

Measurement of Efficiency and Productivity of Zakat Institutions in Indonesia using Data Envelopment Analysis and the Malmquist Productivity Index

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ABSTRACT

This study aims to measure the level of efficiency and productivity of zakat institutions in Indonesia. Quantitative research using the methods of Data Envelopment Analysis (DEA) and the Malmquist Productivity Index (MPI). There are six Amil Zakat (LAZ) institutions in Indonesia, namely Yayasan Dana Sosial Al-Falah (YDSF), Al-Azhar Peduli Ummat, Aksi Cepat Tanggap (ACT), Yayasan Rumah Yatim Arrohman Indonesia, Pos Kemanusiaan Peduli Ummat (PKPU), and Rumah Zakat Indonesia, with 2014–2016 annual data as the number of DMUs (decision making units). This study uses an intermediation approach in determining the variables. The input variables of this research are Collected Funds (X1), Total Costs (X2), and Amil Acceptance (X3), while the Output variables are Funds Distributed (Y1) and Total Assets (Y2). There were two LAZs that experienced inefficiencies in 2014 and 2015, namely LAZ YDSF and ACT. Meanwhile, in 2016, all LAZs achieved optimal levels of efficiency. The results of the MPI analysis show that in the first year two LAZs experienced a decline in productivity, namely LAZ Al-Azhar and PKPU. The other four LAZs saw an increase in productivity, namely LAZ YDSF, ACT, Rumah Yatim, and Rumah Zakat. In the second year, three LAZs experienced a rise in productivity, namely LAZ Al-Azhar, PKPU, and Rumah Zakat, while the other three LAZs experienced a decrease in productivity, namely LAZ YDSF, ACT, and Rumah Yatim.

Keywords: Efficiency, Productivity, Zakat Institutions, DEA, MPI.

INTRODUCTION

Poverty in its various forms continues to be a problem on the national agenda in Indonesia, for both the government and Social Society Institutions (as NGOs). Despite the existence of many programs aimed at overcoming the problem of poverty, no significant reduction has been achieved in Indonesia. This is consistent with data from Badan Pusat Statistik (BPS), which reveals that in March 2017 the number of poor people (defined as those with monthly per capita expenditure below the poverty line) in Indonesia reached 27.77 million people, or 10.64% of the total population. This was an increase of 10 thousand people

compared to September 2016, when the total was 27.76 million people, or 10.70% of the total population.

In Islamic economics, the Qur'an offers a solution to overcoming the problem of poverty, namely income redistribution. In such an income redistribution model, the circulation of assets should not be confined only to the rich, as explained in Al-Hashr verse 7:

مَا أَفَاءَ اللَّهُ عَلَى رَسُولِهِ مِنْ أَهْلِ الْقُرَى فَلِلَّهِ وَلِلرَّسُولِ وَلِذِي الْقُرْبَىٰ وَالْيَتَامَىٰ وَالْمَسْكِينِ وَابْنِ السَّبِيلِ كَيْ لَا يَكُونَ دُولَةً بَيْنَ الْأَغْنِيَاءِ مِنْكُمْ وَمَا آتَاكُمْ الرَّسُولُ فَخُذُوهُ وَمَا نَهَاكُمْ عَنْهُ فَانْتَهُوا وَاتَّقُوا اللَّهَ إِنَّ اللَّهَ شَدِيدُ الْعِقَابِ 7

Meaning: *“What are the spoils (fai ’) given by Allah to His Messenger (from property) that come from the inhabitants of the cities, then it is for Allah, for the Apostles, the relatives, the orphans, the poor and those who are on the journey, so **that the property must not circulate among the rich among you.** What the Apostle gave you, accept it. Leave what he forbids. And fear Allah. Verily Allah is severely punished.”*

Zakat is one such instrument of income redistribution and is Islam’s most important system of philanthropy. Zakat, as the third pillar of Islam, is a form of worship as well as muamalah. Zakat for muzaki functions as a form of obedience or worship and reflects how, in essence, the property owned by every human being belongs to Allah SWT.

In terms of muamalah, zakat serves to alleviate the economic burden of mustahiq and strengthen the brotherhood (ukhuwah) between mustahiq and muzaki. Zakat serves not only to help mustahiq to solve their economic problems, but can also become an instrument of inter-sectoral balance within the national economy. In the long run, the main purpose of zakat is the transformation of mustahiq into muzaki, which must be accompanied by the nature of zakat worship as a built-in stabilizer. This shows that, if managed properly, zakat offers the potential to overcome economic slack and poverty in a country. In light of this objective, the existence of a Zakat Management Organization (here in after referred to as OPZ) is very important for the management of zakat funds.

According to Law No. 23 of 2011 concerning the management of zakat, the purpose of zakat management in Indonesia is to improve the effectiveness and efficiency of services in the management of zakat, along with increasing the benefits of zakat in order to achieve community welfare and poverty alleviation. To deliver

an increase in the benefits felt by the community as part of a poverty alleviation effort, it is very important to ensure the efficiency and productivity of zakat institutions in carrying out their intermediary function. A form of measurement is therefore needed to determine the level of efficiency and productivity of the zakat organization, the results of which can be used as the input for LAZ policy.

LITERATURE REVIEW

Efficiency is the most commonly used metric by which to measure a company’s performance. In the Big Indonesian Dictionary (KBBI), efficiency is defined as the precision with which something (i.e., business, work) is carried out (i.e., by not wasting time, effort, and costs). According to Srivastava (1999), a company is said to be efficient if it can either minimize its costs of producing a certain output (input-oriented) or maximize its profits by using an existing combination of inputs (output-oriented). Efficiency is also the most important thing for a company to consider in order to survive in a competitive market.

Islam also strongly promotes efficiency in terms of financial efficiency, time efficiency, and the efficiency of saying in vain. In financial or property efficiency, Islam forbids (in the verse At-Takasur) boastful behavior. In time efficiency, Islam instructs people (in Surat Al-Ashr) to devote the time they have to faith and good deeds so that they do not enter the class of those who lose money. Regarding efficiency in saying, the Prophet sallallahu 'alaihiwasallam said, “Whoever believes in Allah and the Last Day, let him say well or let him be silent” (Muttafaq 'alaih: Al-Bukhari, no. 6018; Muslim, no. 47).

According to Ali and Ascarya (2010, p. 113), the goal of achieving efficiency means to achieve optimal profits. In Islam, the realization of optimal benefits can be generated through hard

work or efforts to produce things optimally while also maintaining Islamic balance and ethics.

According to KBBI, productivity is the ability to produce something. It concerns the ability to produce the maximum amount of goods and services through the efficient utilization of human resources, in addition to all other units of input. Productivity is therefore often interpreted as the ratio between the output and input of certain units (Sedarmayanti, 2001, p. 57).

Islam teaches its followers to fill their lives by working and not allowing their time to be wasted. Prompts of work are contained in the word of God, specifically in the content of At-Taubah verse 105, which states: "And say (O Muhammad SAW), "Work!, then Allah will see your work and (so will) His Messenger will and the believers, and you will be returned to (Allah) Who Knows the unseen and the seen, then He tells you what you have done"."

In another narrative, the high status accorded to work in Islam is demonstrated in the story of the Messenger of Allāh kissing the hand of Sa'ad bin Mu'az when he saw his hand was rough after working hard to find wood. The Messenger of Allāh said: "These are two palms that are loved by Allah."

Zakat is defined as the obligation attached to a certain portion of assets that is required by Allah SWT to be given to those who have the right to receive it (Qardhawi, 2007, p. 34). According to Kahf (1999), the main purpose of zakat is to achieve social and economic justice. The obligation to manage zakat is contained in the Qur'an letter At-Taubah verse 103. In Indonesia, there are two types of zakat management organizations, namely Badan Amil Zakat (BAZ), which is formed by the government, and Lembaga Amil Zakat (LAZ), which is formed by the community. A LAZ requires inauguration by the government in order to exist and thus operate. This is important when we consider

that the operationalization of LAZ involves public money. It should also be noted that proof of a zakat payment to LAZ can become a deduction from taxable income.

METHODS

This is a descriptive type of research that employs a quantitative approach. The object of the research is the Amil Zakat Institution (LAZ) in Indonesia. LAZ was chosen as the object of the research since only a few prior studies have discussed efficiency and productivity in the context of LAZ in Indonesia. The population in this study therefore comprises all LAZ institutions in Indonesia. The study sample consists of six zakat institutions, namely LAZ Al-Falah Social Fund Foundation (YDSF) Surabaya, LAZ Al-Azhar, LAZ Aksi Cepat Tanggap (ACT), LAZ Yayasan Rumah Yatim Ar-Rohman Indonesia, LAZ Pos Kemanusiaan Peduli Ummat (PKPU), and LAZ Rumah Zakat Indonesia.

Purposive sampling was used as the technique for selecting the sample institutions from the total population, which specifically entailed selection based on a set of criteria (Sugiyono, 2012, p. 96). The following inclusion criteria were used when determining the sample in this study: 1) Amil zakat institutions that have published financial statements for the 2014–2016 period on their website or that are willing to provide financial reports directly; and 2) Amil zakat institutions that have used the same variables in their financial statements, as a requirement of the DEA method.

The minimum number of decision making units (DMUs) in this study is three times the number of inputs and outputs. A total of five variables are used to represent the inputs and outputs in this study, thus giving a minimum number of 15 DMU observations. The study has an actual total of 18 DMUs, based on observations from six LAZs over a three-year period.

This study uses an intermediation approach in determining the variables. The table below is a summary of the input and

output variables used to measure LAZ efficiency and productivity values with the intermediation approach.

Table 1. Input and Output Variables

Input (X)	Output (Y)
Collected Funds (X ₁)	Distributed Funds (Y ₁)
Total Cost (X ₂)	Total Assets (Y ₂)
Amil Acceptance (X ₃)	

Source: Author's illustration

The type of data used in this study is secondary data in the form of financial statements for the 2014–2016 period for all of the LAZ that comprise the object of research. In addition, as support, literature is used in the form of books, previous research, journals, and other sources related to the material discussed.

Banxia Frontier Analyst version 4.3 is the tool used to measure the level of efficiency, while productivity is measured using DEAP version 2.1. The following is an explanation of the analytical techniques used in this study.

Data Envelopment Analysis (DEA) is a method of measuring efficiency with the use of mathematical programming techniques. DEA measures the relative efficiency of a set of DMUs in managing the same type of inputs so as to produce the same type of output, where the relationship of the form functions from input to output is unknown (Siswandi, 2004).

DEA was originally developed by Farell (1957) as a technique for measuring the efficiency of one input and one output in relation to multiple inputs and multiple outputs. It was subsequently popularized by Charness, Cooper, and Rhodes (1978) using the assumption of Constant Returns to Scale (CRS) and then further developed by Bunker, Charness, and Cooper (1994) through the addition of an assumption for Variable Returns to Scale (VRS).

The Malmquist Productivity Index (MPI) was first introduced by Caves, Christensen, and Diewert (1982) as a distance function approach to compare production technology in terms of defining input, output, and productivity indices. Total Factor Productivity (TFP) estimates with the DEA approach use the index approach. The following example illustrates the TFP index. If a company in period *s* produces 80% of its maximum capacity with an input vector *x_s*, while in period *t* it produces output amounting to 30% above its maximum capacity using input vector *x_t*, then the change in productivity from period *s* to *t* is $1.30 / 0.80 = 1.625$.

RESULTS AND DISCUSSIONS

Efficiency and productivity are concepts that involve measuring the ratio of output to input. In the interpretation of results, efficiency has a scale value of 0 (zero) to 1 (one), or $0 \leq e \leq 1$, with *e* as the efficiency score. The value *e* = 1 thus indicates efficiency, while a value of *e* < 1 indicates inefficiency.

Meanwhile, productivity is measured using DEAP software to produce the following five values: 1) EFFCH: change in efficiency (relative to CRS), 2) TECHCH: technological change, 3) PECH: pure technical efficiency change (relative to VRS), 4) SECH: change in

scale efficiency (EFFCH/PECH), and 5) TFPCH table: changes in total productivity factors, the values for which indicate the level of productivity. TFPCH has three possibilities: $TFPCH < 1$, which shows a decrease in productivity; $TFPCH = 1$, indicating no increase or decrease in productivity (stagnation); and $TFPCH > 1$, denoting an increase in productivity.

Table 1.2 shows the results of the LAZ efficiency scores. Two of the LAZ experienced inefficiencies in 2014 and 2015 respectively, namely LAZ ACT and LAZ YDSF. In 2014, LAZ ACT had an

efficiency score of 85.8%. Wandayani (2018) found that ACT experienced inefficiencies in the period 2011–2013 prior to achieving optimal efficiency in 2014. This difference in results may have resulted from the fact that DEA uses calculations of relative efficiency; as such, if the variables used are different, then the results obtained may also be different. Yet despite the use of different variables, the results of the DEA calculation for LAZ Al-Azhar, Rumah Yatim, and Rumah Zakat all generate optimal efficiency results.

Table 2. LAZ Efficiency Values 2014–2016 (in percent)

LAZ	2014	2015	2016
YDSF	90.3	97.5	100
Al-Azhar	100	100	100
ACT	85.8	98.5	100
Orphanages	100	100	100
PKPU	100	100	100
Zakat House	100	100	100

Source: Results of data processing using Banxia Frontier Analyst 4.3

In 2014, LAZ YDSF had an efficiency score of 90.3%. By 2015, the two LAZs with suboptimal efficiency values in 2014 (YDSF and ACT) had shown an increase, with LAZ YDSF recording an increase in efficiency to 97.5% and LAZ ACT seeing an increase to 98.5%. Based on both CRS and VRS assumptions, Maulana's (2017) research results show that LAZ YDSF achieved optimal efficiency scores in 2015 and 2016.

Both LAZs were shown to have made efforts to improve their levels of efficiency, with LAZ YDSF managing to increase its efficiency by 2.5% in 2016 to reach 100%. LAZ ACT succeeded in increasing its efficiency by 1.5% to reach

100%. The results of the data processing show that in 2016, all of the LAZ in question achieved optimal efficiency levels of 100%.

Potential Improvement (PI) is the percentage of the difference between the actual and target value in the inefficient DMU. This difference indicates that a LAZ has potential for improvement in terms of the direction that must be taken in order to improve input and output that is not optimal so that the LAZ can reach an efficient point. The following table displays the potential improvement at a LAZ that is inefficient. Since there were many similarities in the potential improvement for the years 2014 and 2015, the focus will be on the LAZ's values for 2014 only.

Table 3. Potential Improvement (PI) for LAZ YDSF in 2014

Variable	2014		
	Value	Target	PI (%)
Collected Funds	32,124,068,476	29,007,741,617.05	-9.70
Total Cost	7,719,056,503	3,436,303,403.79	-55.48
Amil Acceptance	7,422,734,064	4,273,779,377.12	-42.42

Distributed Funds	32,616,207,093	32,616,207,093.00	0.00
Total Assets	7,894,645,912	9,971,192,713.14	26.30

Source: Results of data processing with Banxia software.

From the input side, LAZ YDSF must reduce the amount of collected funds by 9.70%, from the actual value of Rp. 32,124,068,476 to the target value of Rp. 29,007,741,617.05. In addition, LAZ YDSF must reduce its total cost by the significant amount of 55.48%, from an actual value of Rp. 7,719,056,503 to a target value of Rp. 3,436,303,403.79. Amil acceptance is another input that must be reduced by a sizable proportion, in this case 42.42%, from its actual value of

Rp. 7,422,734,064 to the target value of Rp. 4,273,779,377.12.

From the output side, LAZ YDSF's distributed funds have reached their optimal value, which means there is no target value to be achieved. However, LAZ YDSF must increase its total assets owned by 26.30%, from their actual value of Rp. 7,894,645,912 to the target value of Rp. 9,971,192,713.14. Next, Table 1.4 below shows the potential improvement for LAZ ACT in 2014.

Table 4. Potential Improvement (PI) for LAZ ACT in 2014

Variable	2014		
	Value	Target	PI (%)
Collected Funds	91,150,521,473	78,180,217,495.67	-14.23
Total Cost	16,529,100,346	10,983,204,003.42	-33.55
Amil Acceptance	18,270,584,703	11,220,337,122.29	-38.59
Distributed Funds	77,969,369,051	77,969,369,051.00	0.00
Total Assets	23,046,392,995	23,046,392,995.00	0.00

Source: Results of data processing with Banxia software.

In terms of input, LAZ ACT must reduce the amount of collected funds by 14.23%, from the actual value of Rp. 91,150,521,473 to the target value of Rp. 78,180,217,495.67. It must also reduce its total cost by 33.55%, from an actual value of Rp. 16,529,100,346 to the target value of Rp. 10,983,204,003.42. Amil acceptance is another input that must be reduced, in this case by 38.59%, from the actual value of Rp. 18,270,584,703 to a target value of Rp. 11,220,337,122.29. In terms of output, the distributed funds and total assets of LAZ ACT are already at their optimal values, so there is no target value to be achieved.

Based on the figures for potential improvement, in order to achieve 100% efficiency values, LAZ YDSF must reduce its amount of collected funds, total costs, and amil acceptance, and increase its total assets. LAZ ACT must also reduce the

amount of collected funds, total costs, and amil acceptance, but there are no changes required in respect of the output variables since the total assets and distributed funds are already at their optimal levels. Zakat institutions would seek to reduce the amount of funds in order to avoid a situation wherein the collected funds (zakat, infaq, shadaqah or ZIS) are held for too long. Ideally, zakat institutions in Indonesia compete with each other to raise funds. Since their main function is as intermediaries, in addition to raising funds, they must also deal with the challenge of distributing funds appropriately, effectively, and efficiently. In practice, each zakat institution has its own way of managing ZIS funds, involving both human resources and management, as well as its scope. Therefore, there is a risk of a large accumulation in the event that too many ZIS funds are collected while not

being balanced effectively and efficiently in respect of their target distribution. To this end, a large amount of collected ZIS funds does not necessarily indicate the best performance on the part of the zakat institution; instead, consideration needs to be given with regard to the capacity of the zakat institution to effectively manage its ZIS funds. Islam also teaches Muslims to be middle-class people, stated as follows in Al-Qur'an Surat Al-Baqarah verse 143: "And such that We have made you (Muslims) as a people mid so that you become witnesses of (actions) humans and so that the Apostle (Muhammad) be a witness of your actions" (QS Al Baqarah: 143).

This is in line with Rahmayanti (2014), whose research results showed that the amount of ZIS funds (collected funds) at Zakat Houses in 2009–2011 had to be reduced because the total amount held exceeded the targets to be achieved. However, there is no explanation related to the analysis of the reduction of the collected funds. If we compare the amount of collected funds and distributed funds in the period 2014–2015, LAZ YDSF had a greater amount of distributed funds than collected funds. A decision to increase the size of the distribution, as seen in that year, would usually be taken because the zakat institution has a surplus of funds from previous years that it can use to cover the excess distribution. The management of LAZ YDSF actually has a policy stipulating that it should retain a maximum zakat fund balance of Rp. 200 million each year. Situations where the amount of distributed funds exceeds that of collected funds can occur because zakat institutions are, by definition, philanthropic institutions.

In addition to reducing their amounts of collected funds, LAZs YDSF and ACT must also reduce their total costs. The year 2014 saw an earthquake in China, while there was also an earthquake in Nepal in 2015. ACT, as a LAZ operating on a global scale, has helped provide

assistance to numerous countries that have experienced disasters, and this ability necessarily involves significant costs.

Many of the results from previous studies have indicated that zakat institutions needed to reduce their costs. However, the variables used were not total costs but rather the various components of costs, such as operational costs, labor costs, and socialization costs. For example, Wandayati (2018) stated that in the period 2011–2013, LAZ ACT had to reduce operational costs and employee salary costs. Aini (2012), in another study, showed that in 2008 LAZ YDSF had to reduce operational costs by 69.29% and employee salary costs by 73.07%. It is also worth noting that no previous research has been found in relation to the total cost variable. Total costs were selected as a variable in this study due to the unequal nature of the cost components in the respective LAZ financial reports. In fact, the DEA method requires that the variables used are the same. Although no research has been conducted using total costs as a variable, this is not a problem; rather, it presents a disadvantage in that it is not possible to identify the specific component of costs that should be reduced.

Most previous studies have used variable operational costs and employee salary costs, with the average research results indicating that these costs need to be reduced. In practice, in carrying out its operations, it is impossible for a LAZ to not incur some level of cost. We can cite employee salary costs as an example; thus, even if a LAZ is committed to spending as little as possible, it will still face the possibility of having to pay employees in accordance with what should be their rights. It may thus be concluded that it is not necessarily a case of minimizing costs but rather one of making costs efficient so that those that are incurred are in accordance with the needs and do not result in money being wasted.

Furthermore, YDSF and ACT must also reduce the amount of *amil*

acceptance. Reducing the amount of amil acceptance represents an alignment of the collected funds target, which must also be reduced. Amil acceptance is a part of amil for ZIS funds that are entitled to be taken; therefore, the amount of amil acceptance will depend on the amount of ZIS funds collected. If, as part of a potential improvement, the amount of collected funds needs to be reduced, there will be an associated decrease in amil acceptance. BAZNAS Regulation number 1 of 2016 CHAPTER IV Article 8 paragraph 1 states that the amount of amil rights is deemed to be no more than one-eighth or 12.5% of the zakat funds. In paragraph 2, it is explained that if the receipt of amil from the zakat funds in paragraph 1 is insufficient, the allocation of infaq/shadaqah funds and other socio-religious funds can be met in the form of operational costs, to a maximum amount of 20%. Looking at ACT's financial statements, it was found that the amil portion of zakat funds exceeded the applicable provisions, namely 12.90% in 2014 and 12.65% in 2015. YDSF, meanwhile, operated in accordance with the applicable regulations. Previous research that employed the amil acceptance variable was not widely found. Difanda (2017), however, used a similar variable called amil distribution, yet this was an output as opposed to an input variable. The results of Difanda's (2017) study showed that the 2013 East Java provincial BAZNAS was required to increase its amil distribution by 13.91%, while in 2016 DKI BAZNAS had to increase its amount of amil distribution by 17.07%.

The next interesting finding with regard to the potential improvement at LAZ YDSF is that it is necessary to increase the total assets. When viewed in the context of financial statements, this becomes apparent since YDSF has the lowest level of assets owned compared to the other LAZ. As such, the number of assets under management at YDSF remains relatively small, namely only in the

form of rotating receivables with a final balance in 2014 of Rp. 397,062,500, against a balance in 2015 of Rp. 459,696,500.

In relation to the fact that each LAZ has its own capacity for managing ZIS funds, there are various different measures that can be taken in order to increase this capacity. These can include improving the quality and quantity of human resources (HR), improving technology, and opening branch offices to expand the scope of activities. A LAZ's total assets might also be increased through an increase in capacity, technology procurement, and the opening of new branch offices. No previous study was identified that used the variable of total assets, with the tendency instead to use fixed assets and current assets as variables. While these approaches are essentially the same, it is not possible with the total asset variable to identify the component that is the source of inefficiency. Unlike the results of this research, Aini (2012) showed that in 2008 LAZ YDSF had to reduce its current assets by 5.14% and its fixed assets by 48.04%. This need for asset reduction was caused by the use of less effective and productive assets; for example, the addition of branch offices in less strategic locations and with a lack of balance with socialization to the public.

The table below contains the results of data processing for the variables in LAZ financial statements for 2014–2016 using the MPI, with oriented outputs and VRS assumptions. In practice, the use of CRS or VRS assumptions has no influence on Malmquist DEA, but both are used to calculate the various distances used to construct the Malmquist index. However, with DEAP software, it is still necessary to complete the assumption option. VRS assumptions were chosen for the purpose of equating with the assumptions used in measuring efficiency. The following are the results of data processing and show the LAZ productivity levels.

Table 5. Data processing results in the second year Malmquist Productivity Index (MPI)

LAZ (1)	2014-2015					2015-2016				
	Effch (2)	Techch (3)	Pech (4)	Sech (5)	Tfpch (6)	Effch (7)	Techch (8)	Pech (9)	Sech (10)	Tfpch (11)
YDSF	1.118	0.928	1.061	1.054	1.038	0.859	1.058	1.025	0.837	0.908
Al- Azhar	1.000	0.897	1.000	1.000	0.897	1.000	1.107	1.000	1.000	1.107
ACT	1.317	0.928	1.136	1.159	1.222	1.017	0.875	1.015	1.002	0.889
Rumah Yatim	1.000	1.039	1.000	1.000	1.039	1.000	0.812	1.000	1.000	0.812
PKPU	1.027	0.964	1.000	1.027	0.991	1.000	1.219	1.000	1.000	1.219
Rumah Zakat	1.221	0.953	1.000	1.221	1.164	1.019	1.121	1.000	1.019	1.141
Mean	1.108	0.950	1.032	1.074	1.053	0.981	1.021	1.007	0.974	1.002

Source: Data Recovery Results with DEAP 2.1

There were two periods of data processing results covering the three years studied. This reflects the fact that the calculation of productivity is the value of changes in total factor productivity. These changes involve at least two production technology sets. Given that the total productivity factors are the result of a multiplication between the technical efficiency changes (EFFCH) and technological changes (TECHCH), the increase and decrease in productivity can be checked by comparing the EFFCH and TECHCH values. This can be formulated as follows:

$$\text{TFPCH} = \text{EFFCH} \times \text{TECHCH} \dots \dots \dots (1)$$

In other words, increased productivity can be explained to be the result of an increase or decrease in efficiency, increase or decrease in technology, or both. Likewise, the overall efficiency change (overall efficiency), shown here as the EFFCH value, is the product of pure technical change (PECH) with a scale efficiency change (SECH). In other words, the value of scale efficiency is largely determined by the values of EFFCH and PECH and can be formulated as follows:

$$\text{EFFCH} = \text{SECH} \times \text{PECH} \dots \dots \dots (2)$$

or

$$\text{SECH} = \text{EFFCH} / \text{PECH} \dots \dots \dots (3)$$

Based on the data above, it can be seen that in the first year there were two LAZs that had TFPCH values of less than one, namely LAZ Al-Azhar and PKPU. Meanwhile, four other LAZs had more than one TFPCH score, namely LAZ YDSF, ACT, Orphanage House, and Zakat House. As an example of the interpretation of the results from the above data processing, LAZ PKPU has a TFPCH value of 0.991, which indicates a decrease of 0.9% in productivity at the LAZ. This was caused by a decrease of 3.6% in technical change (TECHCH), or the level of technology used, which was not compensated for by the increase in the value of efficiency change (EFFCH) of only 2.7%. The increase in EFFCH is below the average of 10.8%. This occurred because LAZ PKPU wanted to increase its level of efficiency and thus made savings by reducing the costs incurred for technology, and it was this reduction in technology costs that led to the decrease in LAZ PKPU's productivity. On the other hand, Rumah Yatim experienced a productivity increase of 3.9%. This was the result of a 3.9% increase in the use of technology accompanied by an unchanged level of efficiency. The increased productivity of LAZ Rumah Yatim was only caused by an increase in the

technology used; for example, it has an online donation service and cooperates with partners such as bukalapak.com and kitabisa.com.

As for the second year, three LAZs had less than one TFPCH, namely LAZ YDSF, ACT, and Rumah Yatim. The other three LAZs had more than one value, namely LAZ Al-Azhar, PKPU, and Rumah Zakat. LAZ Rumah Zakat had a TFPCH value of 1.141, meaning that it increased productivity by 14.1%. This value was produced by a 1.9% increase in efficiency changes, as well as a technology increase of 12.1%. This happened due to the improved use of technology by LAZ Rumah Zakat, namely by the presence of online donation services, host to host ATM Bersama, Infaq Card (I-Card), the creation of the *sharinghappiness.org* platform, and collaborations with payment channels, namely *satuloket.com*, *blibli.com*, *bukalapak.com*, *tokopedia*, *paypro*, and *PayPal*, as well as a shopping charity program. This technology improvement was also an effort to improve efficiency; for example, by enabling reductions in operating costs, store rental fees at the mall, and shop staff wages, while also providing convenience to donors for the payment of zakat, infaq, and shadaqah.

On the other hand, LAZ YDSF saw a decrease in productivity of 9.2%. This occurred because of a 14.1% decrease in efficiency change driven by an increase of 5.8% in the level of technology use. This reflects the attempts made by LAZ YDSF to improve the level of technology used; for example, the YDSF Mobile Android application and online trading site KUMYDSF (Mandiri YDSF Business Community). However, it continues to have less than optimal use, thereby resulting in a decrease in efficiency due to technology procurement costs. YDSF's potential is very large but there is a need for collaboration with other partners, such as companies engaged in digital technology, along side synergies with

various institutions or partners in order for this potential to be optimized.

In the first year, every LAZ under consideration experienced a decline in technology, with an average decrease of 6.6%, except for Rumah Yatim, which experienced a technology increase of 3.9%. Meanwhile, in the second year, only LAZ YDSF experienced a decrease in efficiency change, which was 14.1%. For LAZ Rumah Zakat, there was no change in the value of pure technical efficiency in either the first or second year, meaning that the change in overall efficiency was merely an escalation of the scale efficiency of 22.1% in the first year, and 1.9% in the second year.

Overall, a trend can be detected for increasing levels of technology between the first year and second year. This reflects the Minister of Religion Decree No. 333 of 2015 concerning Guidelines for the Granting of Establishment of Amil Zakat Institutions that came into effect on November 6, 2015. The decision was made in order to increase the efficiency and orderly administration of government administration and improve public services. The decree contains requirements for LAZ on a national scale to collect zakat, infaq, shadaqah, and other socio-religious funds of at least Rp. 50,000,000 (fifty billion rupiah) per year. This mandatory target led to the decision by LAZs to harness technology to enable them to meet the requirement for results that demonstrated an increase in the level of funds collected. Meanwhile, only LAZ ACT and Rumah Yatim experienced a decline in technological levels. This was because in the period 2015–2016 these two LAZs had not become LAZNAS, which meant there was no obligation for them to increase their amounts of collected funds. In addition, Act No. 23 of 2011 concerning Zakat Management, article 23 paragraph 1 requires LAZs to provide proof of zakat deposits to each muzaki that can then be recorded as a deduction from taxable income as explained in the Literature Review. The obligation of LAZ to provide a

proof of zakat deposit to muzaki is what prompted their investment in the procurement of recording technology, namely in the form of software/applications for recording and printing proof of zakat deposits.

No prior research has been found on calculating the productivity of zakat institutions using the MPI. One study carried out in Indonesia, namely Al-Parisi (2017), aimed to measure efficiency and productivity, in addition to determining the factors that influence the level of efficiency using Tobit regression. The results revealed that four OPZ, namely YBM BRI, Rumah Zakat, PKPU, and BAZNAS, experienced an increase in productivity. This was indicated by a TFPCH score of more than 1 (one). One OPZ, namely Dompot Dhuafa, saw a decrease in productivity, with a score of 0.845.

Norazlina and Abdul Rahim (2013), in their study, aimed to measure the efficiency and productivity of zakat institutions in Malaysia and identify the factors influencing the level of efficiency using Tobit regression. The results showed that the TFPCH of zakat institutions in Malaysia had increased at an average rate of 2.4% during the period 2003–2007. This increase was associated with a 3.5% change in TECHCH and a -0.1% change in EFFCH. Unfortunately, the current study has examined different objects, meaning it cannot be compared with the research by Norazlina and Abdul Rahim.

Efficiency and productivity are two areas of performance that can run in the same direction but also in the opposite direction. They can go in the same direction since efficiency is a component of productivity. This can be seen from the value of productivity (TFPCH), which is a decomposition of the efficiency value (EFFCH) and technology level (TECHCH). That is, if the efficiency value (EFFCH) increases, there will also be an increase in the productivity value (TFPCH). However, the opposite may also be the case, with institutions unable to optimize their existing re-

sources, in the form of either technology or human resources (HR). If technology is not used optimally, then its procurement can increase costs, with these costs not being proportional to the results obtained, thus reducing the level of efficiency. This can be seen in Table 1.5, namely in relation to LAZ YDSF experiencing an increase in efficiency in the first year although the level of technology used was low. In the second year, LAZ YDSF opted to increase the level of technology used and thus incurred some technology procurement costs. However, LAZ YDSF failed to use the technology optimally, resulting in a decrease in efficiency in the second year. Meanwhile, LAZ Al-Azhar experienced a decrease in productivity in the first year due to the low level of technology used. However, in the second year, LAZ Al-Azhar saw an increase in productivity that resulted from its improved use of technology. LAZ Al-Azhar was thus able to use technology optimally so that the procurement costs incurred could be aligned with the benefits derived from the use of the technology. This can be seen in the success of LAZ Al-Azhar in maintaining its efficiency value.

The decision as to whether or not to use technology must also be made in line with an improvement in the quality and quantity of HR. There are also costs associated with improving the quality of HR, such as training costs. In this era of digitalization, it is only natural that a LAZ also uses advanced technology to optimize the collection and distribution of zakat and aid in the creation of a LAZ database. However, this also needs to be balanced against improvements to the quality of HR. The aim of HR extends beyond the collection and distribution of the most ZIS funds possible to a duty to care about the problems of the ummah and to the adoption of an aim of da'wah to educate the public about the importance of zakat, infaq, and shadaqah.

CONCLUSION

Two of the observed LAZs experienced inefficiencies in 2014 and 2015, namely LAZ YDSF and ACT. Meanwhile, the results of the data processing for 2016 showed that all of the LAZsin this study had achieved an optimal level of efficiency. The results of the MPI analysis show that in the first year there were two LAZs with TFPCH values of less than one, namely LAZ Al-Azhar and PKPU. Meanwhile, four other LAZs had more than one TFPCH score, namely LAZ YDSF, ACT, Orphanage House, and Zakat House. In the second year, three LAZs experienced increases in productivity, namely LAZ Al-Azhar, PKPU, and Rumah Zakat. Meanwhile, three other LAZs experienced a decrease in productivity, namely LAZ YDSF, ACT, and Rumah Yatim.

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