

EFFICIENCY OF ZAKAT INSTITUTIONS: EVIDENCE FROM AN EMERGING ECONOMY

T. Muhammad Ghufran ^{*}, Muhammad Hasbi Zaenal ^{**}, Endri Endri ^{***}

^{*} Institut Agama Islam Tazkia, Bogor, Indonesia

^{**} Universitas Islam Negeri Syarif Hidayatullah, Jakarta, Indonesia

^{***} Corresponding author, Faculty of Economics and Business, Universitas Mercu Buana, Jakarta, Indonesia

Contact details: Faculty of Economics and Business, Universitas Mercu Buana, Jalan Meruya Selatan No. 1, Kembangan, 11650 West Jakarta, Indonesia



Abstract

How to cite this paper: Ghufran, T. M., Zaenal, M. H., & Endri, E. (2023). Efficiency of zakat institutions: Evidence from an emerging economy [Special issue]. *Corporate Governance and Organizational Behavior Review*, 7(2), 338-349. <https://doi.org/10.22495/cgobrv7i2sip12>

Copyright © 2023 The Authors

This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0). <https://creativecommons.org/licenses/by/4.0/>

ISSN Online: 2521-1889

ISSN Print: 2521-1870

Received: 27.08.2022

Accepted: 09.05.2023

JEL Classification: L31, O35, P46

DOI: 10.22495/cgobrv7i2sip12

Efficiency is essential for an institution because it can measure how well resources are used to achieve its specific goals (Wahab & Rahman, 2011). Zakat institutions must be managed efficiently, so they are maximized in promoting socio-economic goals, especially poverty alleviation (Wahab & Rahman, 2013). This study aims to analyze the efficiency level of Baitul Mal districts/cities of Aceh Province in Indonesia. Efficiency measurement uses a nonparametric data envelopment analysis (DEA) approach during 2018-2020. DEA analyzes the interaction between input variables consisting of socialization costs, number of *amil*, and operational costs, with output variables comprising the total collection and distribution of *zakat*, *infaq*, and *sadaqah* (ZIS). The results show that 11 Baitul Mal out of 69 decision-making unit (DMU) (15.94%) are efficient overall, technical, and scale. As for technical efficiency, there are 16 Baitul Mal (23.19%) that are efficient, the remaining 26 Baitul Mal (40.58%) have a score below 60, and 27 Baitul Mal (36.23%) have a score above 60. Regency Baitul Mal Aceh Besar became the only Baitul Mal that achieved efficiency throughout the research period. The source of Baitul Mal's inefficiency comes from all variables. Baitul Mal must optimize socialization costs by 60.68%, operational costs by 33.60%, and the role of *amil* by 3.20%. Furthermore, Baitul Mal must increase the amount of ZIS collection by 46.29% and the distribution of ZIS by 52.84% to achieve efficiency.

Keywords: Efficiency, Zakat, Baitul Mal, Data Envelopment Analysis, Indonesia

Authors' individual contribution: Conceptualization — T.M.G. and E.E.; Methodology — M.H.Z. and E.E.; Investigation — T.M.G. and M.H.Z.; Resources — M.H.Z. and E.E.; Data Curation — M.H.Z. and E.E.; Writing — Original Draft — T.M.G. and E.E.; Writing — Review & Editing — M.H.Z. and E.E.; Supervision — T.M.G. and E.E.; Project Administration — M.H.Z. and E.E.; Funding Acquisition — T.M.G., M.H.Z., and E.E.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

Acknowledgements: This paper is part of the development of the zakat and Baitul Mal Institutions by the National Amil Zakat Agency (BAZNAS), Indonesia. High esteem is given to BAZNAS for the support of journal publications in this research project.

1. INTRODUCTION

Islam is a religion that pays great attention to economic problems by paying particular attention to alleviating poverty and inequality. This is because the zakat instrument is used as an essential pillar in the pillars of Islam (Ayuniyyah et al., 2018; Nurhayati et al., 2022). Zakat is part of the assets that must be issued by every Muslim when it reaches the specified conditions. Zakat is an alternative solution to social and economic inequality, especially poverty. Zakat is considered effective in distributing wealth and improving people's welfare. Research by Ariyani (2016) shows that compared to the poverty alleviation program model from the government and corporate social responsibilities (CSR), the implementation of the zakat-based poverty alleviation program is better. These results indicate that a zakat-based poverty reduction plan can be a valuable model for policymakers to formulate an effective poverty reduction plan (Ariyani, 2016). Poverty has become a fierce polemic in Aceh Province. Badan Pusat Statistik (BPS) data released from the results of the census conducted in 2020 places Aceh as the poorest province on the Island of Sumatra. The percentage of poor people in Aceh Province in March 2020 decreased from 15.01% to 14.99%. However, the number of poor people in Aceh Province increased by 5 thousand people totaling 814,91 thousand people, compared to September 2019 which amounted to 809,76 thousand people (BPS Provinsi Aceh, 2020).

Zakat is said to reduce inequality which can be beneficial for development in general (Ayuniyyah et al., 2018; Malik, 2016; Shaikh & Ismail, 2017; Muthi'ah et al., 2021). The pattern of zakat-based inequality reduction programs is considered to perform better (Ariyani, 2016). Although many factors influence the problem of poverty and inequality, efficient zakat management is expected to contribute to reducing poverty and inequality in Aceh Province. Aceh Province is a unique autonomous region that implements Islamic law in its administration; it has Law No. 10 of 2018 concerning Baitul Mal related to the management of zakat. Baitul Mal Aceh is a zakat management institution established by the government in Aceh Province. The management of zakat funds in 2012-2015 could have been more efficient, with an average inefficiency of 60.75% (Afrida & Amin, 2018). Based on data from the Baitul Mal Aceh Secretariat Performance Report in 2018, the efficiency of performance achievements was 24.99% (Baitul Mal Aceh, 2018). Data on the efficiency of Baitul Mal Aceh's performance in 2019 was 56.40% (Baitul Mal Aceh, 2019). Performance achievement data analyzes the above-average achievement implementation duty subject and function in Plan Strategic Baitul Mal Aceh Secretariat. Baitul Mal Aceh also stated that the realization of zakat in Aceh in 2020 was only 57,55 billion Rp from its potential which reached 4 trillion Rp per year. Therefore, efficiency in managing zakat in Aceh is an obligation for Baitul Mal Aceh to realize *maslahat* to contribute to alleviating the problems of poverty and inequality in Aceh. *Maslahat* means attracting benefits or rejecting harmful things.

Efficient zakat management can be seen in how the institution can provide the best output with the available inputs. Several studies use the data envelopment analysis (DEA) in analyzing the efficiency level of zakat management organizations (Akbar, 2009; Lestari, 2015; Zahra et al., 2016; Al Parisi, 2017;

Alam, 2018; Djaghballou et al., 2018; Bahraini et al., 2021). In their research, Wahab and Rahman (2013) proposed using DEA to measure the efficiency of zakat management. In the case of a zakat management organization, several variables can be included in the model, such as the number of employees and total expenditure as input and the amount of zakat collected, the amount of zakat distribution, the number of *muzakki* and the number of *mustahik* as output. *Muzakki* is a person who is obliged to pay zakat, and *mustahik* is a group entitled to receive assistance from zakat. Wahab and Rahman (2011) said that areas with Muslim populations affect zakat collection positively. This condition is in line with the Aceh region which applies Islamic Sharia in its government. However, Wahab and Rahman (2012) further stated that more is needed to determine the efficiency of the management institution. Meanwhile, Baitul Mal Aceh was chosen as a case study for several reasons: the availability of the necessary data and research on measuring the efficiency of zakat management in Aceh still needs to be improved. Furthermore, previous research conducted by Afrida and Amin (2018) used qualitative descriptive research. Therefore, this research is different from previous research and the Performance Report of the Baitul Mal Aceh Secretariat (Baitul Mal Aceh, 2018). This study aims to measure the efficiency of zakat management in Baitul Mal Aceh with input and output variables using the DEA method.

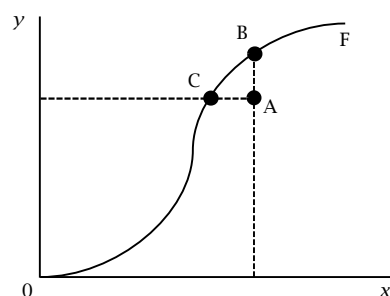
After the introduction, then the structure of this article is as follows. Section 2 is a literature review on the concept and measurement of efficiency and the Baitul Mal zakat institution. The method for measuring efficiency using the DEA approach is presented in Section 3. Section 4 presents the empirical research findings and in-depth discussion. Finally, Section 5 is the conclusions and recommendations of the research results.

2. LITERATURE REVIEW

2.1. Efficiency

Efficiency can be interpreted as a condition where a specific output can be achieved with minimal input. Philosophically, an organization's performance measurement is seen by how it can produce optimal output from the available inputs (Abidin et al., 2021). This study uses a nonparametric frontier DEA measurement method to determine Baitul Mal Aceh's efficiency. There is a line that connects the input and output in the production process called the frontier line, which is described as follows:

Figure 1. Frontier line



Source: Coelli et al. (2005).

The frontier line shows that an organization that is at point A is inefficient because, technically, its output can be increased up to point B without having to increase inputs, or it can be at point C with the same amount of output but with a smaller number of inputs (Coelli et al., 2005). The concept of efficiency introduced by Farrell (1957) can calculate multiple inputs. Farrell classified efficiency into three types, namely technical efficiency (TE), allocative efficiency (AE), and economic efficiency (EE): TE is the efficiency that can be achieved by using or selecting production techniques or technology so that specific inputs can produce maximum output; AE is the efficiency obtained by using inputs in an optimal proportion by considering the price of each input and production technology; EE is a combination of TE and AE, also known as total efficiency (Anggraini et al., 2016).

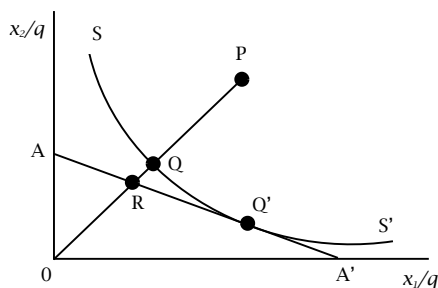
2.2. Efficiency measurement

Efficiency is composed of two factors, namely input factors and output factors. It is an indicator of the success of the productive performance, namely the comparison between inputs and outputs (Jeong et al., 2010; Endri et al., 2020). A company can be said to be efficient when compared to other companies if, with the same amount of input, it can produce a more significant amount of output or can produce the same amount of output but spend a smaller amount of input value (Anwar et al., 2019; Suryadi et al., 2021). Coelli et al. (2005) mention that there are two efficiency measurement techniques, namely input orientation and output orientation. Input-oriented measurement is illustrated as follows:

$$\text{Efficiency } \uparrow = \text{Fixed output/input } \downarrow$$

Input-oriented measures describe the number of inputs that can be reduced in proportion to the amount of output produced remains.

Figure 2. Measurement of input-oriented efficiency



Source: Coelli et al. (2005).

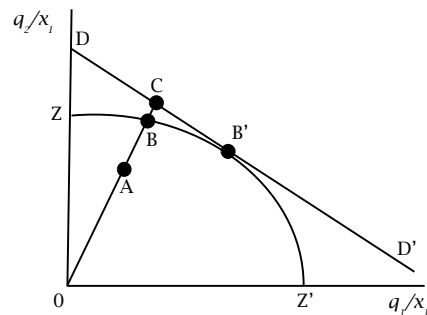
The SS' curve is called the isoquant curve, which results from the combination of the minimum inputs of x_1 and x_2 in producing a unit of output that is technically the most efficient. TE is indicated by point Q because it is on an isoquant curve. The OQ/OP ratio can measure the value of technical efficiency itself. The AA' curve is called the isocost line, a ratio line of input prices. Allocative efficiency occurs when the combination is on the isocost line AA' where it is indicated by point R. The OR/OQ ratio can measure the allocative efficiency value itself.

EE occurs at the intersection of the isoquant curve and the isocost line indicated by point Q'. The value of EE itself can be measured by the OR/OP ratio or by multiplying TE with AE ($TE \times AE$) (Farrell, 1957). EE is when an organization can reduce production costs (inputs) to produce specific outputs with a certain level of technology and prevailing market prices (Abidin et al., 2021). Therefore, the organization must be able to produce output optimally with a certain amount of input (TE) and at a certain price level (AE) to achieve the maximum level of profit (Abidin & Endri, 2009; Indupurnahayu et al., 2022). The output-oriented measurement is illustrated as follows:

$$\text{Efficiency } \uparrow = \text{Output } \uparrow / \text{fixed input}$$

Output-oriented measures describe several output values that can be increased proportionally to the number of fixed input values used.

Figure 3. Measurement of output-oriented efficiency



Source: Coelli et al. (2005).

ZZ' curve is called a production possibility curve, which describes the line of production possibilities that an organization can carry out on two outputs, q_1 and q_2 , from one input x . TE is described by point B. The OA/OB ratio can measure the value of TE itself. The DD' line is called the revenue line, which describes the income line. AE is described by point C. The OB/OC ratio can measure the value of AE itself. EE occurs at the intersection between the production possibility curve and the revenue line indicated by point B'. The condition of point B' is called overall revenue efficiency because it illustrates that the organization can operate with TE and AE. The value of overall revenue efficiency itself can be measured by the OA/OC ratio or by multiplying TE with AE ($TE \times AE$) (Coelli et al., 2005).

2.3. Efficiency approach at Baitul Mal

Baitul Mal in the management of zakat funds carries out their role as *amil*, who carries out the role of collecting, managing, and distributing zakat. Baitul Mal, whose funding source is from the regional government budget (APBD) scheme, demands that they be able to use it efficiently. The institution is expected to play a vital role in promoting the socio-economic objectives of zakat in Aceh. Therefore, these institutions must be managed efficiently (Wahab & Rahman, 2013). The optimal level of efficiency and productivity will illustrate good management of zakat funds. So good

governance indicators are needed, where efficiency and effectiveness become one of the standards in knowing the performance of the zakat management institution. It is also a form of accountability monitoring from the zakat management institute (Noor et al., 2012). So efficient operational management will have an impact on the success of the role of zakat for *mustahik*.

3. METHODOLOGY

This study uses a quantitative research method that emphasizes nonparametric measurements with the DEA method. The DEA methodology is a data-oriented mathematical program technique to evaluate the efficiency of the comparison of input and output ratios called the decision-making unit (DMU) (Cooper et al., 2011). This study analyzes the interaction between input variables consisting of data on socialization costs, number of staff, and operational costs with output variables consisting of the total collection and distribution of *zakat* and *infaq*. The object of research in this study is Baitul Mal. This institution is given the authority to manage *zakat*, *infaq*, and *sadaqah* (ZIS) funds, *waqf*, and religious assets based on Aceh Law No. 10 of 2018. *Waqf* is a legal act by one party to separate or surrender part of his property or assets. Input variables describe resource factors that support Baitul Mal's work efficiency in managing zakat and *infaq* funds. The output variable describes the products that are the main objectives of Baitul Mal in managing zakat and *infaq* funds. A Baitul Mal can be efficient if it can achieve an efficiency score of 100%. So that if the efficient score is getting further away from 100% or close to a score of 0%, then it is increasingly inefficient with their respective assumptions.

DEA has three model assumptions in evaluating efficiency. The constant return to scale (CRS) assumption states that every addition of n units of input must increase the increase in output by n times. Another assumption in this model is that each Baitul Mal operates optimally, so this model is also known as overall efficiency, which is technically efficient and on a scale. The assumption of variable return to scale (VRS) states that every addition of n units of input does not mean that an increase follows it in the output of n times. In this case, each Baitul Mal has different return to scale (RTS) conditions; it could be that the output is getting bigger, called increasing return to scale (IRS), or vice versa, the output is decreasing, called decreasing return to scale (DRS). The measurement of the efficiency with the VRS assumption is known as pure technical efficiency (Endri, 2010). The decomposition of the TE scores from CRSTE into two components, which refers to scale efficiency (SE) and refers to pure TE (VRSTE). This was obtained by calculating CRSTE and VRSTE on the same data. If there is a difference in the TE results from the two assumption models, it is indicated that Baitul Mal is not efficient on a scale (Endri et al., 2022).

4. RESULTS AND DISCUSSION

4.1. Baitul Mal Aceh

Zakat management institutions have existed since the time of the Prophet. Nabi et al. (2021) state that

the importance of zakat management for social life is strengthened by establishing the *amalah* institution (*amil* zakat institution) by the Prophet to collect and distribute zakat for those who are entitled to receive it. Allah says in the Quran which means: "Zakat expenditures are only for the poor and for the needy and for those employed to collect [Zakat] and for bringing hearts together [for Islam] and for freeing captives [or enslaved people] and for those in debt and the cause of Allah and the [stranded] traveler — an obligation [imposed] by Allah. However, moreover, Allah is Knowing and Wise" (Surah Taubah verse 60).

From the verse above, it can be seen that Baitul Mal Aceh and other institutions acting as zakat *amil* embody the application of Islamic law, especially in Aceh Province. Baitul Mal Aceh is a zakat management institution established by the government at the provincial and district/city levels to facilitate zakat management following what is stated in the Law Number 23 of 2011 (Chapter II, Article 16, para. 1). This law provides authority for the complete management of zakat in Indonesia to the National Amil Zakat Agency of the Republic of Indonesia (BAZNAS) with all its functions. For more details, the author describes it in the Figure A.1 (see Appendix).

Structurally Baitul Mal Aceh is an extension of BAZNAS at the provincial and district/city levels. However, due to Aceh's status as one of the provinces with exceptional autonomy, BAZNAS in Aceh Province is called Baitul Mal, following what is stated in Law No. 10 of 2018. The law states that Baitul Mal is an institution of privilege and specificity within the Aceh Government that carries out tasks independently and has the authority to manage ZIS, *waqf*, and other religious assets based on Islamic law. Article 191 of Law No. 11 of 2006 has regulated the role of Baitul Mal Aceh, which mentions Baitul Mal Aceh and Baitul Mal district/city as official and independent institutions entitled to manage ZIS, *waqf*, and other religious assets. *Infak* is wealth issued by a person or business entity outside of zakat, obligatory for the public good. *Sadaqa* is a voluntary act of charity towards others, whether through generosity, love, compassion, or faith.

4.2. Results

The results of this study use DEAP 2.1 software. Measurement of efficiency at Baitul Mal regency/city in Aceh Province is output-oriented which aims to determine the level of efficiency carried out by each Baitul Mal in collecting and distributing ZIS funds with a certain number of inputs. The background for analyzing the interaction between input and output variables using output orientation is because Baitul Mal has the potential to increase ZIS that can be collected and distributed. A Baitul Mal can be efficient if it can achieve an efficiency score of 100%. So, if the efficient score is getting further away from 100% or approaching a score of 0%, then it is increasingly inefficient with their respective assumptions.

The following are the results of data processing using DEAP 2.1 software.

Table 1. Efficiency level of district/city Baitul Mal in Aceh Province

No.	District/city	Year	CRSTE	VRSTE	Scale	RTS
1	Aceh Tengah	2018	100	100	100	-
		2019	91.8	92.2	99.5	DRS
		2020	100	100	100	-
2	Banda Aceh	2018	64.1	86.0	74.5	DRS
		2019	60.1	82.5	72.8	DRS
		2020	57.5	80.1	71.7	DRS
3	Aceh Utara	2018	85.8	91.8	93.5	DRS
		2019	74.3	79.8	93.2	DRS
		2020	100	100	100	-
4	Aceh Besar	2018	100	100	100	-
		2019	100	100	100	-
		2020	100	100	100	-
5	Aceh Barat	2018	80.5	95.8	84.0	DRS
		2019	74.5	100	74.5	DRS
		2020	59.7	66.8	89.4	DRS
6	Bener Meriah	2018	58.8	60.6	97.1	DRS
		2019	77.2	78.6	98.2	DRS
		2020	60.9	65.4	93.2	IRS
7	Bireuen	2018	85.6	86.2	99.3	DRS
		2019	57.2	57.2	100	-
		2020	100	100	100	-
8	Aceh Singkil	2018	42.8	44.1	97.0	DRS
		2019	61.9	62.8	98.7	DRS
		2020	37.0	39.3	94.2	DRS
9	Nagan Raya	2018	29.1	42.7	68.3	DRS
		2019	20.4	29.2	70.0	DRS
		2020	22.8	32.8	69.6	DRS
10	Aceh Selatan	2018	100	100	100	-
		2019	100	100	100	-
		2020	69.1	70.1	98.6	DRS
11	Aceh Tamiang	2018	60.0	60.1	97.7	DRS
		2019	60.0	60.2	97.7	DRS
		2020	87.7	90.0	97.4	IRS
12	Sabang	2018	26.2	28.2	93.0	DRS
		2019	25.9	27.1	95.6	DRS
		2020	31.1	36.1	86.1	DRS
13	Langsa	2018	24.9	27.0	92.1	DRS
		2019	26.6	28.8	92.5	DRS
		2020	31.1	33.8	91.9	DRS
14	Aceh Timur	2018	49.3	50.3	98.0	DRS
		2019	46.4	46.8	99.3	DRS
		2020	60.0	61.0	98.4	DRS
15	Gayo Lues	2018	29.9	47.5	62.9	IRS
		2019	59.6	100	59.6	IRS
		2020	65.0	71.2	91.3	DRS
16	Aceh Jaya	2018	88.5	88.6	99.9	DRS
		2019	77.5	79.5	97.4	IRS
		2020	52.1	55.3	94.3	IRS
17	Subulussalam	2018	22.2	22.5	98.7	DRS
		2019	25.2	25.6	98.6	DRS
		2020	29.0	30.1	96.5	DRS
18	Pidie Jaya	2018	19.5	20.4	95.7	IRS
		2019	19.1	19.7	96.9	IRS
		2020	29.2	61.2	47.5	IRS
19	Pidie	2018	25.1	27.5	91.1	DRS
		2019	22.6	28.1	80.3	DRS
		2020	36.2	100	36.2	IRS
20	Lhokseumawe	2018	44.3	72.3	61.3	DRS
		2019	67.0	83.0	80.7	DRS
		2020	100	100	100	-
21	Simeulue	2018	22.3	24.3	91.7	DRS
		2019	37.3	40.7	91.7	DRS
		2020	30.2	30.8	98.1	DRS
22	Aceh Barat Daya	2018	71.8	100	71.8	IRS
		2019	45.8	90.8	50.5	IRS
		2020	65.6	100	65.6	IRS
23	Aceh Tenggara	2018	82.3	82.3	100	-
		2019	100	100	100	-
		2020	79.0	82.9	95.3	DRS
Mean			0.587	0.663	0.889	

Source: Efficiency measurement results from DEAP 2.1 software.

Based on the table above, 11 Baitul Mal out of 69 DMU (15.94%) is efficient overall, technical, and scale. Technically, 16 Baitul Mal out of 69 DMU (23.19%) are efficient; the remaining 53 Baitul Mal (76.81%)

still need to be more efficient. For more details, the efficient distribution of Baitul Mal can be seen in Table 2 below.

Table 2. Distribution of district/city Baitul Mal efficiency in Aceh Province

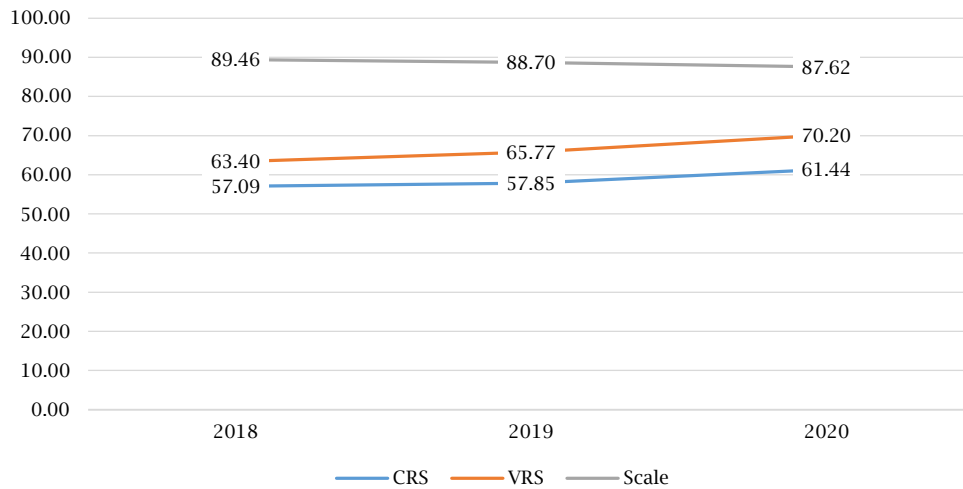
Assumption	100%	80-99.9%	60-79.9%	40-59.9%	0-39.9%
CRS	11	7	17	11	23
VRS	16	13	14	8	18
Scale	13	41	11	3	1

Source: Efficiency measurement results from DEAP 2.1 software.

From the data shown in Table 2, it can be seen that there are 26 Baitul Mal (40.58%) having an efficiency score below 60% and as many as 27 Baitul Mal (36.23%) having a score above 60%. These results indicate that many Baitul Mal in Aceh Province still needs to improve their efficiency. Overall, the overall and

technical performance of ZIS management has increased efficiency levels every year (see Figure 4). Meanwhile, on a scale, regency/city Baitul Mal in Aceh Province experienced a negative trend where we can see a decrease in efficiency levels every year as shown in the following figure.

Figure 4. Trends in Baitul Mal efficiency in 2018-2020



Source: Efficiency measurement results from DEAP 2.1 software.

The figure above shows that the overall trend of Baitul Mal efficiency in the regency/city of Aceh Province has increased slightly from year to year. In 2018 the efficiency score was 57.09%; in 2019, the efficiency score was 57.85%; and in 2020, the efficiency score was 61.44%. Although it is generally still below 60%, the trend is positive. Likewise, from a technical point of view, the efficiency trend is positive, with an increase in efficiency scores at Baitul Mal regency/city in Aceh Province every year. In general, the TE score is above 60%. For example, in 2018, the efficiency score was 63.40%; in 2019, the efficiency score was 65.77%; and in 2020, the efficiency score was 70.20%. The trend of increasing TE scores indicates the use of optimized inputs every year. However, Baitul Mal in Aceh Province still needs more technical efficiency. With the number of existing inputs, Baitul Mal can still increase the productivity of ZIS funds' collection and distribution (output).

Meanwhile, if viewed on a scale, the efficiency trend in district/city Baitul Mal in Aceh Province has decreased yearly. For example, in 2018, the efficiency score was 89.46%; in 2019, the efficiency score was 88.70%; and in 2020, the efficiency score was 87.62%. Generally, the efficiency on a scale shows an efficiency score above 80%. It shows that Baitul Mal in Aceh Province has external support outside the management that supports Baitul Mal to operate at an optimal scale point. Such as, the Aceh

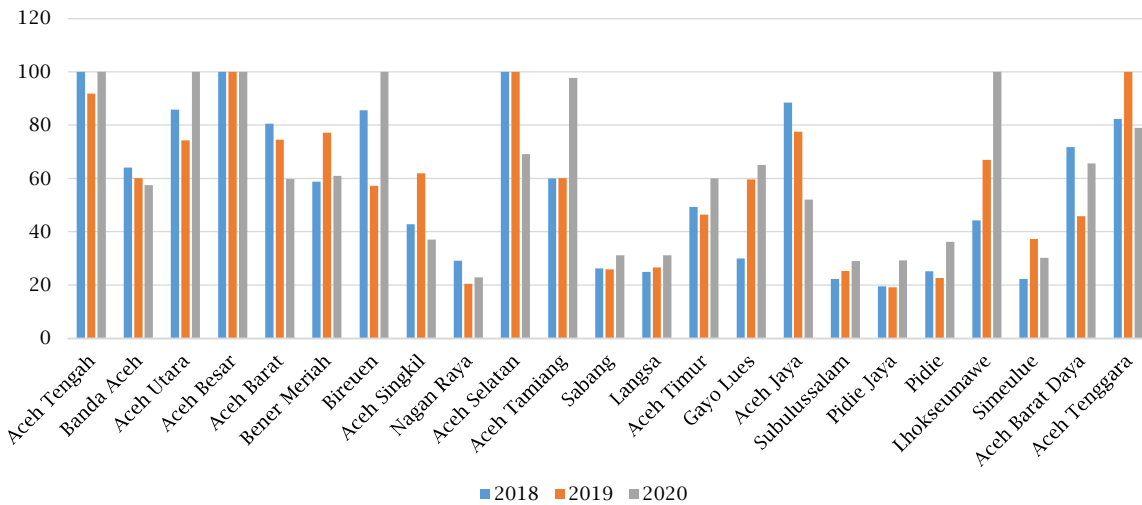
government regulations were translated into law to establish a government system based on Islamic Sharia that directly supports the Islamic social finance ecosystem, such as ZIS funds. However, it is unfortunate that the efficiency trend is negative on a scale.

The results of the processed data in Table 1 show that in the period 2018-2020, IRS conditions were experienced by 13 district/city Baitul Mal in Aceh Province. This condition illustrates that the 13 Baitul Mal has not used inputs optimally, making it possible to continue to increase output capacity by maintaining the number of existing inputs. As for the DRS condition experienced by 43 Baitul Mal districts/cities in Aceh Province. Illustrates that Baitul Mal with DRS conditions must reduce inputs to achieve efficiency because the number of inputs at 43 Baitul Mal could be better.

4.3. Efficiency comparison between Baitul Mal

Based on data processing sourced from the financial statements of 23 district/city Baitul Mal in Aceh Province during the period 2018 to 2020, it can be seen which Baitul Mal is the most efficient and inefficient. Therefore, overall efficiency measurement (see Figure 7) shows that Baitul Mal has achieved efficiency, namely Aceh Tengah (2018 and 2020), Aceh Utara (2020), Aceh Besar (2018-2020), Bireuen (2020), Aceh Selatan (2018-2019), Lhokseumawe (2020), and Aceh Tenggara (2019).

Figure 5. Comparison of overall efficiency

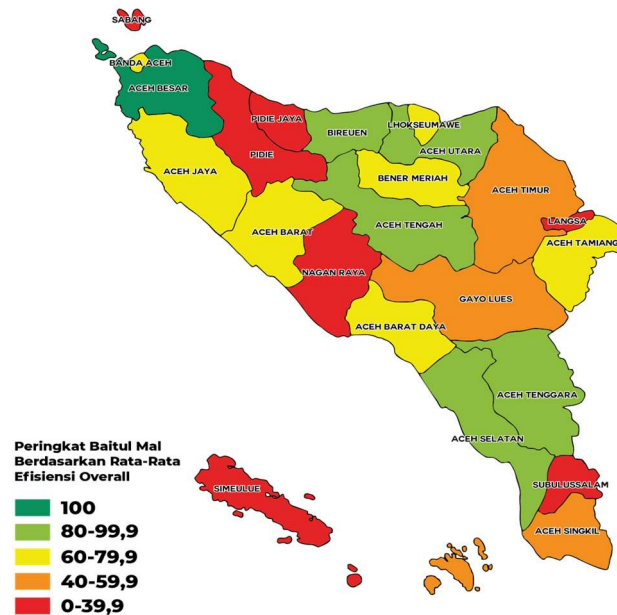


Source: Efficiency measurement results from DEAP 2.1 software.

The Baitul Mal with the lowest overall efficient value (average below 40%) is occupied by the areas of Pidie Jaya, Nagan Raya, Subulussalam, Langsa, Sabang,

Pidie, and Simeulue. More details can be seen in Figure 6 below.

Figure 6. Baitul Mal's rating based on average overall efficiency

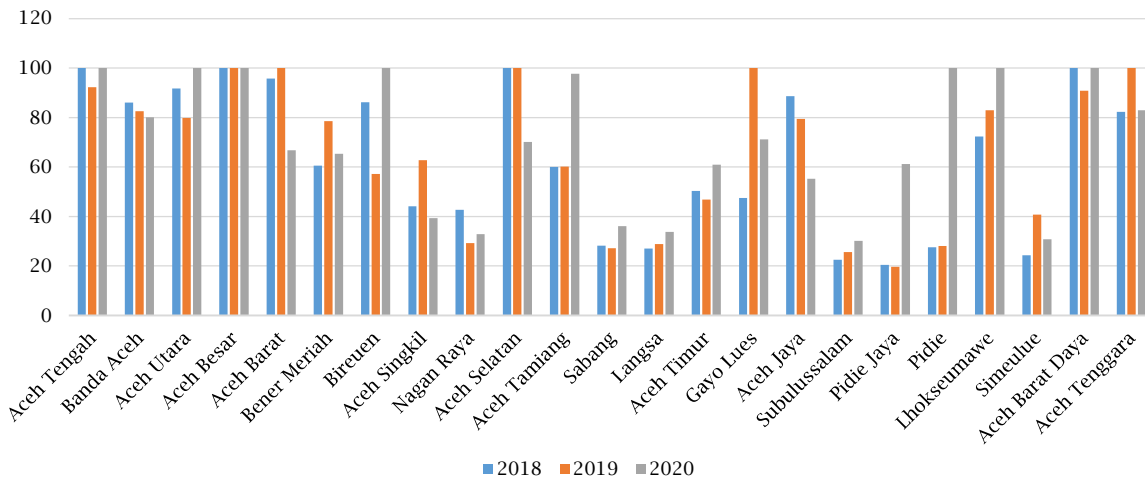


Source: Efficiency measurement results from DEAP 2.1 software.

Meanwhile, based on TE measurements (see Figure 6), it shows that there are additional Baitul Mal that achieve efficiency, namely Aceh Barat (2019), Gayo Lues (2019), and Pidie (2020) and Aceh Barat Daya (2018 and 2020). Accompanying other

Baitul Mal have been shown above which are overall efficiency, Aceh Tengah (2018 and 2020), Aceh Utara (2020), Aceh Besar (2018–2020), Bireuen (2020), Aceh Selatan (2018–2019), Lhokseumawe (2020), and Aceh Tenggara (2019).

Figure 7. Comparison of TE

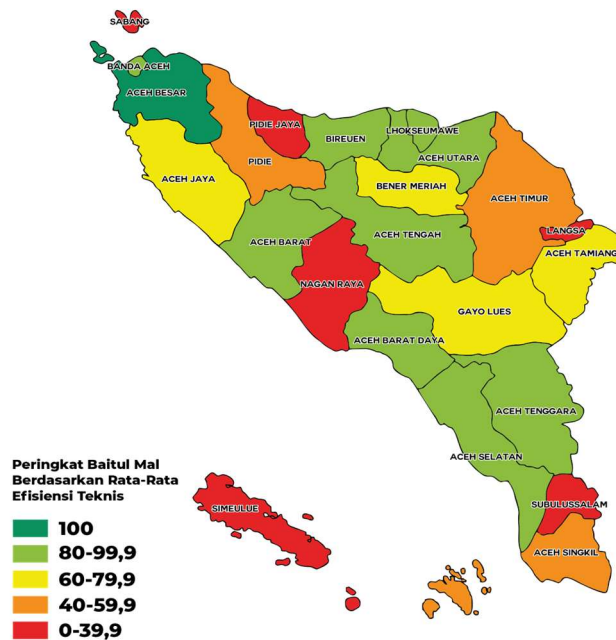


Source: Efficiency measurement results from DEAP 2.1 software.

The Baitul Mal with the lowest technical efficiency score (average below 40%) is occupied by the Subulussalam, Langsa, Sabang, Simeulue, Pidie Jaya, and Nagan Raya (see Figure 8). In general, the cause of the inefficiency of a DMU is due to the less-than-optimal use of inputs. However,

the available inputs can still produce maximum output. Therefore, as shown in Table 1, where as many as 43 Baitul Mal is in decreasing condition, the number of inputs could be better. This condition requires Baitul Mal to reduce the number of inputs to achieve a CRS condition.

Figure 8. Baitul Mal's rating based on average TE

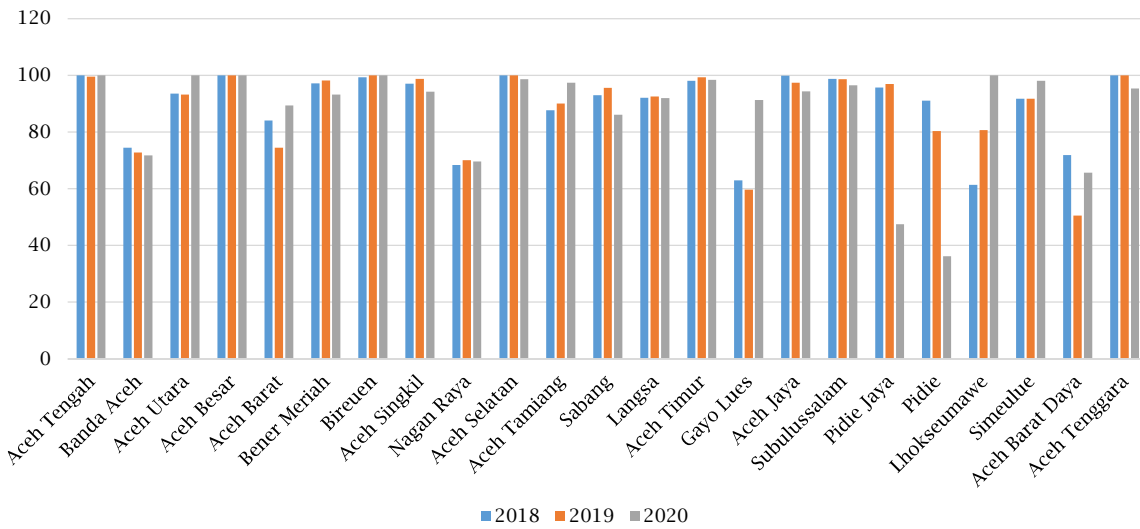


Source: Efficiency measurement results from DEAP 2.1 software.

Furthermore, calculations based on scale efficiency measurements (see Figure 8) show that 13 Baitul Mal achieved an efficiency score of 100, namely Aceh Tengah (2018 and 2020), Aceh

Utara (2020), Aceh Besar (2018–2020), Bireuen (2019–2020), Aceh Selatan (2018–2019), Lhokseumawe (2020), and Aceh Tenggara (2018–2019).

Figure 9. Comparison of scale efficiency

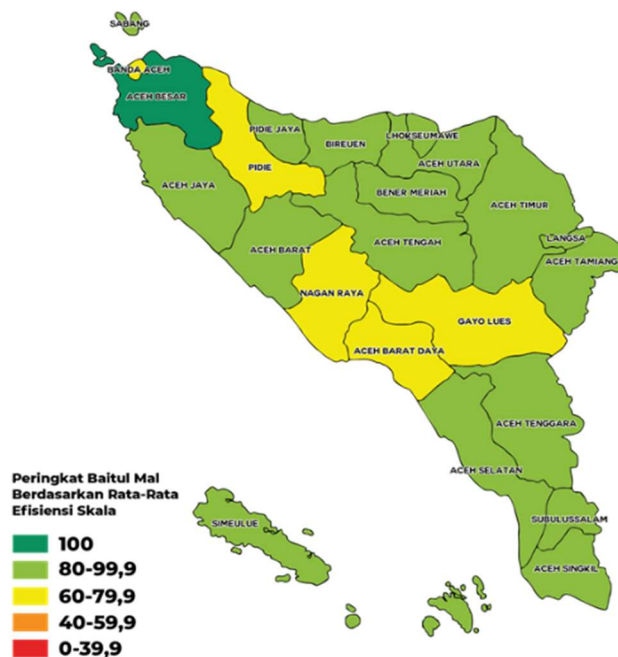


Source: Efficiency measurement results from DEAP 2.1 software.

The Baitul Mal with the lowest efficient scale value is only occupied by one region, Baitul Mal Pidie, in 2020 (see Table 1). However, the results of the scale calculations are pretty good (see Figure 10).

The majority of Baitul Mal is on an efficiency score of 80-99.9% scale. This calculation shows that in a non-technical manner, Baitul Mal districts/cities in Aceh Province are promising.

Figure 10. Baitul Mal's rating based on AE scale

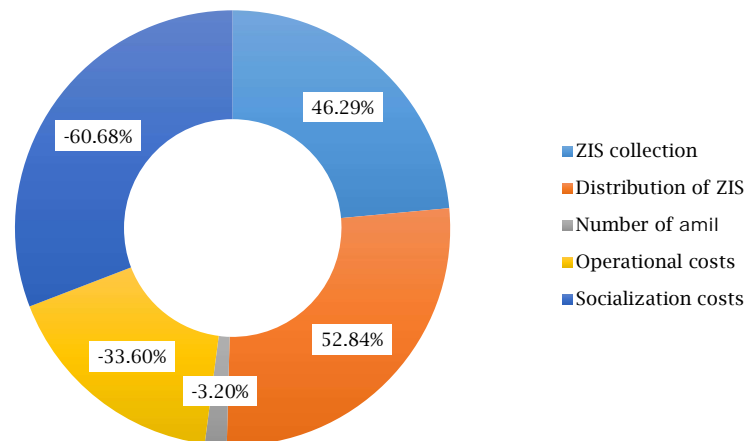


Source: Efficiency measurement results from DEAP 2.1 software.

4.4. Total potential for improvement of regency/city Baitul Mal efficiency in Aceh Province

In this sub-chapter, the author will discuss the sources of inefficiency by looking at the information displayed from the total potential

for efficiency improvement data (total potential improvement). The total potential improvement provides an overall picture of the output and input variables from 2018 to 2020 which must be increased or reduced in number. Below is a picture of the total potential efficiency increase.

Figure 11. Total efficiency improvement potential

Source: Efficiency measurement results from DEAP 2.1 software.

From Figure 11, it can be seen that the source of Baitul Mal's inefficiency comes from all variables, both output, and input, with their respective levels. To achieve efficiency, Baitul Mal must optimize the use of socialization costs by as much as 60.68%, operational costs by as much as 33.60%, and the number of *amil* by as much as 3.20%. Furthermore, Baitul Mal must increase the amount of ZIS collection by 46.29% and the distribution of ZIS by 52.84% to achieve efficiency.

4.5. Discussion

The results of the DEA calculation show that, generally, the Baitul Mal districts/cities in Aceh Province need to be more efficient in carrying out their functions as zakat management institutions. These results illustrate that Baitul Mal has yet to be able to carry out its role optimally in driving *mustahik's* economy through the collection and distribution of zakat. Zakat's primary function is to increase purchasing power and the economy rather than *mustahik*. Therefore, it can also become a balancing instrument for the national economy (Subardi et al., 2020; Hidayat et al., 2022). The magnitude of the total value of potential improvement indicates that in Baitul Mal, districts/cities in Aceh Province, there are still many factors that can be increased efficiency if these variables are managed optimally. Among the leading causes of inefficiency are ZIS funds' distribution and collection variables, which contributed 52.84% and 46.29%, respectively. These results are in line with research by Akbar (2009), Alam (2018), Zahra (2016), and Subardi et al. (2020), which show that zakat management institutions need to be more efficient in carrying out their production side or output function Baitul Mal is expected to be able to optimize the activities of collecting ZIS funds and also the distribution process due to the enormous potential that can still be increased.

The measurement from the input side shows that socialization costs are the biggest cause of inefficiency in Baitul Mal at 60.68%, operational

costs at 33.60% and *amil's* role in the last order is 3.20%. This result is in line with the findings of Akbar (2009), Wahab and Rahman (2012), Al Parisi (2017), and Zahra (2016), who found that some zakat management institutions still need to be able to suppress the input side. For example, Baitul Mal can increase innovation by digitizing services and marketing to reduce socialization costs and be effective. However, the value of the total potential improvement in Baitul Mal indicates that its activities have yet to utilize all its potential capabilities to produce maximum output. For this reason, each Baitul Mal needs to know which variables are inefficient to improve and increase their efficiency. Baitul Mal must improve all variables to achieve cumulative efficiency in 23 regencies/cities in Aceh Province.

5. CONCLUSION

Based on the DEA method, it was found that 11 Baitul Mal out of 69 DMU (15.94%) were efficient overall, technical, and scale. Technically, there are 16 Baitul Mal out of 69 DMU (23.19%) that are efficient, the remaining 53 Baitul Mal (76.81%) are not efficient, where 26 Baitul Mal (40.58%) have a score below 60, and 27 Baitul Mal (36.23%) have a score above 60. These results indicate that many Baitul Mal in Aceh Province still needs to improve their efficiency. Baitul Mal, Aceh Besar District, was the only Baitul Mal that achieved efficiency throughout the research period. Baitul Mal's source of inefficiency comes from all variables, output, and input, with their respective levels. To achieve efficiency, Baitul Mal must optimize the use of socialization costs by as much as 60.68%, operational costs by as much as 33.60%, and the number of *amil* by as much as 3.20%. Furthermore, Baitul Mal must increase the amount of ZIS collection by 46.29% and the distribution of ZIS by 52.84% to achieve efficiency. Therefore, Baitul Mal needs to improve all variables to achieve cumulative efficiency in 23 districts/cities in Aceh Province.

This research has limitations, including; Efficiency analysis was only carried out at the Baitul Mal zakat institution in Aceh Province, and the efficiency measurement method uses a nonparametric DEA approach with limited input and output variables. Therefore, it needs to investigate the factors that determine the efficiency of zakat institutions. Suggestions for future research

agendas, namely; analysis of the efficiency of zakat institutions can cover all provinces in Indonesia, efficiency measurement methods can be developed with a parametric or DEA approach with the expansion of input-output variables, and investigation of the determinants of efficiency to the next stage using the Tobit regression model or other models.

REFERENCES

1. Abidin, Z., & Endri, E. (2009). Kinerja efisiensi teknis bank pembangunan daerah: Pendekatan data envelopment analysis (DEA). *Jurnal Akuntansi Dan Keuangan*, 11(1), 21–29. <https://jurnalakuntansi.petra.ac.id/index.php/aku/article/view/17863>
2. Abidin, Z., Prabantariko, R. M., Wardhani, R. A., & Endri, E. (2021). Analysis of bank efficiency between conventional banks and regional development banks in Indonesia. *Journal of Asian Finance, Economics, and Business*, 8(1), 741–750. <https://doi.org/10.13106/jafeb.2021.vol8.no1.741>
3. Afrida, E., & Amin, A. (2018). Analisis efisiensi pengelolaan dana zakat pada baitul mal provinsi Aceh. *Jurnal Ilmiah Mahasiswa Ekonomi Akuntansi*, 3(1), 20–36. <https://jim.usk.ac.id/EKA/article/view/5358/0>
4. Akbar, N. (2009). Analisis efisiensi organisasi pengelola zakat nasional dengan pendekatan data envelopment analysis. *Islamic Finance & Business Review*, 4(2), 760–784. <https://media.neliti.com/media/publications/271264-analisis-efisiensi-organisasi-pengelola-4027d5ea.pdf>
5. Al Parisi, S. (2017). Tingkat efisiensi dan produktivitas lembaga zakat di Indonesia. *Esensi: Jurnal Bisnis dan Manajemen*, 7(1), 63–72. <http://doi.org/10.15408/ess.v7i1.3687>
6. Alam, A. (2018). Analisis efisiensi pengelolaan dana zakat infak sedekah (ZIS) di baznas kabupaten/kota se-karesidenan Surakarta dengan menggunakan metode data envelopment analysis DEA. *IQTISHODUNA: Jurnal Ekonomi Islam*, 7(2), 262–290. <https://ejournal.iainsyarifuddin.ac.id/index.php/iqtishoduna/article/view/234>
7. Anggraini, N., Harianto, H., & Anggraeni, L. (2016). Efisiensi teknis, alokatif dan ekonomi pada usahatani ubikayu di Kabupaten Lampung Tengah Provinsi Lampung. *Jurnal Agribisnis Indonesia/Journal of Indonesian Agribusiness*, 4(1), 43–56. <https://doi.org/10.29244/jai.2016.4.1.43-56>
8. Anwar, M. S., Itang, I., & Risyanto, H. (2019). Analisis efisiensi lembaga pengelola zakat (LPZ) dalam mengelola potensi zakat di Indonesia. *Tazkiya*, 20(2), 145–180. <https://jurnal.uinbanten.ac.id/index.php/tazkiya/article/view/2370>
9. Ariyani, N. (2016). Zakat as a sustainable and effective strategy for poverty alleviation: From the perspective of a multi-dimensional analysis. *International Journal of Zakat*, 1(1), 89–107. <https://doi.org/10.37706/ijaz.v1i1.9>
10. Ayuniyyah, Q., Pramanik, A. H., Saad, N. M., & Ariffin, M. I. (2018). Zakat for poverty alleviation and income inequality reduction: West Java, Indonesia. *Journal of Islamic Monetary Economics and Finance*, 4(1), 85–100. <https://doi.org/10.21098/jimf.v4i1.767>
11. Ayuniyyah, Q., Pramanik, A. H., Saad, N. M., & Ariffin, M. I. (2017). The comparison between consumption and production-based zakat distribution programs for poverty alleviation and income inequality reduction. *International Journal of Zakat*, 2(2), 11–28. <https://doi.org/10.37706/ijaz.v2i2.22>
12. Badan Pusat Statistik (BPS) Provinsi Aceh. (2020). *Profil kemiskinan dan ketimpangan pengeluaran penduduk di Provinsi Aceh maret 2021*. <https://aceh.bps.go.id/pressrelease/2021/07/15/640/profil-kemiskinan-dan-ketimpangan-pengeluaran-penduduk-di-provinsi-aceh-maret-2021.html>
13. Bahraini, S., Endri, E., Santoso, S., Hartati, L., & Pramudena, S. M. (2021). Determinants of firm value: A case study of the food and beverage sector of Indonesia. *Journal of Asian Finance, Economics, and Business*, 8(6), 839–847. <https://doi.org/10.13106/jafeb.2021.vol8.no6.0839>
14. Baitul Mal Aceh. (2018). *Laporan tahunan: Baitulmal Aceh program zakat: Annual report 2018*. <https://drive.google.com/file/d/18F7a4k2CL6Km9lbeTJ-gO4tTsSUR9prh/view>
15. Baitul Mal Aceh. (2019). *Laporan kinerja tahun 2019*. Pemerintah Aceh. <https://drive.google.com/file/d/1RKU1c5yxARqapEXZMHbBB07bCtINDHhC/view>
16. Coelli, T. J., Rao, D. S. P., O'Donnell, C. J., & Battese, G. E. (2005). *An introduction to efficiency and productivity analysis*. Springer. <https://doi.org/10.1007/b136381>
17. Cooper, W. W., Seiford, L. M., & Zhu, J. (2011). Data envelopment analysis: History, models, and interpretations. In W. W. Cooper, Seiford, L. M., & Zhu, J. (Eds.), *Handbook on data envelopment analysis* (pp. 1–39). Springer. https://doi.org/10.1007/978-1-4419-6151-8_1
18. Djaghballou, C.-E., Djaghballou, M., Larbani, M., & Mohamad, A. (2018). Efficiency and productivity performance of zakat funds in Algeria. *International Journal of Islamic and Middle Eastern Finance and Management*, 11(3), 474–494. <https://doi.org/10.1108/IMEFM-07-2017-0185>
19. Endri, E. (2010). Pengukuran kinerja efisiensi perbankan syariah: Analisis empiris 15 bank syariah di Indonesia 2005–2007 [The measurement of performance efficiency in Islamic banking: An empirical analysis of 15 Indonesian Islamic banks 2005–2007]. *Jurnal Ekonomi dan Pembangunan Indonesia*, 10(2), 175–191. <https://media.neliti.com/media/publications/77637-ID-pengukuran-kinerja-efisiensi-perbankan-s.pdf>
20. Endri, E., Fatmawatie, N., Sugianto, S., Humairoh, H., Annas, M., & Wiwaha, A. (2022). Determinants of efficiency of Indonesian Islamic rural banks. *Decision Science Letters*, 11(4), 391–398. <https://doi.org/10.5267/j.dsl.2022.8.002>
21. Endri, E., Kasmir, K., & Syarif, A. D. (2020). Delisting Sharia stock prediction model based on financial information: Support vector machine. *Decision Science Letters*, 9(2), 207–214. <https://doi.org/10.5267/j.dsl.2019.11.001>
22. Farrell, M. J. (1957). The measurement of productive efficiency. *Journal of the Royal Statistical Society. Series A (General)*, 120(3), 253–290. <https://doi.org/10.2307/2343100>
23. Hidayat, R., Anggraini, D., Riyani, Y., & Endri, E. (2022). Optimal Sharia portfolio selection to outperform the stock market in the post-pandemic era. *Quality Access to Success*, 23(187), 287–294. <https://doi.org/10.47750/QAS/23.187.35>

24. Indupurnahayu, I., Nurhayati, I., Endri, E., Marlina, A., Yudhawati, D., & Muniroh, L. (2022). Islamic bank merger and economic crisis: Event study analysis. *Quality Access to Success*, 23(187), 65-72. <https://doi.org/10.47750/QAS/23.187.08>
25. Jeong, S.-O., Park, B. U., & Simar, L. (2010). Nonparametric conditional efficiency measures: Asymptotic properties. *Annals of Operations Research*, 173(1), 105-122. <https://doi.org/10.1007/s10479-008-0359-5>
26. Lestari, A. (2015). Efisiensi kinerja keuangan badan amil zakat daerah (bazda): Pendekatan data envelopment analysis (DEA). *Jurnal Ekonomi & Studi Pembangunan*, 16(2), 177-187. <https://journal.umy.ac.id/index.php/esp/article/view/1288>
27. Malik, B. A. (2016). Philanthropy in practice: Role of Zakat in the realization of justice and economic growth. *International Journal of Zakat*, 1(1), 65-78. <https://doi.org/10.37706/ijaz.v1i1.7>
28. Mutamimah, M., Alifah, S., Gunawan, G., & Adnjani, M. D. (2021). ICT-based collaborative framework for improving the performance of zakat management organisations in Indonesia. *Journal of Islamic Accounting and Business Research*, 12(6), 887-903. <https://doi.org/10.1108/JIABR-05-2020-0154>
29. Muthi'ah, S., Beik, I. S., & Endri, E. (2021). Analisis faktor penentu tingkat kepatuhan membayar zakat (studi pada BAZNAS DKI Jakarta). *Iltizam Journal of Shariah Economics Research*, 5(1), 48-62. <https://doi.org/10.30631/iltizam.v5i1.654>
30. Nabi, M. G., Islama, M. A., Waheduzzaman, M., Sarder, M., & Rahmanc, M. (2021). Estimation of zakat and its use as an effective tool for socio-economic development in Bangladesh. *Thoughts on Economics*, 31(1), 33-56.
31. Noor, A. H. M., Rasool, M. S. A., Rahman, R. A., Yusof, R. M., & Ali, S. M. (2012). Assessing performance of nonprofit organization: A framework for zakat institutions. *British Journal of Economics*, 5(1), 12-22. [http://www.ajournal.co.uk/EFpdfs/EFvolume5\(1\)/EFVol.5%20\(1\)%20Article%202.pdf](http://www.ajournal.co.uk/EFpdfs/EFvolume5(1)/EFVol.5%20(1)%20Article%202.pdf)
32. Nurhayati, I., Endri, E., Riani, D., & Bimo, W. A. (2022). Community's potential and preferences for Islamic banking: The case of Indonesia. *WSEAS Transactions on Environment and Development*, 18, 1094-1105. <https://doi.org/10.37394/232015.2022.18.104>
33. Shaikh, S. A., & Ismail, A. G. (2017). Role of zakat in sustainable development goals. *International Journal of Zakat*, 2(2), 1-9. <https://doi.org/10.37706/ijaz.v2i2.21>
34. Subardi, H. M. P., Sukmadilaga, C., & Yuliafitri, I. (2020). Analisis tingkat efisiensi badan pengelola zakat di tiga negara ASEAN (Indonesia, Malaysia dan Singapura). *Islamicomic: Jurnal Ekonomi Islam*, 11(1), 55-76. <https://doi.org/10.32678/ijei.v11i1.139>
35. Suryadi, S., Endri, E., & Yasid, M. (2021). Risk and return of Islamic and conventional indices on the Indonesia Stock Exchange. *Journal of Asian Finance, Economics, and Business*, 8(3), 23-30. <https://doi.org/10.13106/jafeb.2021.vol8.no3.0023>
36. Wahab, N. A., & Rahman, A. R. A. (2011). A framework to analyse the efficiency and governance of zakat institutions. *Journal of Islamic Accounting and Business Research*, 2(1), 43-62. <https://doi.org/10.1108/17590811111129508>
37. Wahab, N. A., & Rahman, A. R. A. (2012). Productivity growth of zakat institutions in Malaysia: An application of data envelopment analysis. *Studies in Economics and Finance*, 29(3), 197-210. <https://doi.org/10.1108/10867371211246876>
38. Wahab, N. A., & Rahman, A. R. A. (2013). Determinants of efficiency of zakat institutions in Malaysia: A nonparametric approach. *Asian Journal of Business and Accounting*, 6(2), 33-64. <https://ajba.um.edu.my/article/view/2676>
39. Zahra, A., Harto, P. P., & Bisyr, A. (2016). Pengukuran efisiensi organisasi pengelola zakat dengan metode data envelopment analysis. *Jurnal Akuntansi Dan Keuangan Islam*, 4(1), 25-44. <https://doi.org/10.35836/jakis.v4i1.28>