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The Level of Efficiency of Islamic Rural Banks in Java 2014-2017 Using Slacks-Based Data Envelopment Analysis

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Kata Kunci:
Efficiency; Islamic rural banks; Financial management.

ABSTRACT

The purpose of the study is to evaluate the efficiency of Islamic rural banks in Java by looking at the factors that could influence it year 2014-2017. This research is quantitative using a non-parametric and non-radial based Data Envelopment Analysis method with an intermediation approach to evaluate efficiency. The object of this study is 72 Islamic rural banks in Java. The results indicates that the level of efficiency of Islamic rural banks in Java was still low.

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INTRODUCTION

One of the factors inhibiting the development of MSMEs in Indonesia is due to lack of access to capital loans (Susilo, 2010); (Adawiyah, 2013); (Tambunan, 2018). Microfinance institutions such as Islamic rural banks play a role in expanding the reach of financial inclusion to areas that have not received formal financial services (Harfandi & Puteri, 2015); (Sarah, 2015); (Mulyaningsih, Oktaviani & Firdausy, 2016). The existence of Islamic rural banks can provide services that support and enhance economic activities for the welfare of the community (Yuta & Suhartini, 2014); (Puteri, 2015); (Suryanto & Ruchiyat, 2019); (Suprihadi, 2019).

Indonesia has 1,619 rural banks and 167 Islamic rural banks in 2017, this fact shows that microfinance institutions in Indonesia are still dominated by conventional systems (Kara, 2013); (Rahayu & Kusumaningrum, 2015); (Hamidi, 2017). The prohibition of usury does not make the general public choose a bank with an Islamic system (Setiawan, 2006); (Wahyuningsih, Titik, & Oktavianti, 2014); (Rahim, 2015); (Munajim & Anwar, 2016). However, several economic factors such as low interest rates, low collateral and large loans and also non-economic factors such as bank services, convenience, closeness, and payment methods are important considerations in choosing microfinance institutions for consumers (Masyita & Habib, 2013); (Rahim, 2015); (Suardi & Yusuf, 2017). As the largest Muslim country, Islamic banking needs additional sharia financial products to meet Muslim demand in Indonesia (Hidayati, 2014); (Fitria, 2016); (Susila, 2017). According to Imam & Kpodar (2016), Islamic banking and Islamic rural banks helps increase economic growth especially in developing countries. However, the contribution of Islamic banking to economic growth in Indonesia is still relatively low (Arianto, 2011); (Wardhany & Arshad, 2015); (Mardani, 2018); (Oktarina & Asnaini, 2020).

The financial crisis in 1998 taught a lesson that the banking sector is very influential on the national economy (Baroroh, 2012); (Amah, 2013); (Aprianingsih, & Yushita, 2016); (Suci, 2017). An Efficiency is the ability that must be possessed by banks to be able to face increasingly intense competition (Melani & Suwarni, 2013); (Malik, 2017); (Sukandar, et, al., 2018). Because banks are complex entities, ratio analysis is not enough to describe the real bank's financing. (Kartikasari & Wahyuati, 2014); (Pratiwi, Sondakh, & Kalangi, 2014); (Bitar, et. al, 2015); (Fernos, 2017).

Several research was conducted related to the an analysis of an efficency of Islamic rural banks. Shawtari et. al (2015) argued that an ideal measure of bank performance can be seen from bank efficiency compared to bank profitability. This is due to the highly competitive competition so that inefficient companies will be affected by more than a decrease in profit that is losing the market and unable to survive Boone (2008). According to Widiarti & Siregar (2015) excess liquidity will cause banks to become

inefficient because of funds that exceed the needs so that there are funds that are not productive or idle funds. Shawtari et al, (2015) found that Gross Domestic Product (GDP) can affect bank efficiency because demand for bank services is affected by economic growth. According to Philip Perry in Chowdhury (2015) good or bad inflation on bank performance depends on the bank's knowledge of inflation that will occur.

On the other hand, Widyastuti & Armanto (2013) found that there has been a monopoly or oligopoly in the banking sector in Indonesia. This will support the existence of collusion and reduce the level of company efficiency (Hamza & Kachtouli, 2014). bFurthermore, Hosen & Fitria (2017) shows that Islamic rural banks in Indonesia are already in monopolistic competition among other Islamic rural banks. So efficiency efforts are needed so that competition between SRBs in Indonesia is healthier. On the other hand, Puspita & Shofawati (2017) conduct research related to internal and external factors that affect the efficiency of Islamic and conventional banks in Indonesia. It is stated that BPD Syariah is still inefficient with an average value of around 80 percent. However, Return On Assets (ROA) and Financing to Deposit Ratio (FDR) have positive and significant effects on BPD efficiency, while NPF and inflation have no effect on the efficient BPD Sharia. While Anwar et. al (2018) in the study stated that the Capital Adequacy and natural logarithm of Total Assets affect the technical efficiency of rural banks in 212 rural banks in West Java for the period 2012-2016.

However, most studies using the DEA method carried out in Indonesia still use DEA with a radial approach while studies with a non-radial approach are still few and only used with samples of national commercial banks. The purpose of this study is to evaluate the efficiency of Islamic rural banks, especially those living in provinces in Java, which are islands with high economic growth and also the most Muslim population among the islands in Indonesia. In addition, this study also tries to see what factors can influence the efficiency of Islamic rural banks both internal and external factors by using regression analysis.

RESEARCH METHOD

This study aims to find the level of efficiency of Islamic rural banks by using a non-parametric approach namely Data Envelopment Analysis (DEA) on Islamic rural banks operating in Java for the first quarter of 2014 to fourth quarter of 2017. Furthermore, this study tries to determine the effect of internal and external factors on efficiency, this study implements Tobit regression analysis. In this study the research sample was 72 Islamic rural banks that met the criteria of a total population of 1152 Islamic rural banks. The main sources of this research are Islamic rural banks secondary data for DEA input and output variables and BPRS internal variables taken from the OJK website (https://: www.ojk.co.id) and external variables such as Gross Regional

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Domestic Product (GRDP) and provincial inflation rate from the Bank Indonesia Regional Financial Economics Study (https://: www.bi.co.id).

Starting from the concept of efficiency proposed by Farrel adopted by Charnes, Coopers & Rhodes (CCR) with linear mathematical engineering programs that produce the Data Envelopment Analysis (DEA) method. There are two components of efficiency that are owned by the entity, namely technical efficiency and allocative efficiency. An entity is said to have technical efficiency if it can produce maximum output with a fixed input. While the allocative efficiency if the entity can use input to a minimum by producing a predetermined output (Abidin and Endri, 2009). Data Envelopment Analysis (DEA) is a non-parametric approach which is a mathematical technique based on a linear program to measure the level of relative efficiency by using input and output data from several entities (Pradiknas & Faturohman, 2015).

The first model was introduced with the assumption that CCR (CRS) and BCC (VRS) are radial approaches which means that changes in input or output are carried out proportionally and this model also usually does not care for the existence of more input slacks and less output slacks in calculations. In certain situation not all inputs or outputs change proportionally (Mogha, et. al, 2015). Existing slacks can usually reflect significant inefficiencies so need to be considered in the DEA process (Yang & Lu, 2006). While the non-radial approach considers slack input or output directly and changes in input decrease or output increase disproportionately. Tone (2001) developed a DEA model named Slack-based model which is a non-radial approach. This model can identify more inefficiencies and have better discrimination ability than the radial DEA model (Eken & Kale, 2013).

The input and output variables for DEA are determined by the intermediation approach. This approach argues that the bank functions as an intermediary that collects funds from customers and provides financing to other customers. In the intermediation approach, placing deposits as inputs and financing as outputs. This intermediation approach has been used in previous studies of Islamic banks because it is in accordance with the principles of the Islamic banking system (Yudistira, 2004).

Data Envelopment Analysis (DEA) in this study uses the Slack-Based model. The Slack-based DEA VRS non-orientation model is as follows:

$$\rho = min_{\lambda,s^-,s^+} = \frac{1 + \frac{1}{m}\sum_{i=1}^{m}\frac{s_i^-}{x_{i0}}}{1 + \frac{1}{s}\sum_{r=i}^{s}\frac{s_i^+}{y_{i0}}}$$

$$x_{i0} = \sum_{j=1}^{n} x_{ij}\lambda_j + s_i^-; i = 1, \dots, m;$$

$$y_{r0} = \sum_{j=1}^{n} y_{ij}\lambda_j - s_r^+; r = i, \dots, s;$$

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$$\sum_{j=1}^{n} \lambda_j = 1;$$
$$\lambda_j, s_i^-, s_r^+ \geq 0;$$

ρ shows the level of non-orientation efficiency with a suspension of 0 to 1

To find out whether the independent variable affects the level of efficiency we use Tobit regression because the efficiency score is between 0 and 1 and is a consistent estimator of the regression coefficient (Sufian & Majid, 2007). Tobit regression analysis assumes that the independent variables are of unlimited value (non-censured), all variables (both free and non-free) are measured correctly, there is no autocorrelation, there is no perfect multicollinearity, and the mathematical model used becomes precise. (Puspita & Shofawati, 2017). Here is a regression equation:

EFF = α+β1LNASET+β2FDR+β3ROA+β4NPL+β5KPMM+β6PDRB+ β7INFLASI

Dimana :

EFF = Efficiency

CAR = Capital adequacy ratio

LNASET = Total Asset

FDR = Financing to deposit

NPF = Non performing financing

ROA = Return on Asset

PDRB = Product Domestic Regional Bruto

Inflasi = Inflation

α = Intercept

RESULT AND DISCUSSION

From the result of the study, the average efficiency with data from quarter 1 2014 to quarter 4 2017 is 0.647 or 64.7%. The rate of the average level of efficiency of Islamic rural banks in Java has decreased from 2014 to 2017. The year 2016 became the year with the lowest level of efficiency with 0.629 or 62.9%. This result shows that there are still many Islamic rural banks that are far from perfect efficiency. There is still a lot that needs to be optimized to achieve efficiency. The low efficiency of Islamic Rural Banks in Java is likely because many Islamic rural banks still focus more on the distribution of financing to the poor who are more at risk and also high cost than to rich consumers who would be more profitable (Hermes et al, 2011). Furthermore the intense competition between regional and national banks, which could result the decrease of the repayment of payments to Islamic rural banks (Assefa et al, 2013).

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Table 1. Results of Islamic Rural Banks' Efficiency Rate

Islamic Rural Banks	Years of Efficiency Achievement	Total Asset
Harta Insan Karimah Cibitung	2014-2017	> IDR 250 miliar
Harta Insan Karimah Parahyangan	2014-2017	> IDR 250 miliar
Bhakti Sumekar	2014-2017	> IDR 250 miliar
Baiturridha Pusaka	2014, 2016	< IDR 250 miliar
Al Wadi'ah	2014	< IDR 250 miliar
Mitra Cahaya	2017	< IDR 250 miliar
Cahaya Hidup	2014	< IDR 250 miliar
Syariah Magetan	2017	< IDR 250 miliar
Unawi Barokah	2014, 2016, 2017	< IDR 250 miliar

In the research as explained in Table 1, Islamic rural banks with assets of 250 billion rupiah and above, namely Karimah Cibana Insane, Karimah Parahyangan and Bhakti Sumekar, are Islamic Rural Banks whose efficiency is consistent every quarter from 2014 to 2017. This means that Islamic rural banks has successfully used economies of scale to be more efficient. While other Islamic rural banks other than the three Islamic rural banks above which have smaller assets can also achieve efficiency in certain years. Other efficient SRBs include Baiturridha Pusaka in 2014 and 2016, Al Wadi'ah in 2014, Mitra Cahaya in 2017, Cahaya Hidup in 2014, Syariah Magetan in 2017 and Unawi Barokah in 2014, 2016 and 2017 BPRS Cahaya Hidup, Unawi Barokah and Syariah Magetan are BPRS with assets under 25 billion Rupiah. This proves that Islamic rural banks with small assets can use their resources to a minimum by producing maximum output.

On the other hand, from the result of tobit regression in table 2 indicated that total assets have a positive and significant effect on an efficiency of Islamic rural banks. The more large assets the more increase the trust and services of Islamic rural banks. So they can generate profits. The return on asset (ROA) which reflects the profitability of Islamic rural banks shows a significant positive effect on efficiency. It means that Islamic rural banks can get more profit by being efficient.

While non-performing financing (NPF) shows a negative and significant relationship to efficiency. This means an efficient bank has a low NPF. NPF is a bank risk that must be continuously suppressed because it can drain bank funds that are earmarked for bank productive activities. Banks can lose the opportunity to earn revenue and also increase monitoring and billing costs. That way, Islamic Rural Banks must apply the principle of prudence better in their operations.

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Table 2. The Result of Tobit Regression

Variable	Coefficient	Std. Error	z-Statistic	Prob.
ROA*	0.002487	0.000843	2.949348	0.0032
NPF*	-0.004117	0.000438	-9.396351	0.0000
LNTOTALASET*	0.030273	0.004542	6.665525	0.0000
KPMM*	0.000867	0.000156	5.546477	0.0000
INFLASIPROVINSI*	0.012615	0.002710	4.654720	0.0000
PDRBPROVINSI*	0.057450	0.019525	2.942449	0.0033
FDR***	-5.10E-05	2.66E-05	-1.916104	0.0554
C	-0.244618	0.136683	-1.789680	0.0735

From the table 2 the result of tobit regression indicates that Islamic Rural Banks can meet the KPMM determined by the regulator while increasing efficiency. KPMM is needed to reduce the impact of unexpected financial losses. FDR indicates the level of liquidation of Islamic Rural Banks showing a negative and significant effect on efficiency. This means that if liquidity goes up, efficiency will go down. According to Widiarti & Siregar (2015) excess liquidity will cause banks to become inefficient because of funds that exceed the needs so that there are funds that are not productive or idle funds. Islamic Rural Banks need to adjust the amount of liquidity according to needs so that all funds can be utilized to the maximum.

The external independent variable which is a macroeconomic indicator in this research is the GRDP and regional inflation. Both of them showed a positive and significant effect on the efficiency of Islamic Rural Banks. According to Shawtari et al, (2015) GDP can affect bank efficiency because demand for bank services is affected by economic growth. That way, economic growth in the area of Java will increase public demand for Islamic Rural Banks services so that income will rise. According to Philip Perry in Chowdhury (2015) good or bad inflation on bank performance depends on the bank's knowledge of inflation that will occur. If banks can anticipate inflation, bank performance will be positive. In this study inflation can be anticipated so that Islamic Rural Banks can adjust costs and still produce profits when inflation is high.

Islamic Rural Banks efficiency must be maintained and improved to be competitive and sustainable. Management must be able to identify Islamic Rural Banks inputs and outputs that are not optimal and make decisions in reducing or adding those that are not optimal. Islamic Rural Banks needs to improve its financing and liquidity risk management. The prudent principle needs to be given more attention in Islamic Rural Banks business operations. Good Corporate Governance practices need to be fully implemented and supported by stakeholders because they can reduce risk and improve performance (Bastomi et al, 2017). Management can consider the results of the analysis

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of the independent variables in this study in an effort to improve efficiency performance and determine the right strategy for bank development.

CONCLUSION

Results from this study indicates that Islamic Rural Banks still inefficient with from year 2014 to 2017. While all independent variables in this study have a statistically significant effect on efficiency Islamic rural banks. There are some Islamic rural banks that achieved perfectly efficient levels consistently throughout the research period such as Harta Karimah Cibitung, Harta Insan Karimah Parahyangan and Bhakti Sumekar.

However this study only uses Islamic Rural Banks samples in Java. Future research may add wider population and the use of other DEA models in measuring efficiency can also be done in subsequent studies to improve the quality of research. Estimation with other regression models can be used to see the consistency of the effects of research variables.

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