accordance with the guidance of the Qur'an and Hadith.

On the other hand, Indonesia as one of the pioneers in developing Islamic finance in the world also has an important role in supporting the growth of the global financial industry. The latest Global Islamic Finance Report (GIFR) 2020 report states that the growth of the global Islamic finance industry has increased by 13.9%, where the total asset value has reached $2.88 trillion, higher than in 2019 which only reached $2.52 trillion. The Islamic Finance Country Index (IFCI) places Malaysia and Indonesia at the top of the list of countries leading the Islamic finance industry globally. Followed by Iran and Saudi Arabia which are in positions 3 and 4. Among the Top 10 Countries with Islamic finance industry, Malaysia and Saudi Arabia are indeed countries that are developing quite rapidly.

Meanwhile, in Saudi Arabia, the banking sector, especially Islamic banking, has undergone substantial changes over the last few decades. These changes were triggered by a competitive operating environment so that the efficiency aspect became one of the important things in the management of the Islamic banking sector. One clear evidence is how the Islamic banking sector in Saudi Arabia has shown a significant role in dealing with the financial crisis commonly faced by the largest oil-producing countries, including Saudi Arabia. This phenomenon makes Islamic banking in the spotlight of many parties exploring the Islamic banking system. (Javaid & Alalawi, 2018).

As an intermediary institution, the bank's efficiency value does have an important position in the development of the Islamic finance industry. (Abdullah et al., 2019). Efficiency measurement can be done by measuring how much the bank is

able to use its resources (inputs) to produce optimal output. So that a good bank is a bank that is able to manage all its inputs with good performance to produce optimal output. (Badruzaman, 2020).

One of the measurement methods used to measure the efficiency of financial institutions is the frontier efficiency analysis method. Frontier analysis is divided into two methods, namely non-parametric and parametric. There are two non-parametric methods, namely Data Envelopment Analysis (DEA) and Free Disposal Hull (FDH). The parametric method has three approaches, namely Stochastic Frontier Analysis (SFA), Distribution Free Approach (DFA) and Thick Frontier Approach (TFA). (Sustainable & Huda, 2020).

Among the methods above, the method that is often used is the Data Envelopment Analysis (DEA) method. The DEA efficiency analysis tool has several advantages compared to other traditional analytical tools, namely in the specification of the production function the degree of probability of error is zero, or in other words, the DEA method does not include random errors. (Sadikin et al., 2016). DEA also has a relative advantage over the parametric approach. In measuring efficiency, DEA identifies units that help to find causes and solutions to inefficiencies that become aspect major in managerial terms. (Nurul Komariyatin, 2006) in (Sadikin et al., 2016). Based on this background, the authors are interested in discussing the measurement of the efficiency of Islamic bank performance in terms of finance and the achievement of the *maqashid sharia* aspect.

B. LITERATUR REVIEW

Islamic banks, like banks in general, are intermediary institutions between groups of capital owners or those who have excess funds and groups that lack or need funds. The main characteristic of Islamic banks is that the system used is based on Islamic economics, so that Islamic banks do not use the "interest" system which contains elements of usury which is forbidden. (Yanis, 2015).

Regarding the prohibition of usury, Allah SWT says in the letter Al-Baqarah verse 275:

وَأَحَلَّ ٱللَّهُ ٱلْبَيْعَ وَحَرَّمَ ٱلرِّبَوٰاْ ۚ فَمَن جَآءَهُۥ مَوْعِظَةٌ مِّن رَّبِّهِۦ فَٱنتَهَىٰ فَلَهُۥ مَا سَلَفَ وَأَمْرُهُۥٓ إِلَى ٱللَّهِ ۖ

وَمَنْ عَادَ فَأُوْلَٰٓئِكَ أَصْحَٰبُ ٱلنَّارِ ۖ هُمْ فِيهَا خَٰلِدُونَ

> "… Even though Allah has permitted buying and selling and forbids usury. Whoever gets a warning from his Lord, then he stops, then what has been obtained before belongs to him and his affairs (up to) to Allah. Whoever repeats it, then they are residents of Hell, they will abide in it forever" (Al-Baqarah: 275)

Operationally, Islamic banks have similarities with conventional banks, especially in terms of technical receipts of money, transfer mechanisms, use of information systems and technology as well as requirements for obtaining financing. The difference between the two is in basic aspects such as the legal aspect, where in principle Islamic banks have both worldly and *ukhrawi* legalities. In the organizational structure, Islamic banks have supervisory institutions, namely the Sharia Supervisory Board and the National Sharia Council. Islamic banks also have a good work environment by prioritizing ethical values and integrity at work. And most importantly, the type of business financed by Islamic banks must of course be protected from elements prohibited by sharia such as usury, *gharar*, *maisir* and other elements. (Antonio, 2001).

Efficiency Concept

The theory of producers and consumers in the scope of macroeconomics is the initial concept of efficiency. The producer theory states that producers always try to minimize costs and maximize profits. While the consumer theory states that consumers tend to prioritize the level of satisfaction. (Ascarya & Yumanita, 2006). In production theory, there is a line that describes the relationship between input and output in the production system. This line is called the production frontier as shown below: (Tuffahati et al., 2016).

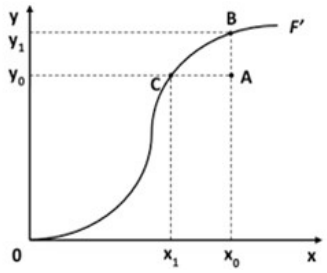

Figure 1: Production Frontier Line

Farrell in (Rusydiana, 2013) explains that there are two efficiency components in the company, namely technical efficiency and allocative efficiency. Technical efficiency is the company's ability to produce output from the inputs used. Meanwhile, allocative efficiency is a company that is able to optimize the use of inputs based on prices and applicable technology. Furthermore, the two components are combined into economic efficiency. Firms are at an efficient scale if they can minimize the cost of obtaining output by using technology and at a certain price level.

Efficiency Measurement

Islamic banks, like banks in general, are intermediary institutions that have a function to collect funds from groups of capital owners or those who have excess funds by channeling them to groups of people who need funds. Efficiency measurements need to be carried out on Islamic banks aimed at knowing the performance of using inputs to produce maximum output.

C. METHODOLOGY

The type of research used in this study is combination research or known as Metkom, which is a study that combines or combines quantitative methods and qualitative methods to be used together in a research activity. The method used in this study is a sequential model (sequentially combined method), where one method is sequential explanatory design, namely by collecting data and analyzing

quantitative data in the first stage and followed by collecting and analyzing qualitative data in the second stage in order to strengthen the results. quantitative research conducted in the first stage.

In the first stage, which is quantitative research measuring the efficiency of the performance of Islamic banks in Indonesia and Saudi Arabia in 2018-2020 with the Data Envelopment Analysis (DEA) approach. The measurement of Islamic Bank performance efficiency is carried out using a nonparametric approach or can be called the Data Envelopment Analysis (DEA) approach which is input-oriented with the assumption of CRS and oriented output with the VRS assumption, after obtaining the level of efficiency, the Islamic Banks that are not yet efficient are given input to optimize efficiency by achieving the target according to the calculation by comparing with the Islamic Banks that have been efficient. In this analysis the approach used is the intermediation approach. This approach is used because it considers the vital function of the bank as a financial intermediary that distributes funds to those in need with the aim of equity and development.

Another consideration is the characteristics and nature of banks that carry out quality asset transformations (qualitative assets transformer) from the collected savings into financing channeled to the public. Although there is no general agreement in the approach used and in terms of determining inputs and outputs. According to Berger and Humphrey, the intermediation approach is a more appropriate approach for evaluating the performance of financial institutions in general because of the characteristics of financial institutions as financial intermediation. In the second stage, the qualitative method analyzes the approach that can be used to measure the performance of Islamic banks in order to be able to survive in the face of intense competition in the global financial industry.

D. RESULT AND ANALYSIS

Measurement of this CRS model uses the Input Oriented. The Input Oriented is used to answer how much input can be reduced proportionally to produce the same quantity of output. The Input Oriented is used because the CRS model assumes that the ratio between the addition of input or the output is the same (constant), so that if there is an increase in input of "n" times, then the output will also increase by "n"

times. As forresults measurement of the efficiency of 8 Islamic banks in Indonesia and Saudi Arabia can be seen in table 3. following:

Table 3. Results of Efficiency Measurement of the CRS Model Input Oriented

Indonesia				
Bank Name	**2018**	**2019**	**2020**	**Average**
BSM	1,000	0.983	0.942	0.975
BNIS	1,000	0.953	0.867	0.940
BRIS	1,000	1,000	1,000	1,000
BMI	0.831	0.857	0.805	0.831
Average	0.958	0.948	0.904	0.937
Saudi Arabia				
Bank Name	**2018**	**2019**	**2020**	**Average**
Al Rajhi	1,000	0.958	1,000	0.986
Alinma	1,000	1,000	0.990	0.997
Al Jazira	0.836	0.835	0.815	0.829
Al Bilad	0.946	0.950	1,000	0.965
Average	0.946	0.936	0.951	0.944
Total Average	0.952	0.943	0.925	0.940

Source: Data Processing Results, 2021

The table above shows that only 10 of the 24 DMUs have an overall level of efficiency. As mentioned above, a DMU (Decision Making Unit) is said to be efficient if its value reaches 1 or 100%. This means that if the efficiency value is lower or closer to 0, then a DMU is said to be increasingly inefficient. The 10 efficient DMUs with CRS model measurements are BSM_2018, BNIS_2018, BRIS_2018, BRIS_2019, BRIS_2020, Al Rajhi_2018, Al Rajhi_2020, Alinma_2018, Alinma_2019, Al Bilad_2020.

The highest average efficiency value of Indonesian Islamic banks using the CRS model during the 2018-2020 period is BRIS which achieves perfect efficiency of 1.00 or 100%, while the lowest is Bank Muamalat Indonesia (BMI) which is only 0.831 or 83.1%. This shows that the value of asset does not determine the level of efficiency of an Islamic bank. Because when viewed from the number asset, BRIS is under BSM which has a value of asset bigger, each amounting to 7,919 million USD

(IDR. 126.9 trillion). While the amount asset BRIS only amounted to 3,432 million USD (IDR. 57.7 trillion). Meanwhile, the average efficiency value of Saudi Arabia's Islamic banks for 3 periods was the highest for Alinma Bank, which achieved an almost perfect average efficiency of 0.997 or 99.7%, while the lowest was Al Jazira Bank which was only 0.829 or 82.9%.

Only BRIS has always achieved an efficient level during the 3-year research period. Meanwhile, Alinma Bank experienced a decrease in efficiency in one period, namely in 2020 which reached 0.990 or 99%, Likewise Al Rajhi which experienced inefficiency in 2019 which reached 0.958 or 95.8%. This shows that the 8 Islamic Banks of Indonesia and Saudi Arabia are not all efficient. The lowest average efficiency value of all banks from both countries occurred in the 2020 period which reached 0.925 or 92.5%. Most Islamic banks in Indonesia experienced a decrease in efficiency levels in 2020 compared to the previous year apart from BRIS, while 2 of 4 Saudi Arabian Islamic banks experienced a decline, namely Alinma Bank and Al Jazira Bank, there was also an increase, namely Al Rajhi Bank and Al Bill Bank. One of the reasons for this decline was the COVID-19 pandemic that hit the world globally and had an impact on the financial sector, including Islamic banking. Meanwhile, the results of processed data show that the bank that has become the most benchmark (benchmark) is Al Bilad Bank in the 2020 period for 11 times. This shows that Bank Al Bilad has a good strategy in maintaining the company's financial stability in the face of the global pandemic situation. Meanwhile, the bank that became the second largest benchmark was BNI Syariah in the 2018 period, which was 7 times. Meanwhile, the results of processed data show that the bank that has become the most benchmark (benchmark) is Al Bilad Bank in the 2020 period for 11 times. This shows that Bank Al Bilad has a good strategy in maintaining the company's financial stability in the face of the global pandemic situation. Meanwhile, the bank that became the second largest benchmark was BNI Syariah in the 2018 period, which was 7 times. Meanwhile, the results of processed data show that the bank that has become the most benchmark (benchmark) is Al Bilad Bank in the 2020 period for 11 times. This shows that Bank Al Bilad has a good strategy in maintaining the company's financial stability in the face of the global pandemic

situation. Meanwhile, the bank that became the second largest benchmark was BNI Syariah in the 2018 period, which was 7 times.

Islamic Bank Efficiency VRS Model (Return to scale variable) Output Oriented

Efficiency measurement using the VRS model is a development of the CRS model. The development lies in the perception that the ratio when there is additional input and the resulting output is not the same. This means that if the input is added by "n" times, it will not result in an increase in output by "n" times. The results of the efficiency of Islamic banks in Indonesia and Malaysia or DMU can be seen in table 4. below:

Table 4. Results of Efficiency Measurement of the VRS Model Output Oriented

Indonesia				
Bank name	**2018**	**2019**	**2020**	**Average**
BSM	1,000	1,000	0.960	0.984
BNIS	1,000	0.965	0.879	0.944
BRIS	1,000	1,000	1,000	1,000
BMI	0.846	0.871	0.956	0.984
Average	0.967	0.965	0.950	0.961
Saudi Arabia				
Bank name	**2018**	**2019**	**2020**	**Average**
Al Rajhi Bank	1,000	1,000	1,000	1,000
Alinma Bank	1,000	1,000	1,000	1,000
Al Jazira Bank	0.841	0.837	0.816	0.831
Al Bilad Bank	0.946	0.954	1,000	0.967
Average	0.947	0.948	0.954	0.950
Total Average	0.958	0.957	0.952	0.956

Source: Data Processing Results, 2021

The table above shows that only 13of 24 DMUs that have a perfect level of efficiency (overall). 13 Efficient DMU with model measurement VRS is BSM_2018, BSM_2019, BNIS_2018, BRIS_2018, BRIS_2019, BRIS_2020, Al Rajhi_2018, AlRajhi_2019, Al Rajhi_2020, Alinma_2018, Alinma_2019, Alinma_2019, Al

Bilad_2020. The highest average efficiency of Islamic banks using the model VRS during the period 2018-2020 is BRIS, Al Rajhi Bank and Alinma Bank which achieves a perfect efficiency of 1.00 or 100%. As the 2 banks with the largest assets in Saudi Arabia, Al Rajhi and Alinma Bank have succeeded in managing the company's operations, so that the potential of these assets can be optimized to produce the best output. temporary Al Jazira Bank becomes the Bank with the lowest average efficiency score that is only 0.831 or 83.1%. Al Jazira experienced a decrease in efficiency during the 2018 -2020 period from 0.841 in 2018, then to 0.837 in 2019 and 0.816 in 2020.

Furthermore, the results of data processing provide recommendations for Al Jazira Bank to increase the amount of financing and target operating income. The correct projection for the financing output is IDR. 257.93 trillion from IDR. 210.87 trillion, while for operating income, the correct projection is IDR. 15.28 trillion from only IDR. 12.33 trillion. Meanwhile, the DMU that became the most benchmark was Al Bilad Bank in the 2020 period, which was 8 times, followed by BRIS in the 2020 period, 6 times.

Table 5. Comparison of the Efficiency of Islamic Banks in Indonesia and Saudi Arabia

Year	CRS Model Efficiency Average Value		VRS Model Efficiency Average Value	
	Indonesia	Saudi Arabia	Indonesia	Saudi Arabia
2018	0.958	0.946	0.967	0.947
2019	0.948	0.936	0.965	0.948
2020	0.904	0.951	0.950	0.954
Average	0.937	0.944	0.961	0.950

Source: Data Processing Results, 2021

Table 5 above shows that the average efficiency value of Indonesian Islamic Banks is higher than the average efficiency of Saudi Arabian Islamic Banks in the 2018 and 2019 periods, both using the CRS and VRS models. As for the 2020 period,

the opposite applies where the average efficiency value of Saudi Arabian Islamic Banks outperforms Indonesian Islamic Banks with the same two measurement models. As a whole, the average efficiency value of Saudi Arabian Islamic Banks is superior to the CRS model, while the Indonesian Islamic Bank's VRS model has a higher average efficiency value.

E. CONCLUSION

Based on the results of the research as described above, it can be concluded that the Islamic Banks of Indonesia and the Islamic Banks of Saudi Arabia have fluctuating efficiency values both with the measurement of the CRS and VRS models. The amount of asset value owned by an Islamic bank basically does not guarantee that the bank has been efficient in terms of operational management. Therefore, it is necessary to evaluate the right strategy in determining targets and projections in terms of inputs and outputs to increase the efficiency value of an Islamic bank.

Increasing the efficiency and effectiveness of financing and other Islamic banking products will encourage asset growth and profitability of Islamic banking, so that they are able to compete with conventional banking. This will also increase the role of Islamic banking in managing customer funds so that the allocation can be more effective and efficient for the common good. Thus, Islamic banking as an intermediary institution based on Islamic law will also have a role in supporting the development of the economic sector in both countries.

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