Performance of Waqf Fund Efficiency Managed by Zakat Institutions in Indonesia

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Waqf has an important role not only in terms of spirituality but also from a social aspect. This study aims to measure the efficiency of waqf funds managed by zakat institutions in Indonesia using the Data Envelopment Analysis (DEA) method with a research period of 2013-2021. The research object used is fifteen zakat institutions that manage waqf funds in Indonesia. The data for this study comes from the annual financial reports of each institution for the 2013-2021 period. The input variables in this study are operating expenses and assets. And for the output variable is the collection and distribution of waqf funds. The results of this study found that the efficiency of waqf management has fluctuated from year to year and tends to increase, and the highest increase in management efficiency by institutions occurs in 2020 to 2021. Based on potential improvements, the highest inefficiencies come from distribution and collection with output-oriented analysis. Meanwhile, based on the orientation of inputs, assets and operating expenses, it also causes inefficiencies in the management of waqf funds.

Keywords: Waqf; Efficiency; Indonesian Zakat Institution; DEA

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INTRODUCTION

Since the heyday of Islam, waqf has been considered the most influential charity as a social mechanism for equal distribution of wealth in the Islamic economic system (Ramli et al., 2018). This waqf is widespread and accepted as one of the foundations for community development, especially in meeting basic needs and has a function as a support system by providing free public infrastructure. The benefits of waqf are not only limited to helping Muslims but also the whole society. Therefore, maintaining good performance is important to ensure that waqf assets are managed properly. (Herindar & Rusydiana, 2021).

The peak of waqf management occurred in the 8th and 9th centuries where waqf covered various objects such as mosques, schools, farmland, shops, gardens, bakeries, office buildings, meetings, and commercial buildings, bazaars and markets, baths and wells, as well as objects other objects that are beneficial to humans (Directorate of Waqf Empowerment, Ministry of Religion, 2007). Until now, waqf culture is still implemented throughout the world and has an important role in the development of socio-economic and cultural activities of Islamic communities (Rusydiana et al., 2022).

In some literature it is stated that waqf plays a role as a solution when a financial crisis occurs because it is similar to social organizations which belong to a third sector besides the private sector and the public sector, which leaves unresolved problems such as poverty, income inequality and other socio-economic problems (Noordin et al., 2017). The problems encountered are also similar, namely that many waqf institutions have difficulty assessing their performance comprehensively, not only consisting of economic indicators but also qualitative methods that cover broader aspects of waqf services such as growth, effectiveness, transparency, and sustainability (Noordin et al., 2017). The performance of the waqf management institution can be determined through the efficiency and effectiveness of the institution concerned. The higher the effectiveness of zakat institutions, the wider the benefits that will be distributed. Thus, evaluation regarding the efficiency and effectiveness of institutions needs to be carried out to maintain the sustainability of zakat institutions (Rusydiana et al., 2022).

This study attempts to look at the efficiency of waqf fund management by analyzing the efficiency of zakat institutions managing waqf funds in Indonesia during the 2013-2021 period. With the DEA method and using MAX DEA 8 software, an analysis is carried out on efficiency levels, efficiency trends, potential improvement, as well as benchmarking.

LITERATURE REVIEW

Waqf generally refers to a word that means detention, or in Islamic law it is defined as "holding or terminating assets and distributing their benefits" (Sabiq, 2004). Waqf can also be referred to as a collection of consumption resources that are simultaneously developed into productive assets to increase capital accumulation in the economy and improve services and income in the future (Rusydiana et al., 2022).

Hasan et al., (2020) explained that waqf is wealth that is kept from its original owner and is beneficial to the poor and needy. The wealth must remain in the same state without being perfected by the first owner. Four prominent Islamic scholars, al-Hanafi, al-Maliki, al-Syafi'i and Hanbali, have different definitions regarding waqf. However, the four scholars agree that in waqf the origin of wealth must be maintained and the profits used as charity to help the poor and needy (Hasan et al., 2020).

From several existing definitions, it can be concluded that waqf plays an important role in reducing the gap in the economy through the distribution of benefits. The important position of waqf is stated by Herindar & Rusydiana (2021) in a study which states that waqf has an important role in achieving equity and being a catalyst in nation building with specific references to waqf institutions which are established to maintain assets continuously and provide income for certain beneficiaries.

Seeing the important role of waqf, waqf must be managed productively according to its purpose, function and designation (Haq & Anam, 2004). Productive management of waqf will show the level of performance of the managing institution. A study related to institutional performance was conducted by Pyeman et al., (2016) who evaluated the performance of waqf institutions by calculating efficiency scores using the DEA method in the waqf departments of the State Islamic Religious Council (SIRCs) of each Malaysian state. The results of the analysis show that the SIRCs waqf department of the state of Penang has increased its efficiency over the four consecutive analysis periods so that it becomes a benchmark for other states.

The performance of waqf fund management was also investigated by Hasan et al., (2020) which measured efficiency scores in two Malaysian states, namely Kelantan and Penang, which managed waqf funds by the State Islamic Religious Council (SIRC). With the DEA method, it is known that only the state of Penang, which

operates with a full score (benchmark) of efficiency, while Kelantan is far from full efficiency.

Studies related to the efficiency of other waqf management were carried out by (Herindar & Rusydiana, 2021) using the DEA method and the period 2013-2020 shows the results that during this period, the efficiency of zakat institutions in managing waqf funds has a fluctuating trend with the main factor in the inefficiency of waqf funds lies in the output variable, namely the receipt and distribution of waqf funds.

Furthermore Rusydiana et al., (2022) in a study that measured the efficiency of waqf fund management institutions in Indonesia during 2014-2019 using the DEA method found that Dompet Dhuafa had a relatively high and stable level of efficiency with a value of 86%. Meanwhile, PKPU has a low and stable efficiency level of 10%.

METHODOLOGY

This research is a quantitative research with a non-parametric approach. The method used in this study is Data Envelopment Analysis (DEA) to calculate the efficiency of waqf fund management by institutions. The DMU used in this study is a zakat institution that manages waqf funds. The source of data in this study comes from the official website of each zakat institution. A total of 15 zakat institutions that published reports on the management of waqf funds during 2013-2021 were the samples in this study.

Table 1: DMU Institutions

No	Institution	2013	2014	2015	2016	2017	2018	2019	2020	2021
1	Dompet Dhuafa	√	√	√	√	√	√	√	√	√
2	Baitul Maal Muamalat	-	-	-	-	-	-	√	√	-
3	Pos Keadilan Peduli Umat (Humanity Initiative)	√	√	√	√	√	√	√	√	-
4	Daarut Tauhid	-	-	-	√	√	√	√	-	-
5	Rumah Amal	-	-	-	-	√	√	√	√	√
6	Sinergi Foundation	-	-	-	-	√	√	√	-	-
7	Yatim Mandiri Surabaya	-	-	-	-	-	√	√	-	-
8	Laznas Dewan Dakwah	-	√	√	-	-	-	-	-	-
9	ACT	-	-	-	-	√	√	-	-	-
10	Inisiatif Zakat Indonesia	-	-	-	√	√	-	-	-	-
11	Mizan Amanah	√	√	√	-	-	-	-	-	-
12	Panti Yatim	-	-	-	√	√	√	√	√	-
13	Griya Yatim dan Dhuafa	-	√	√	√	-	-	-	-	-
14	Lembaga Manajemen Infaq	-	-	-	-	√	√	√	√	-
15	LAZ Muhammadiyah	-	-	-	-	√	√	√	√	-

Source: Zakat Institutions Official Website

With the DEA method, this study compared the results of the analysis with input and output approaches. Through a production approach, this study uses operational costs and assets as inputs and receipts and distribution as output variables. DEA is a method for evaluating the relative efficiency and managerial performance of a production unit or DMU by using several inputs and outputs that are known to be correlated (Purwanto, 2011). Efficiency in DEA ranges between 0 and 1 or 100%. The value of 100% indicates that the efficiency achieved is maximum. Meanwhile, the smaller the value of efficiency, the more inefficient it means (Rusydiana & Nugroho, 2017).

There are two DEA models that are often used, namely the Charnes, Cooper, and Rhodes (CCR) model and the Banker, Charnes, and Cooper (BCC) model which were introduced in 1984 (Coelli et al., 2005). The main difference between the CCR and BCC models is the approach *return to scale* used. The CCR model uses the CRS approach (*Constan Return to Scale)* while the BCC model uses the VRS approach *(Variable Return to Scale*) (Ascarya & Yumanita, 2006). The CRS approach means that when there is an addition of 1 input variable there will be an increase in output of 1 as well, which means it has the same ratio.

The CRS approach can be used when the DMU that is the object of research operates at an optimal scale. But often there is competition and financial constraints that cause inefficiencies in companies. So in 1984 Banker, Charnes, and Cooper formed a new model in the form of DEA with the VRS approach to overcome these obstacles. The VRS approach yields *Pure Technical Efficiency* (PTE). The VRS approach assumes that when there is an additional input, the resulting additional output will not have the exact same ratio, maybe less or more (Ascarya & Yumanita, 2006). By using a CRS approach that produces *Technical efficiency* (TECRS) and VRS for *Pure Technical Efficiency* (TEVRS) will then be calculated *scale efficiency* (SE) by following the formula (Coelli et al., 2005)

RESULTS AND DISCUSSION

Input and Output Variables

Table 2 describes the input and output variables as well as descriptive analysis related to the variables used in this study on waqf fund efficiency performance managed by zakat institutions in Indonesia.

Table 2: Input and Output Variables

Variables	Mean	Min	Max	St. Dev
Input				
Operating Expenses	676.470.819	64.634	2.868.220.477	879.472.528
Assets	26.310.895.380	800.000	235.089.669.301	62.121.740.232
Output				
Collection	4.443.751.687	800.000	34.449.727.582	7.703.562.949
Distribution	2.377.506.967	1.000	13.506.036.966	3.525.990.248

*Note: the number 1,000 is the nominal result of statistical treatment if the report does not include an exact number

Efficiency Level

Reports on the management of waqf funds for 2013-2021 have been analyzed using the DEA method. Table 3 shows descriptive statistics of scores *Technical Efficiency (TE), Pure Technical Efficiency (PTE), dan Scale Efficiency (SE)* management of waqf funds during the study period.

Table 3: Statistical Summary of Efficiency Values each year

Years/Type of Efficiency	Mean	Min	Max	Std.Dev
Panel A (2013)				
TE	0,0357	0,0002	0,0628	0,0282
PTE	0,2027	0,0002	0,6235	0,2843
SE	0,5868	0,0428	0,9999	0,4218
Panel B (2014)				
TE	0,2258	0,0008	1,0000	0,4340
PTE	0,3957	0,0008	1,0000	0,4557
SE	0,6520	0,0235	1,0000	0,4149
Panel C (2015)				
TE	0,2898	0,0009	1,0000	0,3895
PTE	0,3812	0,0009	1,0000	0,3735
SE	0,6780	0,0453	1,0000	0,4276
Panel D (2016)				
TE	0,1944	0,0082	0,9754	0,3367
PTE	0,3357	0,0211	1,0000	0,3859
SE	0,5307	0,0158	0,9959	0,4223
Panel E (2017)				

TE	0,2666	0,0205	1,0000	0,3190
PTE	0,3932	0,1144	1,0000	0,3098
SE	0,6199	0,0304	1,0000	0,4042
Panel F (2018)				
TE	0,2577	0,0305	1,0000	0,3020
PTE	0,4452	0,1330	1,0000	0,3405
SE	0,5595	0,0314	1,0000	0,3751
Panel G (2019)				
TE	0,2791	0,0203	1,0000	0,3646
PTE	0,5247	0,0536	1,0000	0,3948
SE	0,5075	0,0250	1,0000	0,3843
Panel H (2020)				
TE	0,3031	0,0021	0,9761	0,3861
PTE	0,4554	0,0028	1,0000	0,4014
SE	0,7105	0,0252	0,9983	0,4097
Panel I (2021)				
TE	0,6096	0,5377	0,6814	0,1016
PTE	0,7699	0,5399	1,0000	0,3254
SE	0,8387	0,6814	0,9960	0,2224
Panel J (All Years)				
TE	0,2609	0,0002	1,0000	0,3330
PTE	0,4272	0,0002	1,0000	0,3572
SE	0,6155	0,0158	1,0000	0,3713

From the table it can be seen that the highest average value for waqf management efficiency is achieved in 2021*Technical Efficiency (TE), Pure Technical Efficiency (PTE),* nor *Scale Efficiency (SE).* The value for each efficiency is (0.6069) for *Technical Efficiency (TE),* (0, 7699) for *Pure Technical Efficiency (PTE),* and (0.8387) for *Scale Efficiency (SE).* Meanwhile, the lowest efficiency value was in 2013 with PE of (0.0357), PTE of (0.2027), and SE (0.5868). The average efficiency of waqf fund management in 2013-2021 is (0.2609) for TE, (0.4272) for PTE, and (0.6155) for SE.

Table 4: Description of the DMU

No	Institution	DMU
1	Dompet Dhuafa	DMU_1
2	Baitul Maal Muamalat	DMU_2
3	Pos Keadilan Peduli Umat (Human Initiative)	DMU_3
4	Daarut Tauhid	DMU_4
5	Rumah Amal	DMU_5
6	Sinergi Foundation	DMU_6
7	Yatim Mandiri Surabaya	DMU_7
8	Laznas Dewan Dakwah	DMU_8
9	ACT	DMU_9
10	Inisiatif Zakat Indonesia	DMU_10
11	Mizan Amanah	DMU_11
12	Panti Yatim	DMU_12
13	Griya Yatim dan Dhuafa	DMU_13
14	Lembaga Manajemen Infaq	DMU_14
15	LAZ Muhammadiyah	DMU_15

Table 5: Waqf Fund Efficiency Value

DMU	**CRS**								
	2013	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
DMU_1	0,02670	0,01787	0,01820	0,01217	0,02046	0,03135	0,02031	0,02204	0,68143
DMU_2							0,23085	0,97614	
DMU_3	0,05324	0,08574	0,06154	0,00821	0,03286	0,06999	0,02224	0,00211	
DMU_4			1,00000	0,97542	0,49879	1,00000	0,80135		
DMU_5					0,28142	0,35597	1,00000	0,19082	0,53770
DMU_6				0,17674	0,03972	0,07521			
DMU_7						0,04215	0,05117		
DMU_8		1,00000	0,57574						
DMU_9					1,00000	0,43062			
DMU_10				0,33427	0,19350				
DMU_11	0,00021	0,0008	0,00089						
DMU_12				0,02105	0,28948	0,34874	0,18108	0,15548	
DMU_13	0,06282	0,02450	0,08272	0,02748					
DMU_14					0,04360	0,03051	0,02639	0,05365	
DMU_15						0,19251	0,17837	0,72165	
Mean	**0,0357**	**0,2258**	**0,2898**	**0,1944**	**0,2666**	**0,2577**	**0,2791**	**0,2791**	**0,6096**

DMU	VRS								
	2013	2014	2015	2016	2017	2018	2019	2020	2021
DMU_1	0,623461	0,760380	0,401803	0,768551	0,673640	1,000000	0,812037	0,874803	1,000000
DMU_2							0,378579	1,000000	
DMU_3	0,110739	0,185779	0,118617	0,025694	0,114423	0,181903	0,053625	0,002778	
DMU_4			1,000000	1,000000	0,662666	1,000000	0,880158		
DMU_5					0,281455	0,387114	1,000000	0,191276	0,539883
DMU_6				0,485616	0,151194	0,240891			
DMU_7						0,206222	0,319149		
DMU_8		1,000000	0,623259						
DMU_9					1,000000	0,748415			
DMU_10				0,337321	0,194845				
DMU_11	0,000209	0,000801	0,000893						
DMU_12				0,021140	0,290233	0,350117	0,181590	0,155746	
DMU_13	0,076278	0,031613	0,142583	0,047020					
DMU_14					0,170553	0,132993	0,097261	0,228060	
DMU_15						0,204487	1,000000	0,734975	
Mean	**0,2027**	**0,3957**	**0,3812**	**0,3357**	**0,3932**	**0,4452**	**0,5247**	**0,4554**	**0,7699**

DMU	Scale								
	2013	2014	2015	2016	2017	2018	2019	2020	2021
DMU_1	0,042828	0,023505	0,045285	0,015831	0,030370	0,031355	0,025011	0,025191	0,68142
DMU_2							0,609772	0,976144	
DMU_3	0,480795	0,461497	0,518776	0,319373	0,287158	0,384791	0,414759	0,759391	
DMU_4			1,000000	0,975422	0,752697	1,000000	0,910457		
DMU_5					0,999878	0,919557	1,000000	0,997622	0,99596
DMU_6				0,363960	0,262676	0,312234			
DMU_7						0,204412	0,160334		
DMU_8		1,000000	0,923753						
DMU_9					1,000000	0,575380			
DMU_10				0,990968	0,993118				
DMU_11	0,999880	0,999936	0,999973						
DMU_12				0,995910	0,997410	0,996076	0,997177	0,998264	
DMU_13	0,823618	0,775110	0,580181	0,584403					
DMU_14					0,255631	0,229421	0,271325	0,235253	
DMU_15				0,941426	0,178370	0,981866			
Mean	**0,5868**	**0,6520**	**0,6780**	**0,5307**	**0,6199**	**0,5595**	**0,5075**	**0,7105**	**0,8387**

Table 5 shows the efficiency of each DMU each year. By using the Constant Return to Scale (CRS) approach, most DMUs do not achieve optimal efficiency. Meanwhile, by using the Variable Return to Scale approach, more DMUs can achieve higher efficiency scores.

Table 6: Average Efficiency

DMU	Technical Efficiency	Pure Technical Efficiency	Scale Efficiency
DMU_1	0,0945	0,7683	0,10231
DMU_2	0,6035	0,68929	0,79296
DMU_3	0,04199	0,09919	0,45332
DMU_4	0,85511	0,90856	0,92772
DMU_5	0,47318	0,47995	0,9826
DMU_6	0,09722	0,29257	0,31296
DMU_7	0,04666	0,26269	0,18237
DMU_8	0,78787	0,81163	0,96188
DMU_9	0,71531	0,87421	0,78769
DMU_10	0,26389	0,26608	0,99204
DMU_11	0,00063	0,00063	0,99993
DMU_12	0,19917	0,19977	0,99697
DMU_13	0,04938	0,07437	0,69083
DMU_14	0,03854	0,15722	0,24791
DMU_15	0,36418	0,64649	0,70055

Table 5 shows the efficiency values of each DMU. There is no DMU that achieves a maximum efficiency of 1,000. The highest efficiency score was achieved by DMU_4 which is Daarut Tauhiid with a TE score of (0.85511) and PTE (0.90856). Meanwhile, the most inefficient DMU is Mizan Amanah with TE and PTE scores (0.00063). However, the reports published by several institutions that are the object of this research are still incomplete, so there are several statistical treatments to fill in the data gaps by using appropriate proxies.

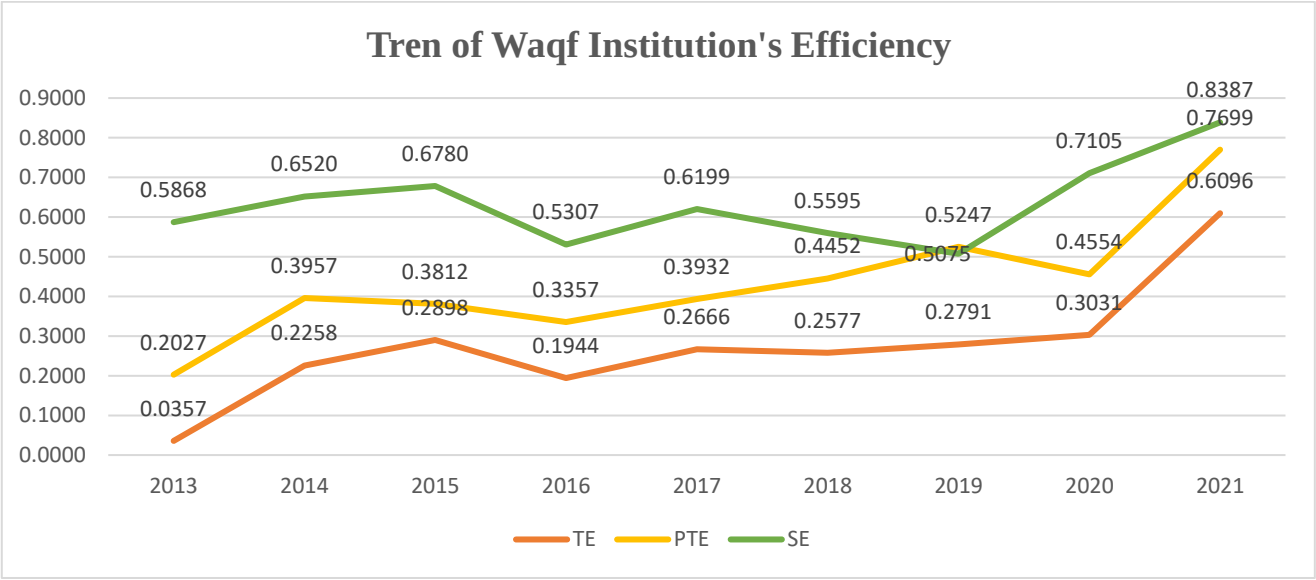

Figure 1: Trends in Efficiency of Waqf Fund

Figure 1 shows the trend of zakat management efficiency that is achieved every year. The graph shows TE values which tend to be below PTE. As seen in the graph on Technical Efficiency (PE) in 2016 and 2020 there was a decrease of (0.0954) and (0.0639). Whereas Pure Technical Efficiency (PTE) showed an increase except in 2016 where there was a decrease of (0.0455). In 2021 there will be a significant increase in efficiency scores for both PE and PTE. Based on the graph, it can be concluded that the efficiency level of waqf management has not yet reached optimal numbers, so evaluation and innovation are still needed for the future.

Based on the analysis, it appears that there are fluctuations in TE from year to year with a decrease at

the end of the observed year in most institutions. At the end of the observation period, DMUs that experienced increased efficiency included DMU_1, DMU_2, DMU_5, DMU_6, DMU_11, DMU_14, and DMU_15. Apart from these seven institutions, their efficiency decreased at the end of the observation period. This shows that it is still necessary to evaluate and improve performance in waqf management to achieve a more optimal efficiency score. Likewise with TE, in PTE there are 7 institutions with increased efficiency at the end of the observation period where these institutions are the same institution. This shows that the seven institutions are able to increase their efficiency. The SE graph shows different things compared to PE and PTE, namely most of the DMUs show an increase. However, if viewed as a whole and analyzed further, the DMUs that have been able to increase efficiency consistently from one period to another are DMU_1 namely Dompet Dhuafa, DMU_2 namely Baitul Maal Muamalat, DMU_7 namely Yatim Mandiri Surabaya, and DMU_11 namely the Indonesian Zakat Initiative. This shows that increasing efficiency from year to year is still a matter of concern.

Potential Improvement

The next analysis carried out is analysis *potential improvement* namely analysis to find out the value that must be achieved so that the management of waqf achieves optimal numbers. The analysis uses the last period of the waqf management institution with data processing separately from other data. The following is the result of data processing of *potential improvement*:

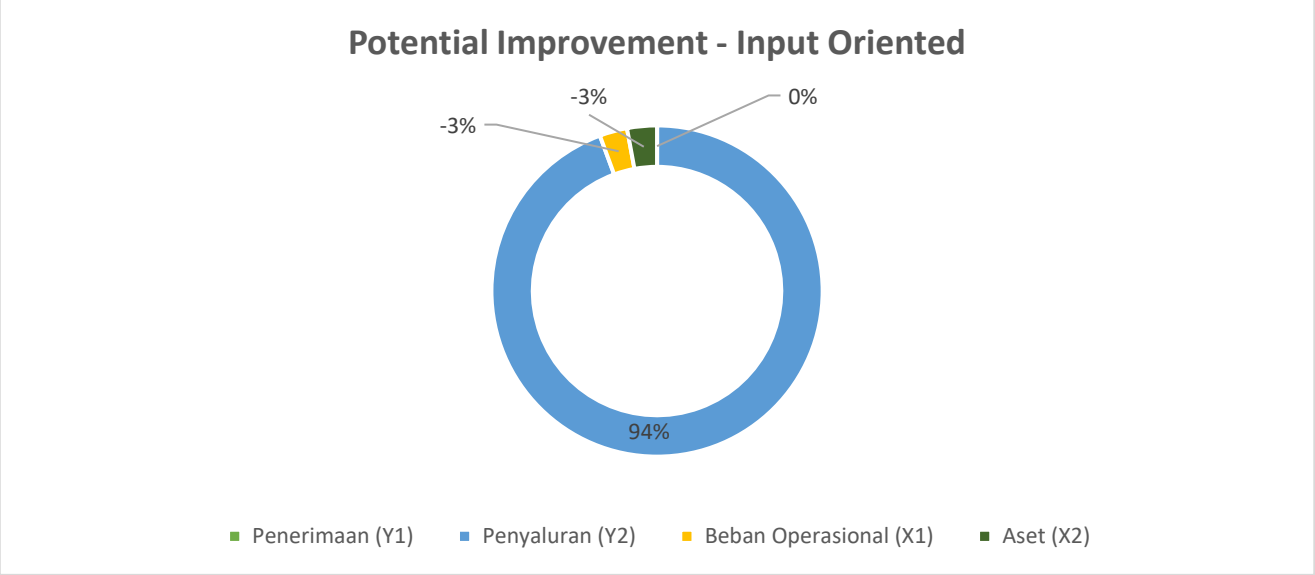

Figure 2: *Potential Improvement Input Oriented*

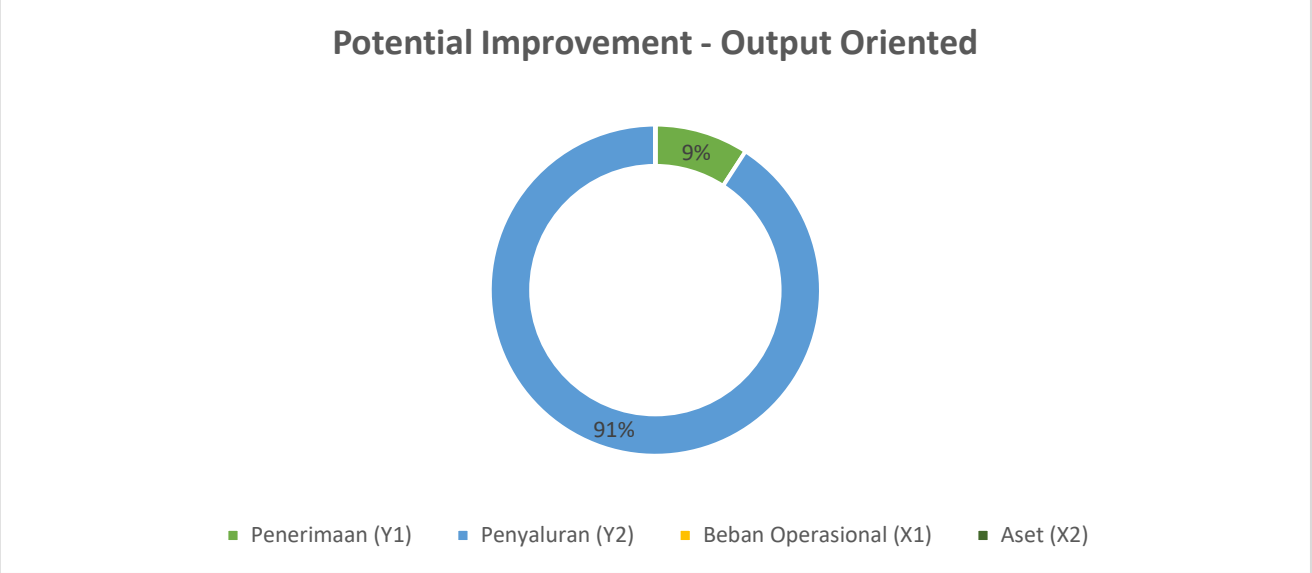

Figure 3: *Potential Improvement Output Oriented*

Figure 2 shows the results of data analysis in sections*potential improvement*. Based on the results, it is known that the biggest cause of inefficiency in both input and output orientation comes from the output variable, namely distribution. In the input-oriented model, there is a need for an increase of 94% in the disbursement variable to achieve optimal waqf management. While from the input side there is an excess of 3% each which causes inefficiency in waqf management. In the output orientation model, it is necessary to increase 91% in distribution variables and 9% in revenue.

Table 7: Slack measurement

Institution	Collection (Y1)	Distribution (Y2)	Operating Expenses (X1)	Asset (X2)
Baitul Maal Muamalat_2020	0%	99%	-2%	-69%
Daarut Tauhid_2019	0%	0%	-25%	-25%
Dompet Dhuafa_2021	0%	46%	-47%	-47%
Human Initiative_2020	0%	90%	-47305%	-47305%
LAZ Muhammadiyah_2020	0%	15%	-39%	-39%
Lembaga Manajemen Infaq_2020	2%	0%	-1764%	-1764%
Panti Yatim_2020	0%	34%	-543%	-543%
Rumah Amal_2021	0%	0%	-86%	-86%
Yatim Mandiri_2019	0%	80%	-1854%	-1854%

Institution	Collection (Y1)	Distribution (Y2)	Operating Expenses (X1)	Asset (X2)
Baitul Maal Muamalat_2020	2%	99%	0%	-65%
Daarut Tauhid_2019	20%	20%	0%	0%
Dompet Dhuafa_2021	32%	63%	0%	0%
Human Initiative_2020	100%	100%	0%	0%
LAZ Muhammadiyah_2020	28%	39%	0%	0%
Lembaga Manajemen Infaq_2020	95%	95%	0%	0%
Panti Yatim_2020	84%	90%	0%	0%
Rumah Amal_2021	46%	46%	0%	0%
Yatim Mandiri_2019	95%	99%	0%	0%

Benchmarking

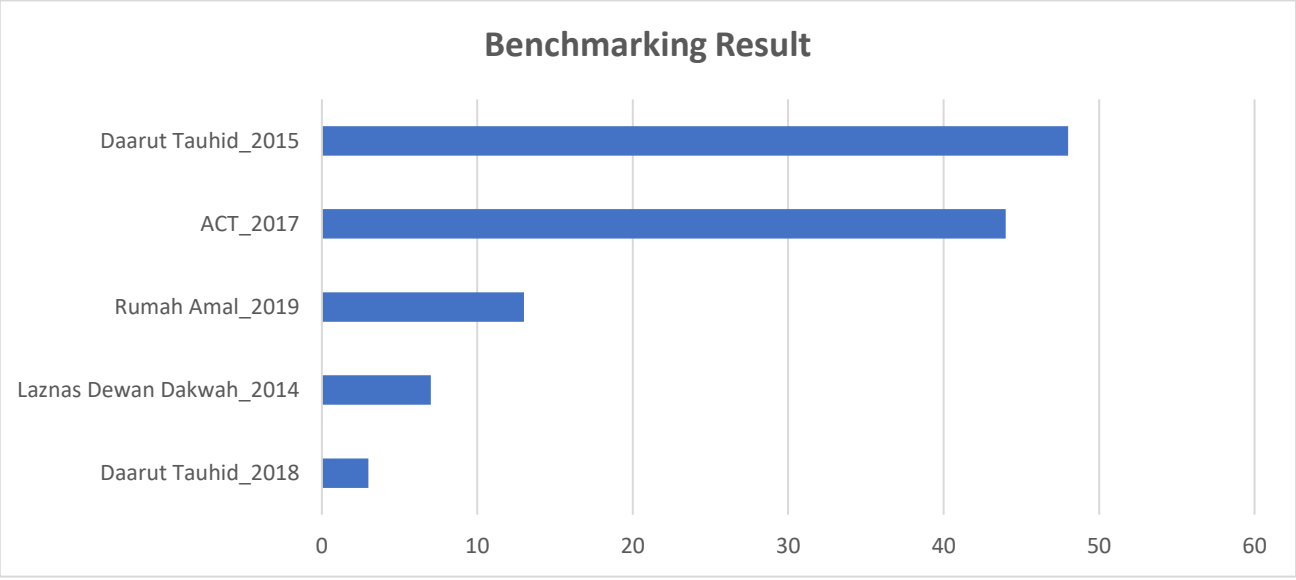

Figure 4: Results of *Benchmarking*

Figure 4 explains the benchmarking of DMUs or institutions that are used as a reference for achieving waqf fund management efficiency, especially for institutions that have not achieved efficiency in their management. Waqf management by Daarut Tauhiid in 2015 became the institution most often used as a reference for other institutions 48 times, then ACT in 2017 44 times, Charity House in 2017 17 times, Laznas Dakwah Council in 2014 7 times, and Daarut Tauhiid in 2018 3 times. Management by Daarut Tauhiid in 2015 became more referrals than in 2018, this shows that management in 2015 was better than in 2018.

FINDINGS

There are several interesting findings from the results of this research that can be used by related parties to make policy decisions in the future. The first finding is that the efficiency of waqf management has fluctuated from year to year but with an increasing trend, and the highest increase in management efficiency by institutions occurs in 2020 to 2021. It can be concluded that waqf management institutions have tried to increase their efficiency. In addition, based on the phenomenon of the Covid-19 pandemic that occurred in early 2020 it had quite an impact on the efficiency of waqf management institutions, where the level of efficiency from 2020 to 2021 is the highest. The results of this study are not relevant to the research of Herindar & Rusydiana (2021) which states that the Covid pandemic has affected the level of efficiency of waqf funds caused by a reduced amount of waqf funds collected and distributed.

The increase in waqf efficiency based on the results of this study could be due to an increase in the collection and distribution of waqf during the pandemic. The results of research from Hasanah (2021) stated that the condition of the Covid-19 outbreak forced people to reduce face-to-face interactions, so that most donations such as Ziswaf were made online by utilizing *ecommerce*. This is also proven by research from Setiadi & Sulistiani (2021) which states that through the method *website, e-money* and *ecommerce*, waqf can easily do waqf, anytime and anywhere, as evidenced by the increasing collection of incoming waqf funds. This proves the important role of digitalization in the management of waqf institutions. As a statement from Fanani et al (2021) explains, with digital waqf in terms of waqf collection and donations it will be more effective because the marketing will be wider throughout the Muslim community. Furthermore, the adoption of waqf digitization can reduce management costs which will certainly be beneficial for waqf fund management institutions to increase their efficiency (Yusof et al., 2014). Berakon's research, et al (2021) found that digitalization played a significant role in attracting youth to contribute to digital waqf transactions.

The second finding relates to the potential for improvement, where the highest inefficiencies come from distribution and collection. Meanwhile, based on the orientation of inputs, assets and operating expenses, it also causes inefficiencies in the management of waqf funds. Based on output-oriented analysis, the results of this study support research from Al Parisi (2017) which examines the efficiency of zakat institutions, where it is stated that the main factor in the inefficiency of zakat institutions can be caused by the distribution of zakat funds that has not been optimal. The same thing was also expressed by Herindar & Rusydiana (2021) that the main factor in the inefficiency of waqf funds comes from the output variables, namely revenue and distribution. Meanwhile, based on input orientation, it can be concluded that waqf institutions have not been able to minimize the use of inputs to maximize output. Furthermore, zakat institutions must be fully corporatized and involve the same pattern of work experience and can generate input savings when an institution manages the collection and distribution of zakat (Wahab & Rahman, 2013).

Thus, it is important for waqf institutions to manage institutions properly to improve their performance. Research from Wahyuni et al (2021) states that good governance and fraud prevention have a significant influence on the performance of zakat institutions. In this case at least institutions implementing good governance need to apply five principles in their operations, namely transparency, accountability, independence, responsibility and justice (Amalia et al., 2018). Furthermore, waqf institutions also need to optimally adopt digitalization to increase their efficiency. As research from Yusof et al (2014) explains that the adoption of digitalization of waqf can reduce management costs which will certainly be beneficial for waqf fund management institutions to increase their efficiency. Setiadi & Sulistiani (2021) also explained that utilization *financial technology* which are currently growing rapidly can contribute to waqf management institutions in the development of waqf.

The third finding is that Daarut Tauhiid is the most referenced by other institutions in the analysis *benchmarking*. This is because Daarut Tauhiid has the

highest management efficiency score compared to other institutions. Meanwhile, the institution with the least efficient score is Mizan Amanah. This can explain the good governance implemented by waqf institutions. With so many institutions referring to an institution, it can be concluded that the institution implements good governance properly, for example by paying attention to institutional accountability and professionalism, and vice versa. Research by Sulaiman & Zakari (2015) states that accountability is one of the bases for measuring, assessing and reporting the performance of managing institutions.

Rahman's research (2015), which examines accountability and transparency in zakat management organizations (OPZ), explains that transparency and accountability are important concerns in the management of zakat by OPZ (Widiastuti et al., (2018); Rusydiana & Firmansyah (2017)). This is because the more transparent and accountable, the higher the level of public trust, which then with high trust in management institutions will foster awareness, compliance and motivation of the community to distribute zakat or waqf. Furthermore, the factors that lead to inefficient management and maintenance of waqf include insufficient funds, poor performance of waqf managers, unregistered waqf land, expired data, and confiscation of property rights by heirs (Rusydiana et al., 2022). Another factor that can affect the difference in the efficiency calculation results, especially in the benchmarking analysis, is the incomplete information in the annual waqf fund report. Therefore, the management of waqf funds needs to be reported every period to support research needs.

CONCLUSION

This study analyzes the efficiency of waqf management by institutions in Indonesia during 2013-2021 using the DEA method. The results of the analysis show that there are fluctuations in the efficiency of waqf management from year to year but with an increasing trend. The highest increase in management efficiency by institutions will occur in 2020 to 2021.

In addition, in the analysis of potential efficiency improvements using data from the last year of each institution, the variable causing the highest inefficiency is distribution followed by revenue. Meanwhile, based on the orientation of inputs, assets and operating expenses, it also causes inefficiencies in the management of waqf funds. Another finding in this study is that Daarut Tauhiid is the most referenced by other institutions in the analysis of *benchmarking*. This is because Daarut Tauhiid has the highest management efficiency score compared to other institutions. Meanwhile, the institution with the least efficient score is Mizan Amanah.

In this study there are limitations including the data used which is data for 2013-2021. However, in data collection there were several obstacles, one of which was due to the management's annual report that was not up to standard and there were differences in the accounts listed in one report and another report. Moreover, in 2021, only 2 out of 15 institutions have published annual financial reports.

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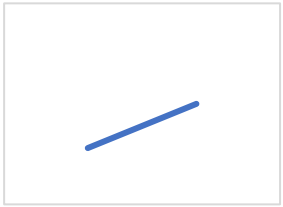
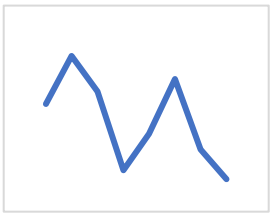
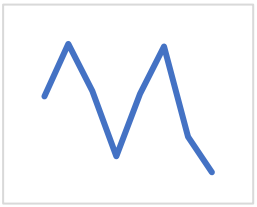
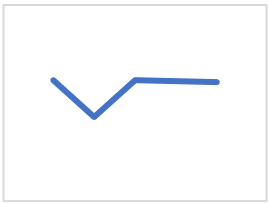
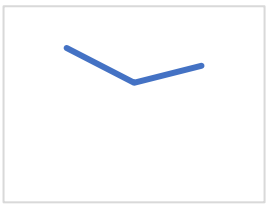
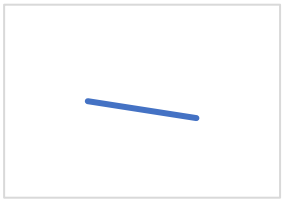
APPENDIX

Trends in Efficiency of Each DMU

DMU	Technical Efficiency	Pure Technical Efficiency	Scale Efficiency
DMU_1			
DMU_2			
DMU_3			
DMU_4			
DMU_5			
DMU_6			
DMU_7			

DMU_8			
DMU_9			
DMU_10			
DMU_11			
DMU_12			
DMU_13			
DMU_14			
DMU_15