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Analysis of Efficiency of National Amil Zakat Institutions Using Two-Stage Data Envelopment Analysis Approach

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ABSTRACT: This quantitative research investigates the technical efficiency of LAZNAS (Lembaga Amil Zakat Nasional – National Amil Zakat Institution) with research period from 2012-2016. The research uses two approaches, namely non-parametric approach using two-stage Data Envelopment Analysys (DEA) to measure the efficiency level of amil zakat institutions, while parametric approach uses Tobit regression model to see the factors that influence the efficiency these institutions. This research uses DEA method with production orientation input approach. It is assumed that LAZNAS as the Decision Making Unit (DMU) of social institution has input variable in the form of Human Resources Expense (X1) and Operational Expense (X2). While the output variables consist of Zakat Fund (Y1) and Zakat Distribution (Y2). The results showed that 20 DMUs were in increasing return to scale and 2 DMUs are in the decreasing return to scale. The remaining 8 DMU are in efficient condition. Technical measurements show that BNI is the most efficient LAZNAS with an average efficiency rating of 92.8% throughout 2012- 2016 followed by LAZNAS Rumah Yatim with average efficiency 70.4% and PKPU with average efficiency 64.8%.

Keywords - Efficiency, Lembaga Zakat Nasional (LAZNAS), National Zakat Institution, Two-Stage Data Envelopment Analysis, Zakat

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1. INTRODUCTION

Indonesia is one of the largest archipelagic countries in the world, with an area of 1,904,569 km square. Indonesia is the fourth world biggest population after China, India and the United States. The population of Indonesia until 2016 has reached to 258,704,986 people Badan Pusat Statistik (2016). The big population causes various problems, one of which is poverty. According to the Central Statistics Agency in March 2015, the number of the poor population with per capita expenditure below the Poverty Line in Indonesia reached 28,592,790 people or 11.22 percent from the total population. This number increased by 0.86 million people compared to the condition in September 2014 which was about 27,727,780 people. The number of poor in the first semester (March) 2016 has reached 28,005,410 people.

Various policies have been carried out by the government, especially the Ministry of Social Affairs which has offered several programs to reduce poverty including the development of self- potential, clothing and food assistance, housing service provision, health service provision, education service provision, provision of access to work and business opportunities, law assistance, and social services (Law number 13 of 2011 article 7

paragraph 1). However, these policies offered by the social ministry are often ineffective and not on target because of poor coordination and management.

Being the largest world Muslim population, Indonesia has tremendous zakat potential. BAZNAS (Badan Amil Zakat Nasional – National Amil Zakat Agency) as one of the zakat recipient institutions established under government supervision has revealed in the 2015 edition of the MILAD Zakat magazine, that since 2012 the acquisition of Zakat, *Infaq*, and Shodaqah (ZIS) funds at a national level have increased to 24.50%. ZIS funds collected in 2012 reached to 2.3 Trillion, in 2013 reached to 2.63 Trillion and in 2014 reached to 3.3 trillion. ZIS funds are collected from various sources such as ZIS funds collected by LAZ (Lembaga Zamil Zakat – Amil Zakat Institutions) and various regional BAZNAS. Looking at the positive trend of ZIS funds collected by BAZNAS, there exist an expectation that ZIS funds can play an important role in reducing poverty, improving the quality of people's lives and even boost the growth of the country's economy.
The command to perform zakat is just as strong as the other Five Pillars of Islam (1. The Testimony of Faith; 2. Prayer; 3. Giving Zakat – Support of the Needy; 4. Fasting the Month of Ramadan; 5. The Pilgrimage to Makkah). The obligation of zakat is clearly stated in the Quran chapter 2 verse 43 which stated:

"And establish prayer and give zakat and bow with those who bow [in worship and obedience]."

Despite the increasing trend of zakat fund, the rate of poverty in Indonesia has not dropped significantly. Most of the distribution of ZIS funds are prioritized on consumptive purposes. ZIS funds aim to alleviate poverty and changing the status of *mustahiq* (zakat recipient) to *muzakki* (*zakat donor*). This objective is difficult to achieve since most of the pattern and distribution system are not conducted properly. It is necessary to apply the right pattern in the distribution of ZIS funds so that the goal of poverty alleviation and the change of status from *mustahiq* to *muzakki* can be achieved.

In optimizing the potential of zakat collections, decent socialization will not provide more benefit without strengthening the management aspects of zakat institutions. A strong and professional amil zakat institution are important factors to guarantee an optimal zakat collection. Amil zakat institutions must meet the standard of good governance, one of the indicators is efficiency.

Efficiency analysis is a calculation technique that measures the performance of an organization's unit. Efficiency analysis is needed to determine the use of organizational inputs or resources in producing outputs and to examine the use of an organization's inputs in efficient or wasteful manner.

Data Envelopment Analysis (DEA) is one of the efficiency analysis methods that is widely used. This method does not require much information so that less data and fewer assumptions are needed (Hadad, et al 2003).
Research to examine the level of efficiency of the Amil Zakat Institutes continues to experience development. Consequently, a research procedure called the Two-Stage Data Envelopment Analysis was created. In this procedure, this research will be will be carried out in two stages (First Stage and Second Stage). At the First Stage, measurement of the level of efficiency will be carried out using the Data Envelopment Analysis (DEA) method. While the later aims to determine the factors that affect the level of efficiency using the Tobit model. These two stages provide complete results regarding the level of efficiency of an Amil Zakat Institution (Endri, 2008: 34).

Based on the descriptions above, this research aims to examine the level of efficiency of ZIS fund managements at several amil institutions using the Data Envelopment Analysis (DEA) method. This research also tries to empirically prove the influence of several variables on the efficiency of amil institutions.

2. LITERATUR REVIEW

2.1 Zakat, *Infaq*, Shadaqh

According to Al Utsaimin (2012), in its etymology, zakat means to grow and develop. While the definition of Zakat according to the Syariah is a proportion of wealth that must be donated if it has fulfilled the requirements determined by religion (nishab and haul) and is distributed to the eight recipients known as asnaf groups. The general principle of zakat distribution has been regulated in the Qur'an in chapter At-Taubah verse 60 while the order to collect zakat is stated in the Quran chapter 9 verse 103. Looking at an economic standpoint, zakat has a deeper meaning. According to Ryandono (2008) zakat is a way to distribute wealth in the economy, especially from the rich to the poor. Zakat moves the economy in a faster manner, building a fraternity between rich and poor so that it will dilute the economic gap between the rich and poor people. Thus, zakat becomes the fuel of the economy in order to achieve falah (physical, spiritual, world and afterlife happiness).

Infaq is derived from the word anfaqa which means 'to take out something (wealth) for the benefit of something'. Meanwhile, according to the sharia terminology, *infaq* means to spend part of the assets or income for an interest ordered by Islamic teachings. If zakat has a Nisab, *infaq* does not recognize Nisab. *Infaq* is conducted by every believer. If zakat must be given to certain recipients (8 asnaf), then *infaq* can be given to anyone, for example for both parents, orphans, and so on as it is stated in the Quran Surah Al-Baqarah verse 215.

Shadaqah is interpreted as a gift given by a Muslim to another person spontaneously and voluntarily without being limited by space, time and amount (Masykur, 2008). *Shadaqah* also means a gift given by someone as a virtue that seeks Allah's blessings and reward

2.2 Amil Zakat

Amil Zakat Institution refers to a group of people who work together to carry out activities and achieve their main goal, that is to manage zakat, *infaq* and *shadaqah* (ZIS). The management of zakat refers to the planning, implementation, and coordination activities in the collection, distribution, and utilization of ZIS. In Indonesia, there are two categories of amils, that include BAZNAS dan LAZ. BAZNAS is formed by the government to carry out the collection, distribution and utilization of zakat to the eight asnaf and reports its accountability to the government. While LAZ refers to amil zakat institution that was established by the application applied by individuals and private sectors to the government and is supervised by BAZNAS. The existence of the Amil Zakat Institutions has been regulated according to law number 38 of 1999 and law number 23 of 2011 concerning Management of Zakat.

2.3 The Concept Of Efficiency

Efficiency is an attempt to use the smallest possible input to create the maximum production possible. Efficiency includes the allocation of resources, human capitals and social systems. The concept of efficiency does not have to mean only material savings, but it also considers non-material aspects.

In Islam, the realization of optimal profits is generated through hard work and best possible efforts. In addition, the profits generated must be balanced with how much expenses incurred and should be in accordance with the Islamic ethics. The prophet Muhammad PBUH, said: "Every profit obtained must be in accordance with the expenses incurred (narrated by Tirmidzi, No. 1285)." Thus, fund management in Islam requires ideal management, so that no funds are wasted as mentioned in quran chapter 17 verse 26-27:
"And give the relative his right, and [also] the poor and the traveler, and do not spend wastefully. Indeed, the wasteful are brothers of the devils, and ever has Satan been to his Lord ungrateful."

Efficiency measurement is an important aspect to insure the performance of the institution. Muharram and Purvitasari (2007) argue, there are three approaches that can be applied to measure the level of efficiency in such institution, namely:

2.3.1 Ratio Approach

The ratio approach in measuring efficiency is applied by comparing the outputs and inputs. This approach will be measured to have high efficiency if it can produce the maximum amount of output with certain amount of inputs:

$$Efficiency = \frac{Output}{Input} \quad (1)$$

2.3.2 Regression Approach

This approach measures efficiency by using a certain level of output as a function of various levels of certain inputs. This approach cannot overcome many output conditions since only one output indicator can be contained in a regression equation. The regression equation can be written as follows:

$$Y = X1 + X2 + X3 + \cdots + Xn \quad (2)$$

Where:
Y = output
X = input

2.3.3 Frontier Approach

The frontier approach in measuring efficiency can be divided into two types, namely the parametric and non-parametric frontier approaches. Parametric approaches such as using the Stochastic Frontier Approach (SFA) and Distribution Free Approach (DFA). Non-parametric frontier approach is measured by non-parametric statistical tests using the Data Envelopment Analysis (DEA) method. DEA is a linear program application technique that measures the relative efficiency of each production unit compared to other production units with the same goal. The production unit in the DEA is called the Decision-Making Unit (DMU) and it can be a company or agency such as amil zakat institutions, banks or everything else that you want to evaluate. The result of efficiency from Data Envelopment Analysis (DEA) ranges from 0 - 1. If a DMU has a lower score than 1 compared to other DMUs, then it is considered as a unit that is relatively inefficient compared to other units. The mathematical equation of the efficiency of the DMU or unit tested is as follows (Ascarya and Yumanita, 2009):

$$DMU\ Efficiency = \frac{\sum_{k-1}^{p} \mu k \gamma kj}{\sum_{i=1}^{nt} Xij} \quad (3)$$

Where:

DMU	=	Decision Making Unit
n	=	the number of DMUs to be evaluated
m	=	different inputs
p	=	different outputs
X_{ij}	=	the number of inputs i consumed by ;
y_{kj}	=	the number of outputs k produced by ;

2.3.4 Tobit Regression Model: Second Stage

The Tobit method assumes that the independent variables are of unlimited value (non- censured); only dependent variables are censured; all variables are correctly measured; no autocorrelation; no heteroscedasticity; no perfect multicollinearity; and precise mathematical model. In this research, the Tobit model is defined as follows:

$$y_i^* = \beta x_i' + \sigma\varepsilon_i, \quad (4)$$

where:

$y_i = y_i^*$ if $y_i^* > 0$

$y_i = 0$ if $y_i^* \leq 0$

2.4 The Relationship of Allocation to Collection Ratio to the Level of Efficiency

Allocation to Collection Ratio is a proxied of the ratio between the proportion of ZIS funds channeled to the collected ZIS funds. The form of ZIS funds that were successfully channeled and collected by LAZNAS allegedly affected the level of LAZNAS technical efficiency. Gunes (2016) explains that financial institutions with large amounts of third-party funds can attract more third- party funds from customers. A large LAZNAS allows attracting more ZIS funds, thus increasing the level of technical efficiency.

2.5 The Relationship of Size to the Level of Efficiency.

Asset of a company, which is usually proxied by the natural log of total assets, is suspected to have an influence on LAZNAS technical efficiency. Ismail, Rahim, and Majid (2009) in their research explained that a company with more assets can more freely run its operational activities and achieve the optimization of its resources

2.6 The Relationship of Operational Management to the Level of Efficiency

LAZNAS operational management, that is proxied by Net Interest Expense divided by the Total Assets is suspected to affect the level of LAZNAS technical efficiency. Operational management is a prerequisite for improving the efficiency of the banking system. This may indicate that LAZNAS operational management which reflects operational cost, salary and other costs affect the LAZNAS operations, as higher LAZNAS operational management will decrease the efficiency level.

3. METHODOLOGY

This research was conducted in two stages. The first stage is to measure the level of efficiency of the National Amil Zakat Institution (LAZNAS) using the Data Envelopment Analysis (DEA). DEA is a non-parametric frontier method that uses a linear programming model to calculate the ratio of output and input for all units compared in a population. Banxia Frontier Analyst 3 is a software used to measure the technical efficiency of amil zakat institutions in carrying out their operational activities. Input variables used in this model are Human Resources Expense Expenses (X1) and Operational Expenses (X2). While the output variable consists of the collected ZIS Fund (Y1) and the Distributed ZIS Fund (Y2) can be written as follow :

$$DEA\ Efficiency\ Score = \frac{Output}{Input} \quad (5)$$

The second stage is to analyze the factors that influence the efficiency of amil zakat institutions using Tobit regression on Eviews 6. The score from DEA is then regressed with the variables that consist of Allocation to Collection Ratio (ACR), Total Asset (LNSIZE) and Operational Management (Net Interest Expense/Total Assets). The model of Tobit regression can be written as follow:

$$EFTi = \beta 1 + \beta 2ACRi + \beta 3\ LNSIZE + \beta 4NIE/TAi + \varepsilon i \quad (6)$$

Where:

EFTi: The value of DEA's technical efficiency

ACRi: The ratio of zakat funds distributed to zakat funds collected LNSIZE: Log natural total assets

NIE/TA: Net Interest Expense/Total Assets

The reason for using the Tobit regression method is because the value of the dependent variable that is the level of technical efficiency (EFT) is limited and should only range from 0 to 100%, in other word, the data is censored data. The use of Ordinary Least Square regression, instead of Tobit regression model, will only lead to biased and inconsistent results.

The type of data used in this study is secondary data, in the form of panel data consisting of Annual Financial Statements of amil zakat institutions in the period 2012-2016. The sample selection was done by purposive sampling, and six amil zakat institutions used as research objects, namely Yayasan Dana Sosial Al-Falah (YDSF), Rumah Zakat Indonesia, PKPU, BAMUIS BNI, BAZNAS, and Rumah Yatim.

4. RESULT AND DISCUSSION

Before discussing the results of the analysis, this section starts with the data presentations to better understand the amil institutions.

No	Nama LAZNAS	Periode				
		2012	2013	2014	2015	2016
1	BAZNAS	50.213	57.505	82.264	94.069	111.690
2	PKPU	104.955	125.493	152.829	188.159	132.591
3	RY	46.906	57.324	50.431	60.363	74.354
4	RZI	95.874	109.694	121.884	144.923	170.677
5	YDSF	32.135	36.159	31.247	47.738	50.718
6	BAMUIS BNI	27.813	24.558	26.587	30.484	35.903
Total Penerimaan		**357.896**	**410.733**	**465.242**	**565.736**	**575.933**

Fig.1 Collected ZIS funds in 2012-2016 in million Rupiah

Based on Figure 1, the overall collection of Zakat *Infaq* and Shadqah funds collected by five LAZNAS and one BAZNAS show an increasing trend. In 2012, the amount collected reached to Rp. 357,896,258,480 and grew by the end of 2016 to Rp. 410,733,176,580. Since the collection of ZIS funds show an increasing trend, this trend is followed by the distribution of ZIS.

No	Nama LAZNAS	Periode				
		2012	2013	2014	2015	2016
1	BAZNAS	45.365	50.615	69.649	74.587	80.252
2	PKPU	95.452	123.827	147.040	174.868	154.317
3	RY	36.339	48.372	46.283	55.984	85.955
4	RZI	96.252	107.432	118.673	143.521	174.090
5	YDSF	30.686	36.668	31.664	49.848	48.207
6	BAMUIS BNI	26.226	23.859	26.705	30.602	35.258
Total Penyaluran		**330.320**	**390.774**	**440.015**	**529.410**	**578.080**

Fig.2 Distributed ZIS funds in 2012-2016 in million Rupiah

In the figure above, the funds that have been distributed by five LAZNAS and one BAZNAS to the public have increased, which initially in 2012 amounted to only IDR 330,319,781,623 and grew by the end of 2016 reaching to IDR 578,079,719,574. Next, the cost of managing amil institutions will be presented.

No	Nama LAZNAS	Periode				
		2012	2013	2014	2015	2016
1	BAZNAS	2.808	5.963	7.076	6.114	13.582
2	PKPU	6.116	8.435	10.340	12.673	7.296
3	RY	2.348	1.095	1.863	3.003	3.684
4	RZI	12.483	12.122	6.845	8.394	5.343
5	YDSF	4.200	4.526	5.152	6.678	6.967
6	BAMUIS BNI	1.291	1.377	1.595	1.683	1.866

Fig. 3 Human Resource Costs of Amils in 2012-2016 in million Rupiah

In Figure 3, Human Resource costs from five LAZNAS and one BAZNAS experienced an increasing trend from year to year. The same trend is followed by the operational costs. As more amils are growing, expanding and developing cost associated with their operations have increased too.

No	Nama LAZNAS	Periode				
		2012	2013	2014	2015	2016
1	BAZNAS	1.045	2.542	2.214	4.049	7.427
2	PKPU	6.213	9.466	11.428	9.929	9.455
3	RY	7.765	5.007	7.403	6.686	5.935
4	RZI	13.185	16.835	18.201	13.436	13.916
5	YDSF	1.404	1.749	1.837	1.992	1.818
6	BAMUIS BNI	428	495	447	516	1.222

Fig.4 Operational cost of amils in 2012-2016 in Million Rupiah

In the figure above, amils' operational costs tend to be unstable or volatile. The highest increase in operational costs occurred at RZI (Rumah Zakat Indonesia) which in 2012 amounted to Rp 13,185,177,236 and increased in 2013 to reach Rp 16,834,968.93. After discussing the inputs and outputs for the DEA efficiency measurement, the next step is to discuss the results of the measurement.

No	Nama LAZNAS	CRS (overall technical efficiency)	VRS (pure technical efficiency)	RTS
1	2012-Bamuis BNI	100	100	Constant
2	2013-RY	100	100	Constant
3	2016-RZI	98.42	100	Constant
4	2014-Bamuis BNI	97.45	97.88	Increasing
5	2015-Bamuis BNI	96.63	100	Constant
6	2016-Bamuis BNI	85.38	89.76	Increasing
7	2016-RY	84.80	90.93	Increasing
8	2013-Bamuis BNI	84.60	93.61	Decreasing
9	2016-PKPU	82.16	100	Constant
10	2012-BAZ	81.86	100	Constant
11	2012-PKPU	64.71	90.03	Increasing
12	2015-BAZ	64.25	96.50	Increasing
13	2015-RZI	62.27	74.40	Increasing
14	2014-RY	60.87	60.89	Increasing
15	2015-PKPU	60.36	100	Constant
16	2015-RY	60.18	61.72	Increasing
17	2013-PKPU	59.27	78.77	Increasing
18	2014-PKPU	57.64	80.68	Increasing
19	2014-BAZ	57.13	100	Constant
20	2014-RZI	51.89	53.79	Increasing
21	2012-RY	46.29	48.84	Decreasing
22	2013-BAZ	43.37	57.66	Increasing
23	2016-YDSF	43.22	65.00	Increasing
24	2015-YDSF	40.80	63.30	Increasing
25	2013-YDSF	39.28	46.02	Increasing
26	2012-YDSF	35.93	39.50	Increasing
27	2016-BAZ	35.58	60.88	Increasing
28	2013-RZI	33.74	40.16	Increasing
29	2012-RZI	31.61	39.91	Increasing
30	2014-YDSF	30.04	33.27	Increasing
	Rata-rata	62.99	75.45	

Fig.5 The Level Of efficiency for different amils

Based on Figure 5, there are only 2 DMU out of 30 DMU that are technically efficient. As for technically pure (VRS), there are 8 DMUs that are already efficient. While the rest shows a score above 30%. The average efficiency level of amil zakat institutions is 62.99% for technical efficiency and 75.45% for pure technical efficiency. This means that the overall average DMU has shown a fairly good level of efficiency, although some DMUs are still relatively low. The results show that 20 DMUs are in a condition of increasing returns to scale and 2 DMUs are experiencing conditions of decreasing return to scale. While the remaining 8 DMUs are in an efficient condition.

The efficiency distribution of DMUs can be shown by the following figure 6:

Asumsi	100%	80%-99,9%	60%-79,9%	< 60%
CRS	2	8	6	14
VRS	8	7	7	8

Fig. 6 Efficiency Distribution

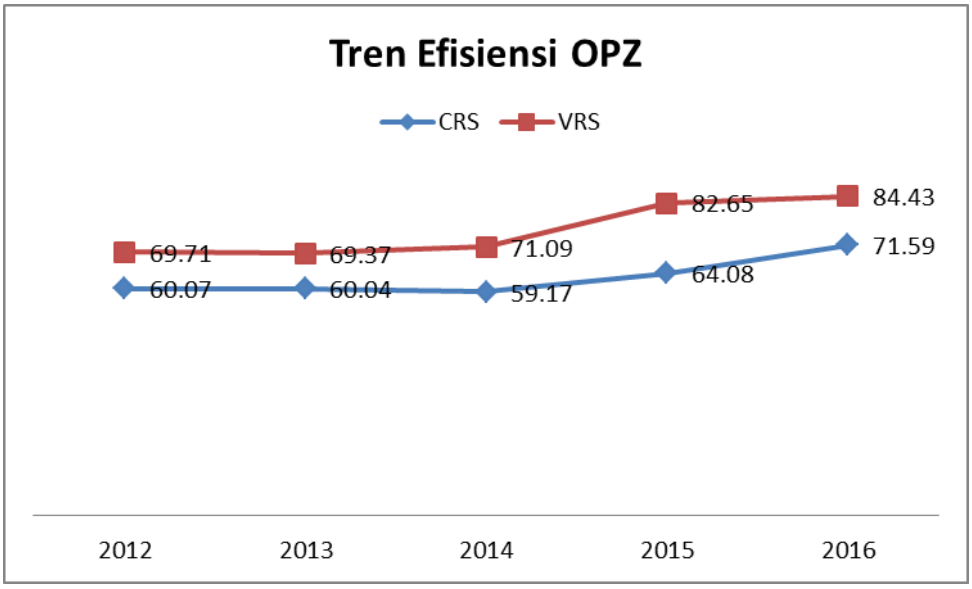

Fig. 7 Trend Efficiency

Figure 7 shows the trend efficiency through years and show that amil zakat institutions are quite efficient both technical and overall efficiency. The increased level of efficiency technically and overall evaluation show that the performance of national zakat institutions is improving in performing their duties to collect and distribute ZIS funds.

Next, we are going to see which amils has the best level of efficiency. Based on the results, technical measurements show that BNI Bamuis is the most efficient amil zakat institution with an average efficiency value of 92.8% during 2012-2016, followed by Rumah Yatim with an average technical efficiency of 70.4% and PKPU 64.8%, see figure 8.

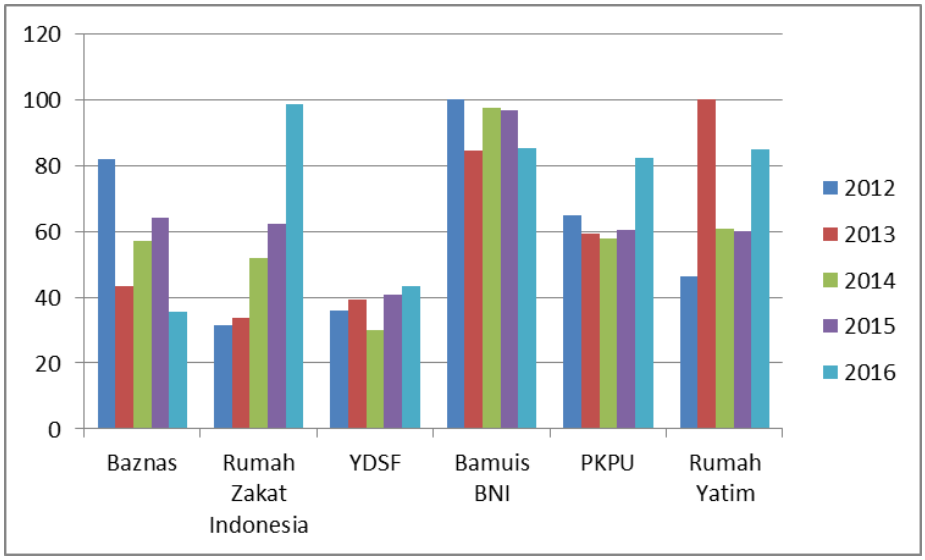

Fig.8 Technical Efficiency for Amils

Having similar results from the technical efficiency measurements, the overall efficiency measurements show that BNI Bamuis is the amil institution with highest level of efficiency with an average efficiency score of 96.25%, followed by PKPU (89.89%) and Baznas (83%), see figure 9.

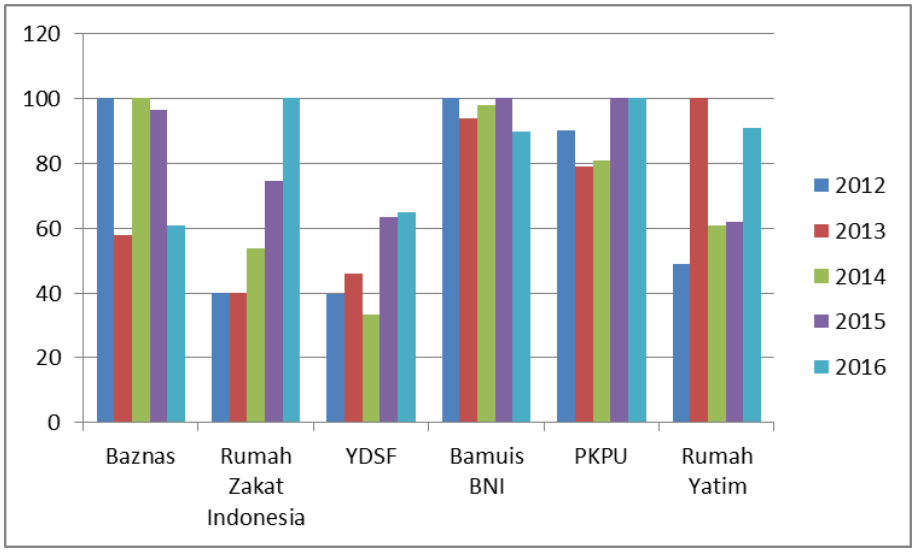

Fig.9 Overall Efficiency for Amils

Another advantage possessed by DEA is that it can rank DMUs which can be used as other DMUs benchmark. In this case, it can provide information about amil zakat institutions which are the most referenced by other inefficient amil zakat institutions during the research period, 2012- 2016. Figure 10 shows that the top three DMUs that were referred to by other inefficient amil zakat institutions were: Baznas in 2012, Rumah Zakat Indonesia in 2016 and Bamuis BNI in 2012.

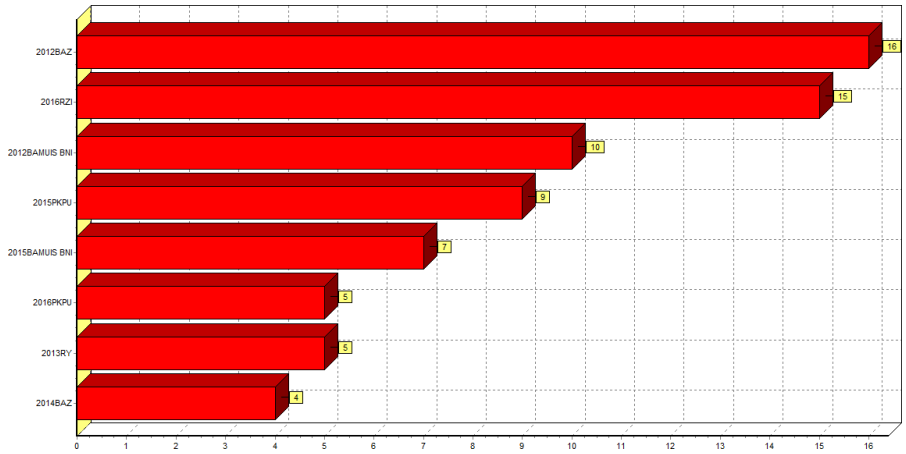

Fig. 10 Reference Frequency

Another advantage possessed by DEA is that it can provide recommendations for improvement through potential improvement. Figure 11 shows the information on total potential improvement that can provide an overview of the inefficiency of amil zakat institutions. The graph of total potential improvement states that industry-wise, in order to be efficient, an inefficient amil zakat institution should reduce operational costs by 44.01% and human resource cost by 46.47%. Whereas in order to achieve an optimal level of efficiency, the revenue funds need to be increased by 4.77% while the distribution funds need to be increased by 4.75%.

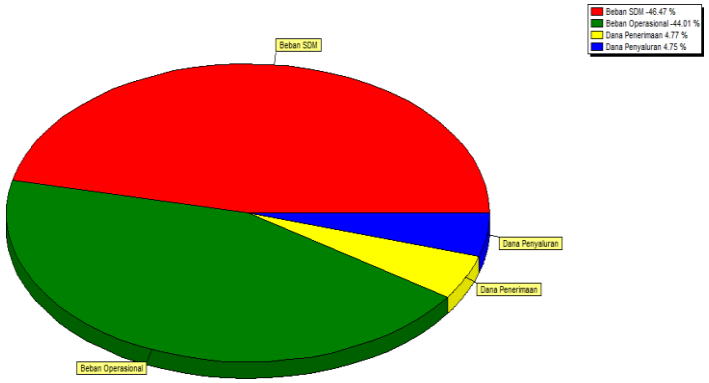

Fig. 11 Potential Improvements

The next analysis is to look for the variables that affect the level of efficiency for amils institutions, using Tobit Regression. The results of Tobit regression model show that the ACR ratio and total assets have a positive influence on the efficiency of amil zakat institutions, while the NIE/TA ratio has a negative effect on the overall technical efficiency. Further, all three independent variables do not play a significant role in determining the level of efficiency for amil institutions, at 5 percent confidence level.

Variabel	Coef	p-Value
ACR	0.249642	0.5623
LNSIZE	1.639136	0.2918
NIE/TA	-2.146863	0.3066

Fig. 12 Tobit Regression Model

5. CONCLUSION

There are 2 perfectly efficient DMUs (100%) for the CRS model and 8 DMUs for the VRS model. The average level of LAZNAS efficiency is 62.99% for technical efficiency and 75.45% for pure technical efficiency. This means that the performance of amils institutions has shown a fairly good level of efficiency, although some DMUs are still relatively low. In general, LAZNAS performance in 2016 of observation, tends to be more efficient when compared to previous years based on the measurement of technical and overall efficiency. This means that, in general there has been an increase in LAZNAS performance efficiency from 2012 to 2016 based on technical and overall value. Technical measurements show that BNI Bamuis is the most efficient LAZNAS with an average efficiency value of 92.8% during 2012-2016, followed by LAZNAS Rumah Yatim with an average efficiency of 70.4% and PKPU 64.8%. To recommend, amils who experience inefficiency should carefully pay attention to the input and output variables that cause inefficiency and must adjust to the target value in order to work efficiently. Amils, both government and private owned, needs to carry out regular and periodic assessments of efficiency. By knowing the level of efficiency. Several strategies for potential improvement can be formulated and implemented. Further research can be conducted to look for other variables that affect the level of efficiency of amil institutions.

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