EFFICIENCY DETERMINANTS OF ZAKAT INSTITUTIONS IN INDONESIA

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ABSTRACT - The purpose of this study is to examine the relative efficiency of national zakat organizations in Indonesia. Data was collected from decision-making units (DMU) consisting of 14 national zakat institutions in Indonesia listed on the BAZNAS website and selected using purposive sampling technique. The information was derived from the DMU's publicly accessible financial reports. This study utilized the Data Envelopment Analysis (DEA) output-oriented approach to maximize output with the same level of input when analyzing the data. In selecting input variables, this study consulted previous research. In addition, it utilized Tobit regression based on the outcome of Maximum Likelihood (ML) to evaluate the determinants of the efficiency value (dependent variable) as the score ranges from 0 to 100. The result indicates that the efficiency of zakat institutions fluctuates slightly throughout the observation period. In addition, the significant efficiency determinants are size and community membership. Therefore, zakat organizations must maintain and increase their donors' loyalty. It is anticipated that the findings will contribute to the advancement of practice and knowledge regarding the study of zakat literature.
Keywords: Zakat Institution, efficiency, Data Envelopment Analysis, Tobit Regression

ABSTRAK – Determinan Efisiensi Lembaga Zakat di Indonesia. *Penelitian ini bertujuan untuk mengkaji tingkat efisiensi relatif instituti zakat di Indonesia. Data dikumpulkan dari unit pengambil keputusan yang terdiri 14 lembaga zakat nasional yang terdaftar pada situs BAZNAS dan dipilih dengan teknik sampel purposif. Informasi yang diolah berasal dari laporan keuangan yang dapat diakses secara publik. Analisis data menggunakan Data Envelopment Anaysis (DEA) dengan pendekatan output-oriented yang memaksimalkan output di level yang sama dengan tingkat input. Dalam memilih variabel input, kajian ini menggunakan beberapa hasil riset sebelumnya. Selanjutnya, analisis data juga dilakukan dengan Tobit regression yang mendasarkan pada outcome dari Maximum Likelihood (ML) dengan maksud untuk mengevaluasi determinan nilai efisensi dalam rentang skor 0 sampai 100. Temuan kajian ini mengindikasikan bahwa tingkat efisiensi lembaga zakat di Indonesia cenderung berfluktuasi dalam periode yang diamati. Selain itu, determinan yang berpengaruh signifikan terhadap pencapaian tingkat efisiensi adalah ukuran (asset) dan afiliasi terhadap komunitas. Oleh karena itu, lembaga zakat harus menjaga dan meningkatkan loyalitas para donaturnya. Hasil kajian ini dapat berkontribusi pada kemajuan pengelolaan zakat dan memperkaya khazanah pengetahuan zakat dalam literatur.*
Kata Kunci: *Institusi Zakat, Efisiensi, Data Envelopment Analysis, Regresi Tobit*

INTRODUCTION

Muslims are obliged to pay zakat. As the majority of Indonesian people are Muslims, the potential of zakat collection should be huge. In 2019, Puskas BAZNAS conducted an indicator to measure zakat potential in Indonesia namely Zakat Potential Mapping Indicator (IPPZ) study. This study focused on calculating zakat potential based on zakat objects stipulated in Law No. 23/2011 on Zakat (BAZNAS, 2019) This study showed that the potential zakat in Indonesia in 2019 reached IDR 233.8 trillion. The details are displayed in Table 1 and 2.

Table 1. Potential of Zakat Collection in Indonesia

Object	Zakat Potential (IDR Trillion)
Zakat on agricultural products	19.79
Zakat on livestock	9.51
Zakat on deposits	58.76
Corporate Zakat	6.71
Zakat on Income	139.07
Total zakat potential	**233.8**

(Source: BAZNAS, 2019)

Nevertheless, the real collection is still far from the expectation although it shows a significant progress. The real collection in year 2018 reached IDR 8.1 trillion which only 3% of the potentials. But zakat collection and distribution experienced an increase respectively 30.13% and 39.91%. If this potential can be optimized properly, it can have a wider impact on society so that the expected social impacts can be maximally achieved and poverty alleviated. Hence, further investigation on the zakat management is necessary.

Table 2. Data on Collection and Distribution of Zakat Potential

Zakat Collection			
Year	**Collection (Billion)**	**Growth (%)**	**Ratio of collection to potential (%)**
2015	3,650	0	1.7
2016	5,017	37.46	2.3
2017	6,224	24.06	2.8
2018	8,100	30.13	3.7
Zakat Distribution			
Year	**Distribution (Billion)**	**Growth (%)**	**Ratio of distribution to potential (%)**

Zakat Collection			
Year	**Collection (Billion)**	**Growth (%)**	**Ratio of collection to potential (%)**
2015	2,249	0	61.6
2016	2,931	30.32	58.4
2017	4,860	65.81	78.1
2018	6,800	39.91	89.8

(Source: National Zakat Statistic (BAZNAS, 2019))

Hafidhuddin (2008) identified some problems in zakat management; 1) ineffective, 2) inefficiency, 3) ineffective information, 4) lack of trust to the zakat institution. On the other hand, Laela (2010) argued that donators are interested to see the efficiency performance of the zakat organizations. The level of efficiency performance affects people's decision in donating their money (Alexander, 2006). Furthermore, Muda et al (2006) found that among the highest factors that influence people to perform zakat is the level of efficiency, effectiveness and transparency of zakat organization. It will increase the public trust as they can monitor the disbursement of the donated funds. In addition, efficiency may contribute to the larger benefit for the ummah (Akbar, 2009)

Zakat organization is an institution collecting and distributing zakat funds (*Aamil*). It deserves some allocation of the zakat funds for operating costs (Q.S. At-Taubah: 60). There is no restriction about the percentage amount of the *aamil*'s right. However, Qaradhawi (2005) argued that the allocation for *aamil* should not exceed than 12.5% following the Shafii's opinion. Most Indonesian Zakat Institutions are private organization whereby they do not receive any allocation funds from the government. For BAZNAS (owned by the government), they receive little financial support from the government. All in all, Indonesian zakat institution depend on their rights upon some portions of zakat funds to operate their activities (Ibrahim, et al., 2014; 2011). The *aamil*'s portion may cover the salary, socialization costs, and other operating costs. Hence, to enlarge the benefit of zakat funds, the collected funds should be utilized efficiently.

Some researches have been found analyzing the efficiency level of zakat organization in Indonesia such as Akbar (2009), Al-Ayubi et al (2018), Rustyani & Rosyidi (2019) Rusydiana (2018) Ryandono et al (2021) Wahyudi & Susetyohadi (2021). However, these previous research only assessed the efficiency level of Indonesian Zakat Institutions, without explain the

determinant that affect it intensively. Therefore, to enhance a comprehensive result, this paper attempts to analyze the efficiency and determinants of efficiency level of Indonesian zakat organization. Hence, it is expected to find some factors that can be optimized to enhance the efficiency level.

This study aims to measure the efficiency level of 14 Zakat Institutions in Indonesia, from 2106 until 2018 using Data Envelopment Analysis (DEA). The analysis the continued by finding the determinant that affect the efficiency level of Indonesian Zakat Institutions using Tobit regression. A similar study was carried out by Wahab & Rahman (2013) which analyzed the determinants of zakat efficiency in Malaysian case. In addition, this study analyzed the influence of affiliation (type) of zakat institutions on the efficiency achievement. This issue was not discussed by Wahab & Rahman (2013) in the case of Malaysia

LITERATURE REVIEW

Zakat Organization in Indonesia

Based on the Act No. 38 Year 1999, there are two types of zakat organization in Indonesia: a) Badan Amil Zakat (BAZ, owned by government), b) Lembaga Amil Zakat (LAZ, private organization). In the newest act, No. 23 year 2011, it is mentioned that there are three types of BAZNAS: a) BAZNAS operating in district level, b) BAZNAS operating in province level and c) BAZNAS operating in national level. People are allowed to establish zakat organization (LAZ) with the approval of minister. BAZNAS is assigned to plan, implement and control the whole collection, distribution and utilization of zakat funds, and make a report to the president. Meanwhile, LAZ is obliged to report the audited zakat collection, distribution and utilization activities to the BAZNAS (National BAZ) regularly (PP RI No. 14/2014).

Efficiency in Zakat Institution

Efficiency concept is derived from the microeconomics theory: producer and consumer behavior. Producers tend to maximize revenue and minimize cost in order to earn more profits, while consumers maximize utility with the budget constraint. Ascarya (2012) In the production theory, frontier line describes the relationship between input and output of production. Input-output relation is the important component to measure the efficiency. An efficient firm is the one who lies at the frontier production line. Efficiency is one of the performance

parameters that theoretically represent the overall performance of decision-making units (DMUs). Prasetyo & Zuhdi (2013) argued that efficiency measurement aims to produce maximum output with the existing input or specific output with minimum input. Output is the income or production that can be accumulated while input is the resources or expenses to produce output.

According to Coelli (1996) the efficiency level can be measured through either the input/cost-oriented approach or the output-oriented approach. The input-oriented approach signifies that a certain amount of input may be reduced proportionally to produce the same level of output. Unlike the input-oriented approach that focuses on cost minimization, the output-oriented approach places emphasis on the profit maximization. This means that a certain percentage of output may be increased proportionally using the same level of input. Efficiency in zakat collection means that the zakat institutions are able to optimize their resources to collect zakat funds as much as possible. Meanwhile, the efficiency in distribution means zakat institutions is able to distribute the zakat funds with minimum costs.

Determinant of Zakat Institution's Efficiency

There are several factors than can be considered as the dominant determinants of efficiency in zakat management namely size, the age of zakat institution, number of branches and types of the organization. Hager & Rooney (2001) found that size influences the efficiency of charity institution. Likewise, Yi (2010) found that size of charitable organization had positive relationship with fundraising efficiency. This implies that the larger the organizational size, the higher the fundraising efficiency Interestingly, Laela (2010) found that size does not significantly influence the efficiency performance of zakat institution. Therefore, this variable should be reexamined.

Age is another important factor influencing the performance of organization due to the experiences (Coad et al., 2013). Iwiyisi & Chinwuba (2015) age was statistically significant in impacting the performance of federal non-profit universities in Nigeria. Perhaps, the age of zakat organization may affect the efficiency. Furthermore, the causality relationship between efficiency level and the number of branches should be studied. A study on the relationship between number of branch and efficiency of zakat institutions has been conducted by Wahab & Rahman (2013) Interestingly, they did not find any correlation in

Malaysian Zakat Institution. However, it is assumed that number of branches positively affect the efficiency of Indonesian Zakat Organizations.

Lastly, the type of zakat organizations may influence the efficiency level. Al-Ayubi et al (2018) have divided types of zakat organization into two groups: zakat organization with community affiliation and zakat organization without any community affiliation. Al-Ayubi et al (2018) found that the efficiency of these two groups is fluctuating. Unfortunately, the relationship between types of zakat organization and efficiency have not been analyzed in depth. It is hypothesized that zakat organization with community affiliation should has a better efficiency performance since they have loyal donators. Reddick & Ponomariov (2012) found a positive connection between affiliation and online donations. Sargeant & Woodliffe (2007) on their research about non-profit institution also found that hat individuals who express a strong personal link to a nonprofit are significantly more likely to express higher levels of active commitment.

Previous Studies

The first paper analyzing the relative efficiency of zakat organization in Indonesia was conducted by Akbar (2009). He analyzed the efficiency level of National Zakat Organization in Indonesia from year 2005 to 2007 relatively. Another research on zakat organization efficiency with Indonesian case study are conducted by Al-Ayubi et, al (2018), Parisi (2017) and Rusydiana (2018) Rusydiana (2018) measured the technological change and the efficiency. He found that productivity growth is dominantly caused by technological change instead of efficiency change 2011-2016. On the other hand, Al-Ayubi et, al (2018) compared the efficiency level of Indonesian Zakat Organization with community affiliation and Indonesian Zakat Organization without any community affiliation. They found that IZI with community affiliation a better performance of technical efficiency between 2010-2013. In addition, Parisi (2017) researched the relative efficiency and productivity level of 5 Indonesian zakat organization namely Dompet Dhuafa, BAZNAS, PKPU, YBM BRI and Rumah Zakat from year 2005-2014. He found that Dompet Dhuafa is the most inefficient. In general, the main factor of inefficiency is the minimum allocation of zakat funds. In other words, zakat organizations are weak in distributing the collected funds.

In recent publications about zakat efficiency, Rustyani & Rosyidi (2019) measure of the efficiency and productivity level amil zakat institutions in Indonesia from 2014 until 2016. This result of MPI analysis showed that in the first year, two LAZs experienced a decline in productivity, namely LAZ Al-Azhar and PKPU. The other four LAZs experienced increased productivity, namely LAZ YDSF, ACT, Rumah Yatim and Rumah Zakat. In the second year, three LAZs experienced increased productivity, namely LAZ Al-Azhar, PKPU and Rumah Zakat. Meanwhile, three other LAZ experienced a decrease in productivity, namely LAZ YDSF, ACT, and Rumah Yatim. Then Wahyudi & Susetyohadi (2021) analyze the level of efficiency of the LAZ of Islamic bank corporations in Indonesia using two samples, Baitulmal Bank Muamalat (BMM) and BSM Ummah (BSMU). The results of this study indicate that all OPZ based on Islamic banks have efficient performance with a value of 100% both on the assumption CRS and VRS. This means that OPZ from Islamic bank corporations can collect and distribute ZISWA funds. Last, Ryandono et, al (2021) examined the efficiency level of fourteen Zakat Management Organizations (ZMO) in Indonesia using FDH and Super Efficiency method. The finding of this study showed that ZMO managed by the government is the most efficient ZMO compared to the others who managed by private group and social organization.

Related research was also conducted with case studies of several countries. In Malaysia, research on the efficiency of zakat organization is conducted by Ahmad & Ma'in (2014) & Wahab & Rahman (2013). The latter measured the efficiency level from year 2003-2007. The method is Data Envelopment Analysis. The inputs are number of staff and the total expenditure while the outputs are the collected funds, the distributed funds and the number of zakat payers. The results depicted that zakat organization have achieved performed efficiently with the average score is 80.6%. Meanwhile Ahmad & Ma'in (2014) studied efficiency of Lembaga Zakat Selangor between 2001 and 2011. Next, Djaghballou et, al (2018) measure efficiency and productivity of zakat funds in Algeria from 2003 to 2013. They found that total factor productivity has increased sharply for all zakat funds, mainly due to a technical rather than efficiency change.

Efficiency measurement is also conducted in other non-profit organizations. Tofallis & Sargeant (2000) analyzed the relative efficiency of 327 charities organizations in United Kingdom. The inputs are collection cost and

administration costs, while output is the amount of collected funds. The result showed that 13 organizations are relatively efficient.

In regard to the efficiency determinant factors, Hager & Rooney (2001) examined the effect of size and age on the efficiency of charity organization. He found that only size which influences the efficiency level. Wahab & Rahman (2013) continued the study by measuring the factors that may influence the efficiency level. The research utilized Tobit regression method. It is found that zakat payment system, zakat computation system, board size, audit committee and decentralization significantly affect the efficiency level of Malaysian Zakat Organization.

Laela (2010) examined some factors that influence the efficiency level of zakat organization. Efficiency is measured by the ratio of spending program over the total spending. The research selected 23 zakat organization with a cross section data. Having employed Ordinary Least Square method, the results showed that the board of supervisors do not affect the efficiency level. However, the number of supervisory board as well as its ratio over the number of executive directors influence the efficiency. Likewise, she found that zakat institution will be more efficient if they hired independent auditor. Surprisingly, organizational structure and the size have no correlation with the efficiency level. The relationship between age and efficiency is proven by Coad et, al (2013) in manufactural Industries. It is argued that age will increase the productivity and then may generate more profit.

Studies on efficiency of zakat institution in Indonesia have been carried out by some researchers, among them   and others. However, those previous studies did not tackle the issue of the determinants that affect the efficiency achievement of zakat institution in Indonesia. The further research is needed to find out the determinants that influence it, not only limited on efficiency analysis. This study will analyze efficiency level and determinant that influence it. A similar study was carried out by Wahab & Rahman (2013) which analyzed the determinants of zakat efficiency in Malaysian case. In addition, this study analyzed the influence of affiliation (type) of zakat institutions on the efficiency achievement. This issue was not discussed by Wahab & Rahman (2013) in the case of Malaysia.

RESEARCH METHOD

This research is quantitative research with parametric and non-parametric approach. The non-parametric is Data Envelopment Analysis method to measure the efficiency level of the decision-making units (DMU). Meanwhile, the parametric approach is Tobit regression method to analyze the determinants of efficiency score. The DMUs observed in this study are national zakat institutions in Indonesia as listed in https://pid.baznas.go.id/laz-nasional/. There are 14 institutions selected out of 25 institutions as they provide their financial reports from year 2016 to 2018 online. Selection of 2016-2018 as the research period due to latest available data

Table 3. List of DMUs

No.	Name of Zakat Institutions	Year Establishment	Type	2016	2017	2018
1	BAZNAS	2001	Affiliated	√	√	√
3	Dompet Dhuafa	1993	Not Affiliated	√	√	√
4	Global Zakat	2005	Not Affiliated	√	√	√
5	Griya Yatim Duafa	2009	Not Affiliated	NA	√	√
6	Inisiatif Zakat Indonesia	2014	Not Affiliated	√	√	√
7	LAZ Al Azhar	2004	Affiliated	√	√	√
8	Lazis NU	2004	Affiliated	√	√	√
9	Laznas Dewan Dakwah	2016	Affiliated	√	√	√
10	Mizan Amanah	1995	Not Affiliated	√	√	√
11	Panti Yatim Indonesia	1998	Not Affiliated	√	√	√
12	Rumah Zakat Indonesia	1998	Not Affiliated	√	√	√
13	Yatim Mandiri	2004	Not Affiliated	√	√	√
14	YDS Al Falah	1999	Affiliated	√	√	NA

(Source: Zakat Institution Financial Report)

Data Envelopment Analysis

The research applies the Data Envelopment Analysis (DEA) using the output-oriented approach; how to maximize output with the same level of input. Output oriented measurement is more appropriate for the OPZ case, where zakat funds collected and distributed are far from their potential. This approach is employed as the main problem in zakat is the low level of collected funds compared to its potential Akbar (2009) The selected input variables are operational costs and personnel ('*aamil*) costs, while the output variables are the amount of collected

funds and the amount of distributed funds. The selection of input and output variables are based on the production approach. In other words, this research considers zakat organization as producers with the output maximization approach.

In selecting input variables, this study refers Tofalis & Sargeant (2000), Akbar (2009),Parisi (2017) & Rusydiana (2018). Tofalis & Sargeant (2000) use administrative and fundraising expenses as input variable to measure non-profit organization efficiency. These two variables also used by Akbar (2009) and Rusydiana (2018) to measure zakat institution efficiency In Indonesia Parisi (2017) use the other expenses or operational cost except sozialisation cost in order to measure efficiency. While output variables used in this study refers to (Ahmad & Ma'in, 2014; Akbar, 2009; Parisi, 2017; Rusydiana, 2018; Wahab & Rahman, 2013). All of these studies use the amount of zakat collected and zakat distributed as output variables to measure the achievement of input variables.

Table 4. Input Output Specification

Output Variables	Definition	Source of Data	Reference
Collected Funds	Total collection of zakat, infaq, shadaqah, other religious alms, and profit of funds management	Statement of changes in funds	(Ahmad & Ma'in, 2014; Akbar, 2009; Parisi, 2017; Rusydiana, 2018; Wahab & Rahman, 2013)
Distributed funds	Total of restricted distribution funds and unrestricted distribution funds.		(Ahmad & Ma'in, 2014; Akbar, 2009; Parisi, 2017; Rusydiana, 2018; Wahab & Rahman, 2013)
Personnel Costs	Salary and allowance of 'Amil. Funds for paying the amil in zakat management organization	Statement of changes in funds	(Tofalis & Sargeant, 2000; Akbar, 2009; Rusydiana, 2018)
Operational costs	Other expenses. This cost consists of any expenses in the financial report except employee income		(Tofalis & Sargeant, 2000; Akbar, 2009; Parisi, 2017; Rusydiana, 2018)

(Source: Zakat Institution Financial Report)

DEA is a method to evaluate the relative efficiency and managerial performance of production or decision-making units (DMUs), using the same selected multiple inputs and outputs whereby the correlation function from inputs to outputs is unidentified. The efficiency score in DEA ranges between 0 and 1 or 100%. An efficient DMU is indicated by 100% score. The lower the

score, the less efficient the firm. Using a mathematical equation, the formula of DEA is drawn as follows (Ascarya & Yumanita, 2006).

$$\text{Efficiency of DMU} = \frac{\sum_{k=1}^{P} u_k y_{kj}}{\sum_{i=1}^{m} v_i x_{ij}} \tag{1}$$

Whereby:
DMU = decision making unit
n = number of DMU observed
m = different inputs
p = different outputs
μk = average output
vi = average input
xij = number of input i consumed by DMUj
ykj = number of output k produced by DMUj

DEA approach models

There are two DEA models which are frequently employed, namely Charnes, Cooper and Rhodes (CCR) model and the Banker, Charnes and Cooper (BCC) model, introduced in year 1984 Coelli (1996) The primary distinction between CCR model and BCC model is the treatment over return to scale. The CCR model assumes constant return to scale (CRS) while the BCC model assumes that each DMU operates with variable return to scale (VRS) Ascarya & Yumanita (2006)

Constant return to Scale (CRS) assumes that every increase in a certain percentage of input will be proportionally followed by an increase in output with the same percentage. In other words, an additional input of x times will increase the additional output of x times. This assumption is only applicable if the observed DMU operates on the optimal scale. CRS is applicable when the observed DMU has been operating on an optimal scale. Competition and other financial barriers in most of the times are key factors of firm inefficiency. To anticipate it, Banker et, al (1984) proposed the DEA model based on variable return to scale (VRS). VRS produces Technical Efficiency (TE), also known as Pure Technical Efficiency (PTE). The VRS approach assumes that the additional input of x times may not produce additional output of exactly x times, thus it can be smaller or greater than x times Ascarya & Yumanita (2006) Employing an estimation frontier based on CRS and VRS, we can decompose the technical efficiency (overall) using the CRS approach (TECRS) to become

pure technical efficiency (TEVRS) and scale efficiency (SE) by using the following equation (Coelli, 1996)

TECRS = TEVRS x SE

A firm should be very sensitive to the issue of output scale (commonly called return to scale (RTS). In practice, a firm is experiencing one of three RTS conditions, namely increasing return to scale (IRS), constant return to scale (CRS), and decreasing return to scale (DRS). The IRS condition assumes that every increase of x times of input will produce more than y times of output. The CRS condition assumes that every increase of 1x input will produce 1y output. Meanwhile, the DRS assumes that every increase of 1 unit of input will produce less than 1 unit of output. Briefly, DEA method can be explained by the following figure:
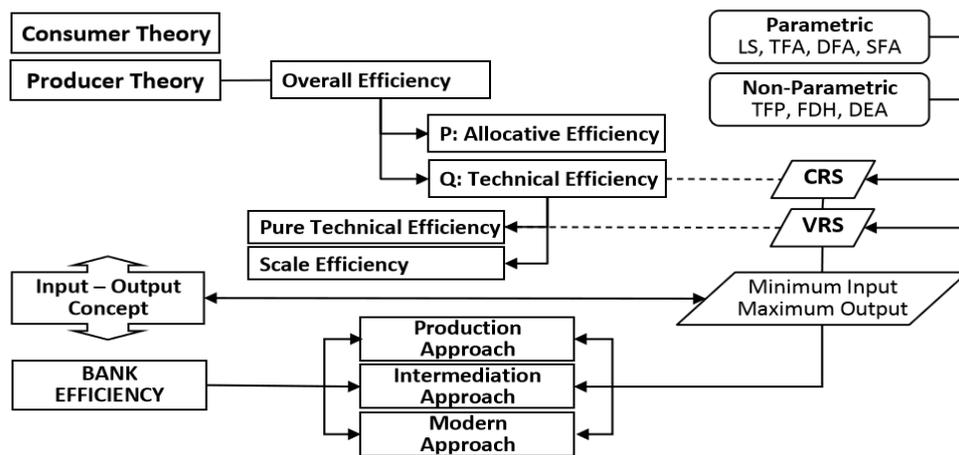

Figure 1. DEA Model
(Source: Ascarya et al., 2010)

Tobit Regression

The second research stage employs Tobit regression. Hoff (2007) argued that Tobit approach as the second stage of DEA is sufficient in most cases. The method is introduced by James Tobin in year 1958 to evaluate the relationship between limited dependent variables and independent variables Gujarati & Porter (2009) Initially, he wants to evaluate the expenditure of American household to buy car. However, this creates a problem in the OLS estimation as some households may not buy a car (zero expenditure). The estimation will

tend to zero and not significant. If it is significant, the value will be bias and not consistent Tobin (1958)

In Tobit regression model, the estimation is based on the result of Maximum Likelihood (ML). The result of parameter estimation is more accurate compared with OLS. Tobit regression is also known as a censored regression. Gujarati & Porter (2009) The use of Tobit in this research is to evaluate determinants of efficiency value (dependent variable) as the score lies between 0 and 100. Statistically, the tobit model can be expressed as follow Gujarati & Porter (2009)

$$Y_t = \beta_1 + \beta_2 X_i + \mu_i \qquad (2)$$

Several variables have been selected as the regressors or independent variables namely size/total asset, age (internal), branch/number of offices and the type of organization. Hence, the tobit model of the research is as follows:

$$Y_t = \beta_1 + \beta_2 lnSize + \beta_3 Age + branch + \beta_5 type + \mu \qquad (3)$$

Table 5. Tobit Variable Specification

Tobit Variable	Definition
Efficiency Score (Y)	Relative efficiency scores obtained from DEA computation
Size (X1)	Total Asset
Age	The observed year minus the year of establishment
Branch	Number of offices
Type	Whether the zakat institution has community affiliation (1) or not (0)

The selection of size as an independent variable refers to (Hager & Rooney, 2001) and Yi (2010) who in their research found that the size variable has a positive effect on efficiency, whereas this is contrary to Laela (2010) Next, he choice of age refers to Coad et, al (2013) and Iwiyisi & Chinwuba (2015) which show that age affects efficiency performance. Furthermore, the selection of branch variables refers to Wahab & Rahman (2013) Interestingly, Wahab & Rahman (2013) did not find any correlation between branches and efficiency in the Malaysian Zakat Institutions.

Lastly, the type variable was chosen as an independent variable referring to Al-Ayubi et, al (2018), Reddick & Ponomariov (2012), and Sargeant & Woodliffe

(2007). Al-Ayubi et, al (2018) have divided types of zakat organization into two groups; zakat organization with community affiliation and zakat organization without any community affiliation. their found that efficiency of these two groups is fluctuating, without analyze relationship among it in depth. While research conducted Reddick & Ponomariov (2012) and Sargeant & Woodliffe (2007) found a positive connection between affiliation/type and funds raised by non-profit organization. This variable is the first to be used in measuring the efficiency of a non-profit institution. The selection of this variable is based on the number of zakat institutions in Indonesia with different affiliations.

RESULTS AND DISCUSSION

Before entering into the discussion to the efficiency of zakat institution, table VI provides an overview of the input and output variables used in this study. Table VI shows descriptive statistics of the input and output variables

Table 6. Descriptive Statistics

Variable	Mean	Std.Dev	Max	Min
Input				
Staff Costs	9,652,621,375	11,425,920,903	51,641,508,352	116,825,275
Operational Costs	8,447,258,593	8,945,429,161	38,476,421,979	115,490,358
Output				
Collection	115,456,509,596	112,060,080,996	517,090,634,721	1,361,329,464
Distribution	103,210,241,623	105,961,609,761	509,269,003,283	1,187,745,527

Efficiency Level

On average, the results of CCR model shows that LAZISNU is the most efficient zakat institution, while Mizan Amanah and BAZNAS experienced the lowest level of efficiency. Interestingly, there is a significant gap of the efficiency level between LAZISNU and the others; whereby their efficiency scores mostly (77%) were below 50%. LAZISNU performed efficiently due to the loyalty of the members of *Nahdhotul Ulama* and also the efficient promotion.

Table 7. Average Efficiency Score

No	Zakat Institutions	CCR Model	BCC Model	
		Technical Efficiency	Pure Technical Efficiency	Scale
1	BAZNAS	0.17	0.42	0.40
2	Dompet Dhuafa	0.19	0.77	0.26
3	Global Zakat	0.68	0.82	0.84
4	Griya Yatim Duafa	0.25	0.26	0.98
5	Inisiatif Zakat Indonesia	0.41	0.43	0.96
6	LAZ Al Azhar	0.64	0.68	0.95
7	Lazis NU	0.81	0.93	0.88
8	Laznas Dewan Dakwah	0.28	0.29	0.95
9	Mizan Amanah	0.16	0.23	0.69
10	Panti Yatim Indonesia	0.25	0.26	0.98
11	Rumah Zakat Indonesia	0.29	0.58	0.51
12	Yatim Mandiri	0.30	0.33	0.92
13	YDS Al Falah	0.20	0.67	0.36

To understand deeper, the BCC model is worth to be analyzed since the zakat institutions may not operate at the optimum scale. Coelli (1996) argued that imperfect competition, constraint on finances, government regulations, and etc. may cause a decision-making unit to operate at not optimal scale. The results show that LAZISNU, Global Zakat and Dompet Dhuafa rank in the top three of pure technical efficiency. This indicates that they have better management than the others. However, since the scale efficiency scores of Dompet Dhuafa is very low, it cannot compete the overall efficiency of LAZISNU. Meanwhile, many zakat institutions enjoyed scale efficiency. Griya Yatim Dhuafa and Yatim Mandiri Indonesia achieved the highest level of scale efficiency during these three years on average. Unfortunately, both institutions had a very low performance in terms of technical efficiency.

The low scale efficiency level of Dompet Dhuafa and YDS al-Falah signify that there are not operating at the optimum level. However, these two zakat institutions have the difference in the level of return to scale, where YDSF at increasing return to scale, and Dompet Dhuafa at decreasing return to scale conditions. Return to Scale (RTS) analysis used as indicator to describe how well the bank's ability to produce its output. In the relationship between production factors or inputs with the level of production or output, RTS describes the response of output to a proportional change in input. Decreasing

Return to Scale (DRS) condition that an increase in all inputs the same amount causes a disproportionate increase in total output, this occurs when the increase in output is smaller than the added input. While Increasing Return to Scale (IRS) is a condition where additional input cause greater increase in output.

Table 8. Efficiency Trend of Each Zakat Institution

	Technical Efficiency	Pure Technical Efficiency	Scale Efficiency	Return to Scale
BAZNAS				Decreasing
Dompet Dhuafa				Decreasing
Global Zakat				Decreasing
Griya Yatim Duafa				Increasing
Inisiatif Zakat Indonesia				Decreasing
LAZ Al Azhar				Increasing
Lazis NU				Decreasing
Laznas Dewan Dakwah				Increasing
Mizan Amanah				Decreasing
Panti Yatim Indonesia				Increasing
Rumah Zakat Indonesia				Decreasing
Yatim Mandiri				Decreasing
YDS Al Falah				Increasing
Average				

(Source: author, processed, 2021)

Furthermore, in regard to the trend of efficiency from year 2016 until 2018, it can be clearly seen from Figure 2.
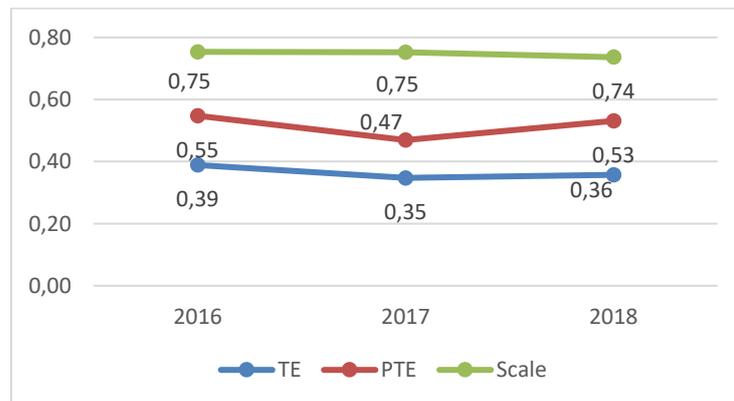

Figure 2. Trend of Zakat Institution's Efficiency

The Technical Efficiency (TE) shows a small fluctuation as it decreased in 2017 and then increased in 2018. The Pure Technical Efficiency (PTE) also fluctuates whereby the score in 2017 dropped significantly and then rebound in 2018. Lastly, the scale efficiency moved steadily in 2017 and then slightly

declined in 2018. All in all, there is no significant progress of the efficiency level during these three years. In this case, a breakthrough is needed to upgrade the efficiency level, especially the PTE.

In detail, the efficiency trend of each zakat institutions can be viewed in table 6. From TE perspective, only three institutions show a steady increase namely BAZNAS, Griya Yatim Dhuafa and Laz al Azhar. They show good improvement from time to time. On contrary, some institutions were declining continuously such as Dompet Dhuafa, IZI, Laznas Dewan Dakwah, Rumah zakat Indonesia, and YDS al Falah. Those institutions must be more aware about their performance. Serious improvement should be made. Other institutions fluctuate from time to time. Consistent improvement is required. In term of PTE, Lazisnu and Baznas made a consistent improvement. In the contrast, Griya Yatim and YDS al Falahh decreased simultaneously. Others fluctuate overtime. Hence, consistency of management aspect is still a serious problem in zakat management.

Potential Improvement

The improvement should be made to increase the efficiency. DEA results also show the potential improvement of each variable of every DMU. Based on the efficiency of the latest observed period with CCR model, the results are presented in Table 9.

Table 9. Potential Improvement

Zakat Institutions	Output Orientation (%)				Input Orientation (%)			
	Collect ion	Distri- bution	Staff Costs	Operatio nal costs	Collect ion	Distri- bution	Staff Costs	Operational costs
Baznas	349.51	379.44	-72.03	0.00	0.00	6.66	-93.78	-77.75
Dompet Dhuafa	509.66	589.76	-19.48	0.00	0.00	13.14	-86.79	-83.60
Global Zakat	36.98	33.68	**-87.63**	0.00	**2.47**	0.00	-90.75	-25.19
Griya Yatim Duafa	294.75	302.29	-57.17	0.00	0.00	1.91	-89.15	-74.67
Inisiatif Zakat Indonesia	220.65	222.12	-64.20	0.00	0.00	0.46	-88.83	-68.81
LAZ Al Azhar	32.75	47.20	-78.64	0.00	0.00	10.89	-83.91	-24.67
Lazis NU	51.02	56.67	0.00	**-34.35**	0.00	3.74	-33.78	-56.53

Zakat Institutions	Output Orientation (%)				Input Orientation (%)			
	Collection	Distribution	Staff Costs	Operational costs	Collection	Distribution	Staff Costs	Operational costs
Laznas Dewan Dakwah	319.37	315.39	-10.78	0.00	0.96	0.00	-78.52	-75.93
Mizan Amanah	**573.26**	**591.99**	-21.96	0.00	0.00	2.78	-88.41	**-85.15**
Panti Yatim Indonesia	361.31	393.36	-21.35	0.00	0.00	6.95	-82.95	-78.32
Rumah Zakat Indonesia	269.22	331.66	0.00	-33.48	0.00	16.91	-72.92	-81.98
Yatim Mandiri	245.88	341.77	-86.66	0.00	0.00	**27.72**	**-96.14**	-71.09
YDS Al Falah	503.28	501.67	-54.77	0.00	0.27	0.00	-92.48	-83.38
Mean	289.82	315.92	-44.20	-5.22	0.28	7.01	-82.96	-68.24

Based on the output orientation, Mizan Amanah has the highest potential in output variable (collection and distribution) followed by Dompet Dhuafa and YDS Al Falah. This indicate that they have not optimized their inputs yet to generate more output; collecting and distributing zakat funds. On the other hand, the input orientation model shows that the highest potential in staff cost is Yatim Mandiri. Benchmarking to the most efficient institution, Yatim Mandiri should reduce the cost up to 96%. In regard to the operational costs, Mizan Amanah should minimize the cost up to 85%.

On average, problem in outputs is higher than inputs. The distribution as well as collection should be increased about triple of the current condition. OPZ should increase zakat collection by 289.82% and improve zakat distribution by 315.92% in order to achieve maximum efficiency. Hence, zakat institutions should find a better strategy to increase the collection as well distribution. In addition, zakat institution should pay more attention to the staff cost variable. Based on potential improvement result above, this variable always shows great contributed to inefficiency, either using input or output approach. Zakat institution should pay more attention to the amil salaries or staff cost variable. Based on analysis, this variable was the main cause of inefficiency, either using input or output approach. This result implies that zakat institutions should improve their technology, rather than add their staff.

Tobit Regression Analysis

To identify the determinants of efficiency score obtained by DEA method, another method namely Tobit Regression should be employed. The results are as follow:

Table 10**.** Tobit Regression Results

Variable	CCR Model (Technical)		BCC Model (Pure Technical)	
	Coefficient	Prob	Coefficient	Prob
AGE	-0.007503	0.1912	0.005954	0.3733
BRANCH	0.000148	0.5548	-1.71E-06	0.9953
SIZE	-1.22E-13	0.7723	1.05E-12	**0.0322***
TYPE	0.061939	0.4975	0.230145	**0.0311***

*significant with 5% alpha

The table depicts that all independent variables are not significant influencing the efficiency score in CCR model. On the other hand, two variables are proven as determinants of efficiency score as the values of prob are less than alpha 5%. Age fails to determine the efficiency level. This finding is in contrast with Coad et al (2013) and Nurwati et, al (2014) who argued the positive relationship between age and efficiency performance. The development of digital technology, perhaps, allows young institution to compete with the older.

Likewise, branch does not affect the efficiency of zakat institutions. It is quite interesting to see the absence of relationship between branch and efficiency of zakat institutions as several studies such as (Ahmad & Ma'in, 2014; Al-Ayubi et al., 2018; and Wahab & Rahman, 2013) considered number of offices as an input of zakat efficiency. However, this finding is consistent with Wahab & Rahman (2013) It is found no relationship between those two variables in Malaysia using Tobit regression.

Meanwhile, size is proven as significant factor to determine the efficiency level. This finding is supported by Hager & Rooney (2001) who argued that size is a significant factor to the efficiency level of charity organization. The finding also in line with the fact in Islamic financial institutions whereby Ali & Ascarya (2010) discovered positive relationship.

In addition, type variable is proven among the determinants of efficiency in CCR Model. Hence, zakat institutions with community affiliation are more

efficient than those without any community affiliation. Having a community affiliation can lower the promotion costs. The loyalty of the affiliation can increase the output of zakat institutions significantly with lower costs.

CONCLUSION

The efficiency of zakat institutions fluctuates overtime. The low level of pure-technical efficiency indicates inequality of management quality among zakat institutions as DEA measures relative efficiency. LAZISNU achieved the most efficient zakat institution. Based on the analysis, it suggested to the zakat institutions which reached the maximum or high-level efficiency to keep their performance by maintaining the proportion of inputs and continue to work in increasing the output. However, the low-level efficiency of zakat institutions should further optimize the uses of input and find different strategy to maximize their output. Then, the analysis of potential improvement suggests the inefficient zakat institutions to minimize their input and maximize their output based on the value provided in the table 7 in order to achieve maximum efficiency level.

Further analysis is shown by Tobit Regression whereby size and community affiliation are significant determinants of efficiency. This finding urge zakat institutions without community affiliation to increase the loyalty of their donors. This research is expected to find several factors that can be optimized to improve the efficiency performance of zakat institutions in Indonesia. It also expected to be a reference and evaluation by government and zakat institutions in Indonesia, so it can expend the benefits received by mustahiq (*i.e* the needy), through efficient zakat policy and management

This research is expected to contribute to advancing practice and knowledge towards the study in zakat literature. In addition, we recommend further research investigating the efficiency of zakat institutions in Indonesia and its determinant with the latest data. Future research can also use different methods to assess the efficiency and productivity of zakat such as using the Stochastic Frontier Analysis (SFA) and the Malmquist Productivity Index (MPI).

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APPENDIX

Appendix 1. Data Envelopment Analysis (DEA) Result

No	Zakat Institutions	CCR Model Technical Efficiency	BCC Model Pure Technical Efficiency	Scale Efficiency	Return to Scale
1	Baznas 2016	0.11	0.44	0.26	Decreasing
2	Baznas 2017	0.12	0.56	0.22	Decreasing
3	Baznas 2018	0.13	0.65	0.19	Decreasing
4	BM Muamalat 2016	0.32	0.33	0.97	Increasing
5	BM Muamalat 2017	0.61	0.65	0.94	Increasing
6	BM Muamalat 2018	0.64	0.68	0.94	Increasing
7	Dompet Dhuafa2016	0.17	0.89	0.20	Decreasing
8	Dompet Dhuafa2017	0.16	0.89	0.18	Decreasing
9	Global Zakat 2016	0.16	0.58	0.28	Decreasing
10	Global Zakat 2017	0.19	0.78	0.24	Decreasing
11	Global Zakat 2018	0.22	1	0.22	Decreasing
12	Griya Yatim Duafa 2017	0.20	0.20	0.98	Increasing
13	Griya Yatim Duafa 2018	0.18	0.18	0.99	Increasing
14	Inisiatif Zakat Indonesia 2016	0.27	0.32	0.86	Decreasing
15	Inisiatif Zakat Indonesia 2017	0.22	0.30	0.73	Decreasing
16	Inisiatif Zakat Indonesia 2018	0.22	0.38	0.58	Decreasing
17	LAZ Al Azhar 2016	0.33	0.34	0.97	Increasing
18	LAZ Al Azhar 2017	0.36	0.37	0.98	Increasing
19	LAZ Al Azhar 2018	0.35	0.35	0.98	Increasing
20	Lazis NU 2016	0.63	0.65	0.96	Increasing
21	Lazis NU 2017	1	1	1	Constant
22	Laznas Dewan Dakwah 2016	0.28	0.30	0.93	Increasing
23	Laznas Dewan Dakwah 2017	0.28	0.30	0.95	Increasing
24	Laznas Dewan Dakwah 2018	0.23	0.24	0.99	Increasing
25	Mizan Amanah 2016	0.21	0.27	0.77	Decreasing
26	Mizan Amanah 2017	0.20	0.24	0.86	Decreasing
27	Mizan Amanah 2018	0.21	0.28	0.73	Decreasing
28	Panti Yatim Indonesia 2016	0.29	0.31	0.95	Increasing
29	Panti Yatim Indonesia 2017	0.23	0.23	0.98	Increasing
30	Rumah Zakat Indonesia 2016	0.23	0.70	0.33	Decreasing
31	Rumah Zakat Indonesia 2017	0.20	0.67	0.29	Decreasing

No	Zakat Institutions	CCR Model Technical Efficiency	BCC Model Pure Technical Efficiency	Scale Efficiency	Return to Scale
32	Rumah Zakat Indonesia 2018	0.22	0.70	0.31	Decreasing
33	Yatim Mandiri 2016	0.10	0.29	0.34	Decreasing
34	Yatim Mandiri 2017	0.09	0.30	0.30	Decreasing
35	Yatim Mandiri 2018	0.09	0.33	0.29	Decreasing
36	YDS Al Falah 2016	0.17	1	0.17	Increasing
37	YDS Al Falah 2017	0.16	0.73	0.22	Increasing

Appendix 2. Tobit Regression CCR Model (CRS) Result

```
Dependent Variable: EFF
Method: ML - Censored Normal (TOBIT)  (Newton-Raphson / Marquardt
    steps)
Date: 05/07/20   Time: 17:29
Sample: 1 37
Included observations: 37
Left censoring (value) series: 0
Right censoring (value) series: 1
Convergence achieved after 5 iterations
Coefficient covariance computed using observed Hessian
```

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.437447	0.091269	4.792926	0.0000
AGE	-0.007503	0.005740	-1.306969	0.1912
BRANCH	0.000148	0.000250	0.590527	0.5548
SIZE	-1.22E-13	4.22E-13	-0.289327	0.7723
TYPE	0.061939	0.091302	0.678394	0.4975

Error Distribution				
SCALE:C(6)	0.212245	0.025262	8.401709	0.0000

Mean dependent var	0.363893	S.D. dependent var		0.223607
S.E. of regression	0.226522	Akaike info criterion		0.153655
Sum squared resid	1.590684	Schwarz criterion		0.414885
Log likelihood	3.157390	Hannan-Quinn criter.		0.245750
Avg. log likelihood	0.085335			
Left censored obs	0	Right censored obs		1
Uncensored obs	36	Total obs		37

Appendix 3. Tobit Regression BCC Model (VRS)

```
Dependent Variable: EFF
Method: ML - Censored Normal (TOBIT)  (Newton-Raphson / Marquardt
    steps)
Date: 05/07/20   Time: 17:31
Sample: 1 37
Included observations: 37
Left censoring (value) series: 0
Right censoring (value) series: 1
Convergence achieved after 4 iterations
Coefficient covariance computed using observed Hessian
```

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.288589	0.106137	2.719019	0.0065
AGE	0.005954	0.006687	0.890331	0.3733
BRANCH	-1.71E-06	0.000293	-0.005835	0.9953
SIZE	1.05E-12	4.91E-13	2.141736	0.0322
TYPE	0.230145	0.106784	2.155235	0.0311

Error Distribution				
SCALE:C(6)	0.246223	0.031401	7.841293	0.0000

Mean dependent var	0.514738	S.D. dependent var	0.259004
S.E. of regression	0.242834	Akaike info criterion	0.633748
Sum squared resid	1.828024	Schwarz criterion	0.894978
Log likelihood	-5.724330	Hannan-Quinn criter.	0.725843
Avg. log likelihood	-0.154712		

Left censored obs	0	Right censored obs	4
Uncensored obs	33	Total obs	37