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# Efficiency Analisis of National Zakat Management Organization with DEA Method in 2015 – 2019 Period

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*ABSTRACT*

*This study aims to measure the efficiency level of the National Zakat Management Organization (ZMO) in 2015 – 2019. The object of research is financial report of the National Zakat Management Organization. Data Envelopment Analysisis (DEA) with input and output approach is the method used in this research. The calculations use both the Constant Return to Scale (CRS) and Variable Return to Scale (VRS) assumptions. The input variables and output variables used are ZISWAF funds received, fixed assets, employee salaries, ZISWAF funds distributed and operational costs. The results of this study indicate that the efficiency of ZMO namely BAZNAS, Dompet Dhuafa Republika and Rumah Zakat in the 2015 – 2019 period with the input approach and CRS/VRS method gets efficiency results above 100%. Meanwhile, with the output approach of CRS/VRS method there is one ZMO that has value of 100% that is able to maintain consistent efficiency values, is Dompet Dhuafa Republika with efficienct values of 104,17% and 100,85% which overall almost reach the optimal value.*

*Keywords: efficiency, National Zakat Management Organization, Data Envelopment Analysis, input and output approach.*

## INTRODUCTION

Indonesia is a developing country with the biggest population in Southeast Asia and the largest Muslim population in the world. With this such big population, Indonesia cannot be separated from the case of poverty which is a big danger to mankind, because there will be various criminal acts due to economic pressure. Wealth inequality can trigger poverty, this is very closely related to the income distribution gap (Pratama, 2015).

It takes a financial instrument that can deal with the problem of income inequality, which is also useful for supporting the economic growth of the people. Zakat can be used as an instrument, because it has economic power that has the potential to advance public welfare. Zakat is a strategic instrument that influences the behavior of a Muslim, society and economic development in general. The existence of zakat seen economically can erase the level of difference between the rich and the poor (Zahra et al., 2016).

On the other hand, the potential for zakat in Indonesia is very large, Prof. Bambang Sudibyo as chairman of the National Amil Zakat Agency (BAZNAS) explained that with existing regulations it could reach 213.3 trillion or 1.57% of Gross Domestic Product (GDP). This number will continue to increase with the new regulations regarding zakat as a tax deduction, so the potential for zakat in Indonesia can reach IDR 462 trillion or 3.46% of GDP. In fact, the potential for zakat has not been realized optimally. In 2017 the number of zakat, infaq, shadaqah (ZIS) collected was only 6.2 trillion, this value increased by 24% compared to 2016 which was 5 trillion (Center for Studies, 2019).

The receipt and distribution of zakat funds received nationally has increased significantly since the last 5 (five) years. Based on table 1, it can be seen an increase in the receipt and distribution of zakat funds from 2015 to 2019, but in 2018 the distribution of zakat funds was greater than the receipt (deficit). This is presumably due to the maximization of the distribution of existing zakat funds based on financial balances in the previous year, not based on the amount of funds.

Table 1. Data on receipt and distribution of zakat funds for the period 2015 - 2019

| *Year* | *Receipt* | *Distribution* |
|---|---|---|
| 2015 | 82.272.643.293 | 66.766.033.369 |
| 2016 | 97.637.657.910 | 67.727.019.807 |
| 2017 | 138.096.290.551 | 118.071.046.770 |
| 2018 | 153.153.229.174 | 191. 966. 485.358 |
| 2019 | 248.342677.327 | 225.702.309.429 |

Source: baznas.go.id

There is an interesting development regarding religious awareness within the Muslim community in Indonesia, especially in terms of awareness of zakat, shadaqah and infaq. This is indicated by the large number of zakat management institutions, both managed by the community and the government. Zakat Management Organization (ZMO) is an organization that manages zakat funds, acts as an intermediary, namely collecting community zakat funds and then distributing and empowering them to the community. In recent years, ZMOs have experienced rapid development both from the quantity aspect, namely the increasing number and from the quality aspect, namely the excellent institutional quality (Fadilah et al., 2017). With the establishment of this institution, of course, there is a purpose and purpose, namely to serve zakat obligors so that they can distribute their zakat easily (Romdhoni, 2017).

Until now, ZMO continues to appear, based on the website of the Director General of Taxes, Ministry of Finance of Indonesia, there are 19 National ZMOs that have been recognized by the government. Unfortunately, the level of trust of the Indonesian people is still relatively low, because in fact there are approximately 300 ZMO, but only 19 ZMO that have been legally registered and recognized by the government. The other registered ZMOs do not yet have transparent financial reports and are audited regularly. This also triggers the weak public trust in these institutions (Widyaningrum, 2018).

Based on the above phenomenon, it is necessary to study further how far the efficiency of the listed ZMO's performance is. If proven efficient, this can increase public confidence in distributing zakat funds to ZMO. In addition, it can be a reference for other ZMOs that have not been registered to immediately register their institutions to be recognized by the government. Measuring efficiency in an institution can be done with parametric and non-parametric models. Efficiency according to Nordiawan & Hertianti (2010) is the relationship between goods and services (outputs) that produce an activity with the resources (inputs) used. One method that is often used to analyze efficiency is the non-parametric model of Data Envelopment Analysis (DEA), which measures the ratio between input and output.

Based on previous research conducted by Zahra et al., (2016), concluded that the measurement of ZMO efficiency in 2012 was 90.04%, in 2013 was 93.50% and 2014 was 95.52% which is more efficient than two years earlier. By calculating the 7 ZMO in 2013 assuming Constant Return to Scale (CRS) using input and output measurements there are only 3 efficient ZMO, namely BAMUIS BNI with a score of 100% in 2012 to 2014, BSM Ummat with a score of 100% in from 2013 to 2014 and YBM BRI with a score of 100% in 2013 to 2014.

Furthermore, Hanifah & Nurzaman, (2019) stated their research that the measurement of efficiency in 2016 was

declared efficient for the Nurul Hayat institution. The average efficiency in 2015 was lower than in 2016 there were 3 institutions, namely: YDSF, YAKESMA, Al-Azhar Peduli Ummat, LMI and Dompet Dhuafa. Meanwhile, Widyaningrum (2018) measures efficiency using 3 ZMO including BAZNAS, PKPU and Rumah Zakat in 2016 with a production approach. The efficiency score obtained by PKPU and Rumah Zakat is 100%, while BAZNAS has a score of less than 100%, which is 77.68% of each measurement, both input and output.

Based on different results from previous research, it shows that some ZMOs considered already efficient in terms of managing zakat funds, but there are still some not efficient. Further studies are needed along with the turn of the year so that more recent data is obtained based on the conditions that occur. The formulation of the problem that arises is how the efficiency level of the National Zakat Management Organization during the 2015-2019 period and what input and output variables need to be streamlined by the National Zakat Management Organization in order to obtain optimal results.

## RESEARCH METHODS

This study uses a quantitative research type with a non-parametric approach to Data Envelopment Analysis (DEA), the objects of this research are 3 ZMO namely BAZNAS, Dompet Dhuafa and Rumah Zakat which have complete Annual Financial Reports for the period 2015 – 2019. Types of data used in this study is secondary data that comes from the website of each ZMO. The operational variables used in this study in the form of input and output variables are adopted from previous research conducted by Lestari (2015). They can be seen in Table 2.

Table 2. Research Operational Variables

| *No* | *Variables & Definitions* |
|---|---|
| 1 | ZISWAF funds received (Input 1):<br>Funds that are successfully received from muzakki by an institution within a certain period |
| 2 | Fixed Assets (Input 2):<br>Institutional assets in the form of land, buildings, non-current assets and vehicles are calculated in Rupiah |
| 3 | Employee Salary (Output 1):<br>A number of funds are issued to pay employees in an institution |
| 4 | ZISWAF funds disbursed (Output 2):<br>Funds that have been disbursed to mustahik for a certain period in the form of empowerment programs or direct distributions given in cash |
| 5 | Operational Cost (Output 3):<br>Costs incurred by an Amil Zakat Institution that are not directly related to the beneficiary (mustahik) |

The data obtained was processed with EMS software version 1.3. The advantage of EMS software is that it can calculate efficiency with the Super-Efficiency DEA model where the relative efficiency value is not only 1 and 0 but can be more than 1 or more than 100%. This study uses the assumption of Constant Return to Scale (CRS) analysis, when there is an additional input of n times, it will increase the output of n times. And using the assumption of Variable Return to Scale (VRS), when there is an additional input of n times, the output will not increase by n times. Systematically, the DEA formulation can be formulated as follows (Ascarya & Yumanita, 2006):

$$Efficiency = \frac{\sum_{t=1}^{m} Ui\ Yis}{\sum_{i=1}^{m} Vj\ Xjs}$$

Information:

m = observed LAZ s output
i = input LAZ s observed
Yis = number of outputs to I produced
Xjs = number of inputs to j used
Ui = s x 1 sum of output weights
Vj = s x 1 sum of input weights

*DEA Models*

There are two models used in DEA, known as CCR and BCC models (Tanjung and Devi in Siswandi, 2004).

1. CCR or CRS models

CCR model was developed by Charnes, Chooper and Rhodes in 1978. Assuming that the addition of one unit of input. must result in the addition of one unit of output as well. Another assumption used is that each DMU operates optimally. Efficiency in this type is called Overall Efficiency, namely technical efficiency and scale. The CRS formula is written with the following notation:

$$max \sum_{k=1}^{p} \mu k\, \gamma k0$$

$$s.t. \sum_{i=1}^{m} \nu ki\, Xi0 = 1$$

$$\sum_{k=1}^{p} \mu k\, \gamma k0 - \sum_{i-1}^{n} vki\ xij \leq 0\ j = 1, \dots, n$$

$$\mu k \geq \varepsilon,\ \nu i \geq \varepsilon \mu k \geq \varepsilon$$

$$k = \mathrm{I}, \dots, p$$

$$i = l, \dots, m$$

The maximization above is CCR or technical efficiency, so xij is the number of inputs of type i from the j DMU and ykj is the quantity of k type of output from the j DMU. The efficiency value is always less than or equal to 1. A DMU whose efficiency value is less than 1 means inefficiency, while a DMU whose efficiency value is equal to 1 means that the DMU is efficient (Akbar, 2009).

2. BCC or VRS Model models

This model was developed by Banker, Charnes and Chooper in 1984 which is a development of the previous model, namely the CCR. This BCC DEA model is known as the Variable Return to Scale (VRS) model which assumes that each addition of one input unit is followed by the addition of one output unit. The increase in output can be greater than 1 (Increasing Return to Scale), less than 1 (Decreasing Return to Scale) or constant (Constant Return to Scale).

A production process is said to be efficient if the use of a certain number of inputs is able to produce an optimal amount of output or to produce a certain amount of output, minimal input is used, this efficiency is called technical efficiency (Pure Technical Efficiency). The following calculation model is denoted below:

$$max \sum_{k=1}^{p} \mu k\, \gamma k0 - \mu 0$$

$$\mu k\ \nu i$$

$$s.t. \sum_{i=1}^{m} \nu i\, Xi0 = 1$$

$$\sum_{k=1}^{p} \mu k\, \gamma kj - \sum_{i-1}^{n} vki\ xij - \mu 0\ \leq 0\ j = 1, \dots, n$$

$$\mu k \geq \varepsilon,\ \nu i \geq \varepsilon \mu k \geq \varepsilon,\ \nu i \geq \varepsilon$$

$$k = \mathrm{I}, \dots, p$$

$$i = l, \dots, m$$

The maximization above is technical efficiency (BCC), xij is the number of inputs of type I from the j DMU, ykj is the number of outputs of type k from the j DMU. This value is used to see whether the efficiency is always less than equal to 1. A DMU whose efficiency is less than 1 is called inefficiency, while a DMU whose value is equal to 1 means that the DMU is efficient. In addition to the two models above (CCR and BBC), several studies have developed the calculation of

the Technical Efficiency (TE) of CRS DEA into two components, including: the first component refers to the efficiency scale and the second component refers to "pure" TE. This can be done by calculating CRS and VRS against the same data. If there is a difference between the two TE scores of the DMU, it indicates that the DMU has an efficiency scale. Efficiency value can be with the following equation:

$$Scale\ Efficiency\ (\text{SE}) = \frac{\text{TE CRS}}{\text{TE VRS}}$$

The difference between CRS, VRS and SE can be seen in the following graph.

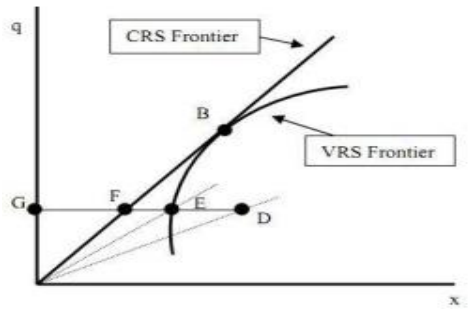


Figure 1. Efficiency Graph of CRS and VRS

The straight middle line shows the CRS, describing the company's performance that is running optimally. The curved line is the VRS which is the company's TE whose performance varies from company to company. Point D shows that the company's performance is not yet efficient and not optimal. Point E indicates the company's performance is already technically efficient, but has not yet reached the optimal scale. Companies that are at points D and E must increase their scale to reach point B, namely Overall Efficiency (Akbar, 2009).

## RESULTS AND DISCUSSION

A National Zakat Management Organization (ZMO) can be said to be efficient if it uses its input variables to produce optimal output variables. In calculating the efficiency in this study, it is processed using the DEA method EMS software version 1.3, using the assumptions of CRS and VRS as well as the input - output approach.

The input approach shows that the number of inputs can be reduced proportionally without changing the amount of output produced, if using this approach, the model will calculate the required input reduction to produce efficient performance with a fixed output. The output approach shows how much the quantity of output can be increased proportionally with the same quantity of input (Kaban & Setyawati, 2020). In addition, data processing using EMS can directly show the benchmark value of each variable. The results of the processing data are in the form of a table that can immediately see the efficiency value of each DMU.

1. *The results of processing the CRS and VRS model DEA methods using the input approach*

From the results of testing the Baznas data, Dompet Dhuafa and Rumah Zakat achieved an efficiency value of 100% or equal to 1 with the CRS and VRS models with the input approach. This shows that the 3 ZMOs have been able to use existing inputs to produce maximum output. The efficiency achievement can be seen in each input and output variable which is shown in Table 3. The table shows the results of the efficiency analysis of 3 ZMO in 2015 to 2019 which shows the level of efficiency value that has reached 100%. That is, the value of 100% indicates that the 3 ZMOs are able to achieve the actual value (actual value) calculated by DEA.

Table 3. The results of the DEA processing of the CRS and VRS models of the input approach

| *No* | *DMU* | *SCORE* | *BENCH MARK* |
|---|---|---|---|
| 1 | BAZNAS 2015 | 100,00% | 0 |
| 2 | Dompet Dhuafa 2015 | 100,00% | 0 |
| 3 | Rumah Zakat 2015 | 100,00% | 0 |
| 4 | BAZNAS 2016 | 100,00% | 0 |
| 5 | Dompet Dhuafa 2016 | 100,00% | 0 |
| 6 | Rumah Zakat 2016 | 100,00% | 0 |
| 7 | BAZNAS 2017 | 100,00% | 0 |
| 8 | Dompet Dhuafa 2017 | 100,00% | 0 |
| 9 | Rumah Zakat 2017 | 100,00% | 0 |
| 10 | BAZNAS 2018 | 100,00% | 0 |
| 11 | Dompet Dhuafa 2018 | 100,00% | 0 |
| 12 | Rumah Zakat 2018 | 100,00% | 0 |
| 13 | BAZNAS 2019 | 100,00% | 0 |
| 14 | Dompet Dhuafa 2019 | 100,00% | 0 |
| 15 | Rumah Zakat2019 | 100,00% | 0 |

*2. The results of processing the DEA method of the CRS model output approach*

From the results of testing CRS data with the output approach in Table 4 below, the results of the efficiency analysis are not so different, but there are some changes in efficiency scores from 2015 to 2019. BAZNAS has increased its score from 100% in 2017 to 119.85%, 2018 by 176.31% and in 2019 experienced a high increase of 257.16%. Then the Dompet Dhuafa and Rumah Zakat organizations experienced a very significant increase in efficiency scores from 100% to more than 100% every year. If made in a graph, it will show the movement of the National ZMO efficiency score using the DEA method, the CRS model with the output approach.

Table 4. Results of processing DEA CRS model output approach

| *No* | *DMU* | *SCORE* | *BENCHMARK* |
|---|---|---|---|
| 1 | BAZNAS 2015 | 100,00% | 0 |
| 2 | Dompet Dhuafa 2015 | 102,78% | 1 (0.32) 10 (0.12) 11 (0.79) |
| 3 | Rumah Zakat 2015 | 100.00% | 0 |
| 4 | BAZNAS 2016 | 100,00% | 0 |
| 5 | Dompet Dhuafa 2016 | 100,76% | 9 (0.13) 11 (0.81) |
| 6 | Rumah Zakat 2016 | 101,91% | 1 (0.00) 9 (0.98) 11 (0.00) |
| 7 | BAZNAS 2017 | 119,85% | 1 (0.02) 4 (1.35) 11 (0.01) |
| 8 | Dompet Dhuafa 2017 | 103,38% | 9 (0.05) 10 (0.00) 11 (0.90) |
| 9 | Rumah Zakat 2017 | 100,00% | 0 |
| 10 | BAZNAS 2018 | 176,31% | 4 (1.67) 11 (0.04) |
| 11 | Dompet Dhuafa 2018 | 100,00% | 0 |
| 12 | Rumah Zakat 2018 | 110,04% | 1 (0.13) 9 (0.97) 1 (0.00) |
| 13 | BAZNAS 2019 | 257,16% | 4 (2.40) 11 (0.10) |
| 14 | Dompet Dhuafa 2019 | 113,91% | 1 (0.31) 9 (0.21) 11 (1.08) |
| 15 | Rumah Zakat 2019 | 122,87% | 9 (1.16) 11 (0.01) |

If depicted with a graph, it shows that the average efficiency of each ZMO has an efficiency level higher than 100%, this is because each ZMO has set expenditures from inputs, namely ZISWAF funds received and fixed assets according to the capabilities and capacities of the ZMO.

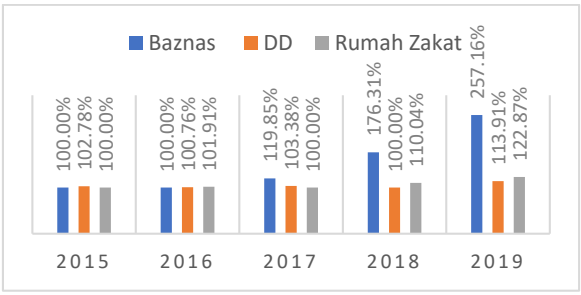


Figure 2. National ZMO efficiency score using DEA method CRS model output approach

*3. The results of processing the DEA method of the VRS model output approach*

Table 5. Results of processing DEA VRS model output approach

| *No* | *DMU* | *SCORE* | *BENCHMARK* |
|---|---|---|---|
| 1 | BAZNAS 2015 | 100,00% | 0 |
| 2 | Dompet Dhuafa 2015 | 101.00% | 10 (0.17) 11 (0.68) 14 (0.10) 15 (0.05) |
| 3 | Rumah Zakat 2015 | 100.00% | 0 |
| 4 | BAZNAS 2016 | 100,00% | 0 |
| 5 | Dompet Dhuafa 2016 | 100,00% | 0 |
| 6 | Rumah Zakat 2016 | 100,00% | 0 |
| 7 | BAZNAS 2017 | 104,64% | (0.38) 4 (0.61) 11 (0.01) |
| 8 | Dompet Dhuafa 2017 | 103,23% | 1 (0.06) 5 (0.28) 11 (0.66) |
| 9 | Rumah Zakat 2017 | 100,00% | 0 |
| 10 | BAZNAS 2018 | 125,20% | 3 (0.72) 4 (0.24) 11 (0.04) |
| 11 | Dompet Dhuafa 2018 | 100,00% | 0 |
| 12 | Rumah Zakat 2018 | 105,27% | 9 (1.00) 11 (0.00) |
| 13 | BAZNAS 2019 | 141,59% | 3 (0.89) 11 (0.11) |
| 14 | Dompet Dhuafa 2019 | 100,00% | 0 |
| 15 | Rumah Zakat 2019 | 107,50% | 3 (0.19) 9 (0.78) 11 (0.03) |

From the results of testing the VRS data with the output approach in table 5 above, for the 3 ZMOs, there was a change in efficiency scores from 2015 to 2019. Baznas experienced an increase in efficiency scores from 100% in 2017 to 2019 which each had a number of 104.64 %, 125.20% and 141.59%. Then the DD and RZ organizations experience an increase in efficiency scores every year. The number in brackets is the entity value, while the previous number is the serial number of the DMU which is used as a benchmark. If made in a graph, it will show the movement of the National ZMO efficiency score using the DEA method, the VRS model with the output approach.

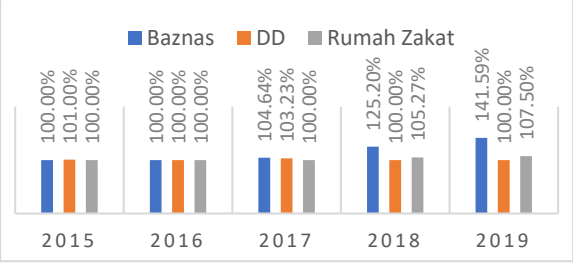


Figure 3. National ZMO efficiency score with DEA method CRS model output approach

From the graph above, it shows that the average efficiency of each ZMO has an efficiency level higher than 100%, this is because each ZMO has set expenditures from inputs, namely ziswaf funds received and fixed assets according to the capabilities and capacities of the ZMO. Of the 3 ZMOs in 2016 it was the one who had the most efficient score of 100% according to the efficiency score. Factors that can lead to technical efficiency is the maximum use of input capacity.

An Economic Activity Unit (ACU) can be said to be efficient if a unit can operate properly. It can systematically be explained when every ideal input ratio will produce an ideal output as well and that ideal ratio is said to be efficiency (Lestari, 2015). In 2016 the 3 ZMOs had the most efficient score of 100%.

For example, from table 4, it is known that 2019 was taken into consideration in the last year for improvement in the following year. DMU BAZNAS 2019 has serial numbers 4 and 11 as benchmarks with values of (2.40) and (0.10), DMU Dompet Dhuafa 2019 has serial numbers 1, 9, 11 as benchmarks with values (0.31), (0. 21) and (1.08) and DMU

Rumah Zakat 2019 has serial numbers 9 and 11 as benchmarks with values (1.16) and (0.01). After being calculated and recapitulated, the results are as follows.

Table 6. Recapitulation of Result Difference Values per Variable and DMU for Each Benchmark

| *Variables* | *BAZNAS* | *Dompet Dhuafa* | *Rumah Zakat* |
|---|---|---|---|
| Input 1 | 162.951.696 | 1.927.005.721 | 587.140.592 |
| Input 2 | 240.967.617.677 | 940.332.321 | 2.387.868.378 |
| Output 1 | 57.623.298.474 | 13.320.022.067 | 435.017.514 |
| Output 2 | 964.149.295 | 81.424.561 | 94.769.086 |
| Output 3 | 27.884.432.298 | 17.866.413.265 | 4.750.555.076 |

Based on Table 6 above, it can be made a priority order of efficiency that needs to be carried out by BAZNAS, starting with the largest difference, namely:

1. Input 2 → Fixed Assets
2. Output1→ ZISWAF Funds disbursed
3. Output 3 → Operational Cost
4. Output 2 → Employee Salary
5. Input 1 → ZISWAF Funds Received

The priority sequences of efficiency that need to be carried out by Dompet Dhuafa:

1. Output 3 → Operational Cost
2. Output 1 → ZISWAF Funds Disbursed
3. Input 1 → ZISWAF Funds Received
4. Input 2 → Fixed Assets
5. Output 2 → Employee Salary

While the priority order of efficiency that needs to be carried out by Rumah Zakat:

1. Output 3 → Operational Cost
2. Input 2 → Fixed Assets
3. Input 1 → ZISWAF Funds Received
4. Output 1 → ZISWAF Funds Disbursed
5. Output 2 → Employee Salary

## CONCLUSION

Measuring the efficiency value of 3 National ZMOs in 2015 – 2019 using the Data Envelopment Analysis method. The CRS/VRS method with the input approach to 3 DMUs has an efficiency value of 100%. While in the CRS/VRS method, the output approach is 1 ZMO which has a value of 100% which is able to maintain the consistency of efficiency values, namely Dompet Dhuafa Republika with an efficient value of 104.17% and 100.85%, which in overall almost reach the optimal value. The test results obtained that there were differences in the level of efficiency of ZMO in 2015 – 2019, namely, BAZNAS, Dompet Dhuafa Republika and Rumah Zakat. This shows that each ZMO is different from one another in managing inputs (inputs) and outputs (outputs). BAZNAS has two priorities, namely fixed assets and distributed ZISWAF funds. Meanwhile, Dompet Dhuafa consists of operational costs and ZISWAF funds that are distributed. And in Rumah Zakat, namely operational costs and fixed assets.

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