

Assessing the Efficiency of Waqf Institutions in Indonesia: A Non-Parametric Approach

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Maintaining waqf performance is important to ensure that waqf assets are well managed. The effectiveness and efficiency of waqf asset management is crucial so that progress can be measured. This study aims to evaluate the efficiency of waqf institutions in Indonesia during the 2015-2021 period using the non-parametric Data Envelopment Analysis (DEA) approach. The research object includes six waqf institutions in Indonesia, with data obtained from the annual reports of each institution. The results show that during the observation period, no waqf institution has managed to achieve the optimum efficiency score. In addition, the efficiency trend of waqf institutions shows a downward trend, especially during the Covid-19 pandemic. Through potential improvement analysis, this study succeeded in identifying the main factors causing the inefficiency of waqf institutions. In particular, output variables such as waqf fund receipts and disbursements become the main focal points for efficiency improvement.

Keywords: Waqf Institution, Efficiency, DEA, Non-parametric

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INTRODUCTION

Waqf is an activity that combines the concepts of savings and investment, as explained by [Pyeman et al. \(2016\)](#). In this context, waqf is defined as the distribution of funds and other resources from consumption, which are then invested as productive assets to generate future income, both for individuals and groups. ([Herindar & Rusydiana, 2022](#)). A key principle in waqf management is to prohibit the sale or conversion into consumptive assets, so that waqf retains its function as a productive asset. This concept reflects that theoretically, waqf should continue to grow and can even create new forms of waqf. ([Faradis et al., 2019](#)). Thus, optimal waqf management becomes an important necessity to carry out the inherent socio-economic function of waqf itself.

In Indonesia, the waqf sector has experienced tremendous growth. This can be identified from the huge potential as well as the significant development in waqf practices in the country. According to the statistical data released by the Waqf Information System of the Ministry of Religious Affairs ([2022](#)), waqf land in Indonesia has been spread across 440.5 thousand locations with a total area of 57.3 hectares. In addition, the potential of waqf, especially cash waqf, is estimated to reach 180 trillion per year. ([BWI, 2022](#)). Indonesia's population also contributes significantly to the development of waqf, based on data from the [World Population Report \(2023\)](#) Indonesia accounts for around 12.7% of the world's total Muslim population. With this number, Indonesia has the potential to become a large and economically strong Islamic country. ([Junaidi & Al-Asyhar, 2005](#)). However, this potential must be managed well through effective waqf governance so that there is no gap between the existing potential and the realization of waqf assets.

According to [Ningsih et al. \(2022\)](#), the lack of socialization and the shortage of professional nazir resources are the main obstacles in the development of waqf today. This finding is in line with the view of [Pyeman et al. \(2016\)](#), which suggests that in terms of management, waqf institutions still suffer from an imbalance in organizational structure. Waqf institutions often only operate with limited staff and knowledge in managing waqf assets. The benefits of waqf are not only limited to assistance to Muslims, but also apply to the entire society. Therefore, maintaining waqf performance is important to ensure that waqf assets are well managed. The effectiveness and efficiency of waqf asset management is crucial so that progress can be measured and to avoid waste that can harm the ummah. For

example, land around mosques that is no longer productive is often left abandoned, even though the land can be utilized, and the proceeds can be used for the maintenance of the mosque. ([Djunaidi & Al-Asyhar, 2006](#)). Therefore, this study will assess the extent to which waqf institutions are efficient in managing waqf assets. Efficiency measurement helps waqf institutions to identify the extent to which their resources are optimally utilized. By assessing efficiency, institutions can identify areas that require improvement to maximize the benefits of each unit of available resources. Efficiency evaluation provides a basis for improving the performance of waqf institutions. By knowing the extent to which the institution is able to achieve optimal results, corrective and improvement measures can be implemented to enhance operational efficiency and achieve the desired socio-economic objectives.

According to [Belanès et al. \(2015\)](#) efficiency is a financial concept that evaluates the extent to which invested inputs can produce outputs or profits. According to [Ali & Ascarya \(2010\)](#) the goal of achieving efficiency means achieving optimal profit. An economic system is more efficient if it can provide more goods and services to society without using more resources. ([Wahab & Rahman, 2011](#)). Efficiency is the most commonly used metric to measure company performance ([Rustyani & Rosyidi, 2011](#)). ([Rustyani & Rosyidi, 2018](#)). The theory of efficiency in Islamic perspective is explained by [Karim \(2012\)](#) that production efficiency in Islam can be done with two approaches. The first approach is production efficiency based on minimal costs. Cost minimization is carried out by producers by reducing production costs with the aim of minimizing average production costs. While the second approach, production efficiency is done with optimal production. Output maximization is done by utilizing its production factors maximally, so that producers can maximize the amount of output produced as effectively and efficiently as possible in their production activities.

Research that focuses on analyzing the efficiency of waqf institutions is still limited, but some studies have been conducted. One of them is a study by [Pyeman et al. \(2016\)](#) who evaluated the efficiency score of the Waqf Department in Malaysia's State Islamic Religion Councils (SIRC) from 2007 to 2012. The data envelopment analysis (DEA) method was used to measure the efficiency index of waqf management. This study also utilizes Malmquist's Total Factor Productivity (TFP) to evaluate the growth and change of waqf institutions between two time periods, i.e., to dissect

productivity into changes in technical score and technical efficiency. Moreover, Malmquist's TFP index provides the additional advantage of allowing the decomposition of productivity change into two components, namely pure technical and scale change. The results show that the SIRC endowment department, with the highest improvement in efficiency over the four study periods, is located in the state of Penang. Therefore, Penang serves as a benchmark or example for other states in Malaysia in improving the efficiency of waqf institution management. The findings make an important contribution in understanding the productivity dynamics of waqf institutions and provide a foundation for further development in this area.

Other works, by [Hasan et al. \(2020\)](#) focused on measuring efficiency in two states, namely Kelantan and Penang, which managed waqf funds through the State Islamic Religion Councils (SIRC) of Malaysia during the period 2008 to 2010. The methods used in this study include Data Envelopment Analysis (DEA) and Malmquist Productivity Index (MPI). The findings showed that only one state, Penang, managed to achieve the full efficiency score and became the benchmark, while Kelantan is still far from the maximum efficiency level. The research also provides recommendations to the Kelantan Waqf Department and Pahang Waqf Department to make major changes, including additional staff, branches, size and other measures. These recommendations are expected to help improve the operational efficiency of waqf institutions in the state. This study makes an important contribution to the understanding of factors affecting the efficiency of waqf institutions and provides practical insights for further improvement and development.

Further, [Herindar & Rusydiana \(2022\)](#) measured the efficiency of waqf funds in zakat institutions in Indonesia by using non-parametric Data Envelopment Analysis (DEA) method. This study shows that during 2013-2020, the efficiency of zakat institutions in managing waqf funds experienced a fluctuating trend. This study will also look at the possibility of improving inefficient programs from input and output variables; in general, the main factor of waqf fund efficiency lies in the output variable, namely the receipt and distribution of waqf funds.

Other studies related to efficiency and productivity measurement on waqf and other Islamic social finance institutions for the example can be found at [Rohmatullah \(2022\)](#), [Putri \(2022\)](#), [Rusydiana et al. \(2022\)](#), [Uula \(2022\)](#), and also [Khamis & Salleh \(2018\)](#) study.

This study tries to fill the gap in research related to the measurement of the efficiency of waqf institutions. The focus of the research will be on waqf institutions in Indonesia during the observation period from 2015 to 2021. This study will also evaluate the impact of the pandemic on the efficiency of waqf institutions. Using the Data Envelopment Analysis approach, this study is expected to make an important contribution in understanding the extent to which waqf institutions have reached their efficiency level. In addition, the results of this study are expected to provide a solid basis for better policy formulation, as well as identify development opportunities and potential improvements for waqf institutions in the future. With a better understanding of the efficiency of waqf institutions, it is expected that strategic steps can be taken to advance the sector in a sustainable manner.

RESEARCH METHOD

This study uses secondary data using random sampling techniques. The sample of this research is waqf funds managed by national zakat institutions spread across Indonesia. The data collected covers the period 2015-2021. However, only 6 institutions are the object of this research because not all waqf institutions publish their financial reports within the observation period. Secondary data were collected from annual financial reports provided on the official website of each institution. The financial statements studied were the income statement and balance sheet. The reports provide information on financial items that will then be used as input and output variables in this study.

This research uses non-parametric quantitative method by using Data Envelopment Analysis (DEA). This research will examine the efficiency level of zakat institution in Indonesia. Data Envelopment Analysis (DEA) method is used to measure the efficiency level of decision making (DMU). The output approach used in this study aims to maximize output while maintaining the same amount of input. The collected and distributed waqf funds are still far from their potential, so output-oriented measurement is more appropriate to measure the efficiency of waqf funds. Operating costs, HR expenses and fixed assets are the input factors chosen in this study, while the waqf funds received and disbursed are the output variables.

DEA was originally initiated by Charnes, Cooper & Rhodes in 1978 and then revised by Banker, Charnes & Rhodes in 1984. The Charnes, Cooper and Rhodes (CCR) DEA model and the Banker, Charnes

and Cooper (BCC) model are two DEA models that are often used today since their introduction in 1984. (Coelli et al., 2005). The Charnes, Cooper & Rhodes (CCR) model, which corresponds to the Constant Return to Scale (CRS) assumption, is one of the two fundamental models in the DEA method. It assumes that the production function is fixed and that changes in the output value of the DMUs produced are constant (equal). Second, the Banker, Charnes & Rhodes (BCR) (VRS) model which corresponds to Variable Return to Scale (VRTS). This second model makes the opposite assumption to the previous model, namely that any change in the output value of a DMU is different from any change in the value of a particular input. Therefore, it can be stated that not every input will produce the same output value. To reflect banking activities, the CRV and VRS models are compared in this study to determine the level of banking efficiency.

The DEA approach is used to measure technical efficiency, including the efficiency of financial institutions, according to a study by Sharma et al. (2013), in a number of empirical investigations related to efficiency. In addition, information about Decision Making Units (DMUs) that are inefficient in utilizing inputs, and what factors cause such inefficiencies can be

obtained by the DEA approach. The DEA approach can also identify the values of input or output variables that must be met or modified to achieve the highest level of efficiency. According to Hadini & Wibowo (2021), DEA can examine a case that has a complex relationship between the inputs and outputs used that cannot be successfully solved by other analytical methods. In addition, the DEA method can also measure the efficiency value using variable inputs and variable outputs produced in a company.

RESULT AND DISCUSSION

Panel Efficiency of Waqf Institutions in Indonesia

Using the DEA method, the efficiency level of waqf institutions in Indonesia is analyzed using the common frontier for each year. The table below contains the average values of Technical Efficiency (TE), Pure Technical Efficiency (PTE), and Scale Efficiency (SE) of waqf institutions in Indonesia from 2015 (Panel A), 2016 (Panel B), 2017 (Panel C), 2018 (Panel D), 2019 (Panel E), 2020 (Panel F), and 2021 (Panel G) and the overall year (Panel H).

Table 1 Efficiency Panel of Waqf Institutions in Indonesia

Years/Type of Efficiency	Mean	Min	Max	Std.Dev
Panel A (2015)				
TE	0,392	0,023	1	0,312
PTE	0,816	0,376	1	0,263
SE	0,540	0,023	1	0,378
Panel B (2016)				
TE	0,414	0,016	1	0,398
PTE	0,873	0,236	1	0,285
SE	0,504	0,016	1	0,393
Panel C (2017)				
TE	0,395	0,016	1	0,420
PTE	0,610	0,078	1	0,406
SE	0,689	0,016	1	0,355
Panel D (2018)				
TE	0,286	0,006	1	0,336
PTE	0,356	0,006	1	0,370
SE	0,871	0,470	1	0,189
Panel E (2019)				
TE	0,410	0,000	1	0,390
PTE	0,429	0,000	1	0,407
SE	0,964	0,879	1	0,043

Panel F (2020)				
TE	0,374	0,015	1	0,405
PTE	0,393	0,016	1	0,424
SE	0,932	0,865	1	0,049
Panel G (2021)				
TE	0,376	0,015	1	0,402
PTE	0,393	0,016	1	0,420
SE	0,953	0,904	1	0,042
Panel H (All Years)				
TE	0,378	0,000	1	0,384
PTE	0,553	0,000	1	0,423
SE	0,779	0,016	1	0,317

Based on the acquisition of efficiency level with TE, PTE and SE assumptions, it is known that in waqf institutions in Indonesia, the lowest TE value is obtained in 2019 (0.000) and the highest is in 2015 (0.023). Furthermore, for the PTE assumption on waqf institutions in Indonesia, the lowest value is obtained in 2019 (0.000) and the highest in 2015 (0.376). For the SE

assumption in waqf institutions in Indonesia, the lowest value is in 2016 and 2017 (0.016) and the highest in 2021 (0.904). Therefore, it can be concluded that the average efficiency of waqf institutions in Indonesia based on their efficiency score fluctuates from year to year.

Efficiency Score of Waqf Institutions in Indonesia

Table 2 Average Efficiency Score of Waqf Institutions in Indonesia

DMU	CCR Model	BCC Model	
	CRS	VRS	SE
Dompot Dhuafa	0,889	0,913	0,974
Griya Yatim and Dhuafa	0,656	0,951	0,683
Indonesia Zakat Initiative	0,101	0,340	0,691
LAZ Muhammadiyah	0,013	0,434	0,549
Indonesian Orphanage	0,384	0,424	0,871
Yayasan Yatim Mandiri Surabaya	0,226	0,255	0,906

Based on the table of average efficiency scores of waqf institutions in Indonesia each year, it is known from the assumptions of CRS, VRS, and SE that there is no waqf institution in Indonesia that reaches the optimal level of efficiency (1,000) during the 7-year observation period. However, when viewed from the highest CRS score, Dompot Duafa achieved the highest average CRS score (0.889), and the lowest average CRS score was obtained by LAZ Muhammadiyah (0.013). Then, further analysis is needed through the BCC Model through VRS and SE assumptions. Based on the highest VRS assumption, it is known that Griya Yatim and Duafa achieved the highest average VRS score (0.951). Meanwhile, the lowest VRS score is Yayasan Yatim

Mandiri Surabaya with an average VRS value of 0.255. The highest SE assumption was achieved by Dompot Duafa (0.974), while the lowest SE score was achieved by LAZ Muhammadiyah (0.549).

Score Efficiency Trend of Waqf Institutions in Indonesia

This study also analyzes the efficiency trend of waqf institutions in Indonesia, with the aim of seeing the extent to which waqf institutions operate optimally. The following is a graph of the efficiency trend of waqf institutions in Indonesia.

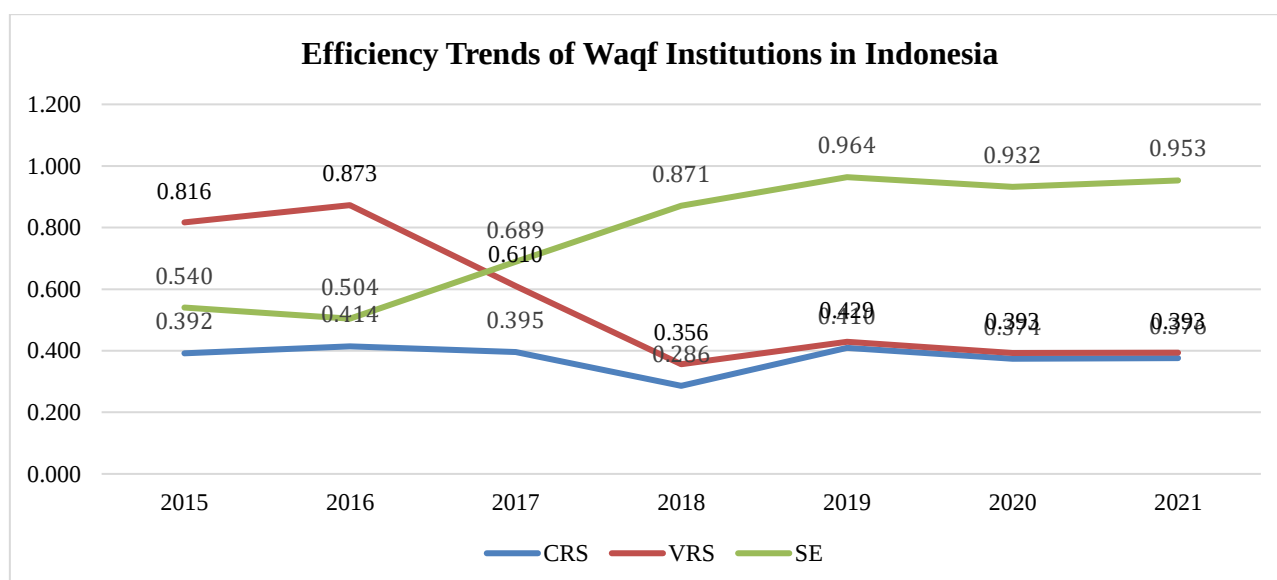


Figure 1. Efficiency Trends of Waqf Institutions in Indonesia

The figure above explains the efficiency trend of waqf institutions in Indonesia from 2015 to 2021. Based on the efficiency graph, it is known that Technical Efficiency (CRS), Pure Technical Efficiency (VRS), and SE show movements that tend to fluctuate from year to year. Based on the TE assumption, the efficiency value of waqf institutions in Indonesia had decreased from 2017 to 2018, then increased and tended to stabilize until 2021. Furthermore, in Pure Technical Efficiency (VRS), the efficiency value of waqf institutions in Indonesia experienced a significant decline from 2016 to 2021.

While in SE, the efficiency value of waqf institutions in Indonesia has increased from 2016 to 2021.

Efficiency Score of Waqf Institutions during the Covid-19 Pandemic

The emergence of the Covid-19 pandemic at the end of 2019 has been a major disaster for the financial sector, including waqf institutions. The figure below provides information on the efficiency level of waqf institutions in Indonesia caused by the Covid-19 pandemic.

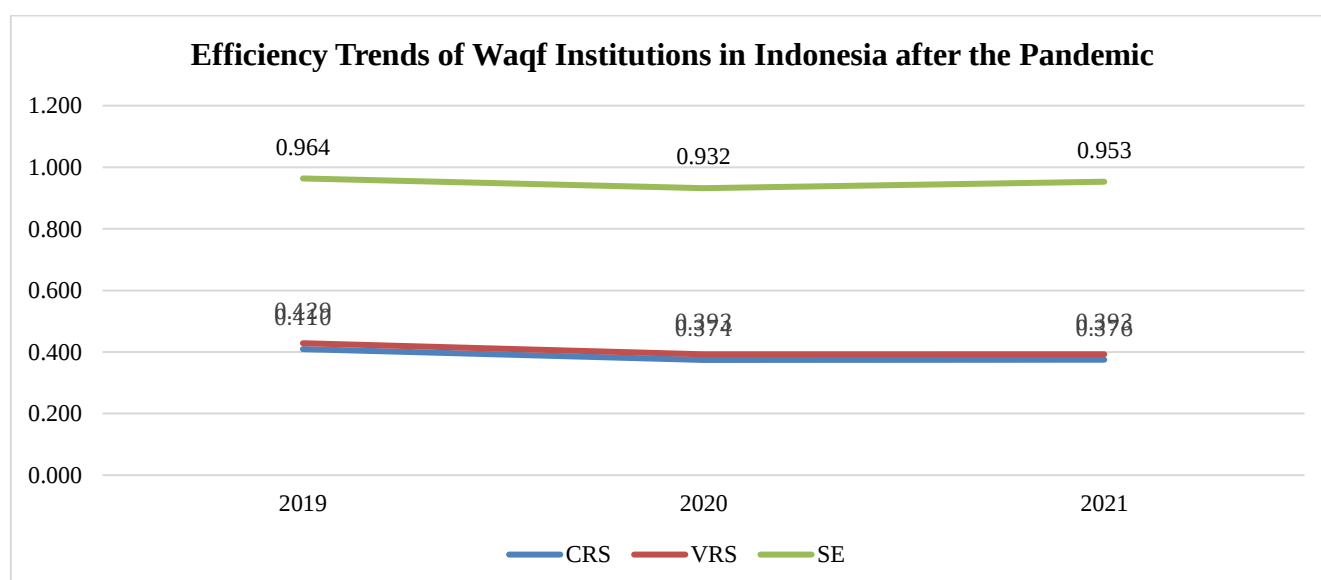


Figure 2. Efficiency of Waqf Institutions in Indonesia during the Covid-19 Pandemic Period

The figure above represents the level of efficiency of Waqf Institutions in Indonesia during the Covid-19 period, namely from 2019-2021. It can be concluded that the efficiency of waqf institutions in

Indonesia in CRS (Constant Return to Scale) and VRS (Variable Return to Scale) analysis tends to be stable. In 2020, waqf institutions in Indonesia showed a decreasing level of efficiency compared to 2019. This is due to the

emergence of the Covid-19 pandemic at the end of 2019 and began to spread massively in 2020. The decline in the efficiency trend of waqf institutions in Indonesia continues to occur until 2021.

Potential Improvement

By using the DEA method, the results of potential improvements are known which are used to

obtain the value that needs to be improved by waqf institutions in Indonesia to be able to achieve the optimum level of efficiency, which then results in what variables must be improved by waqf institutions in Indonesia. By using 2021 as the last year of observation which is then analyzed separately with the previous years to get an overview of the value that must be achieved.

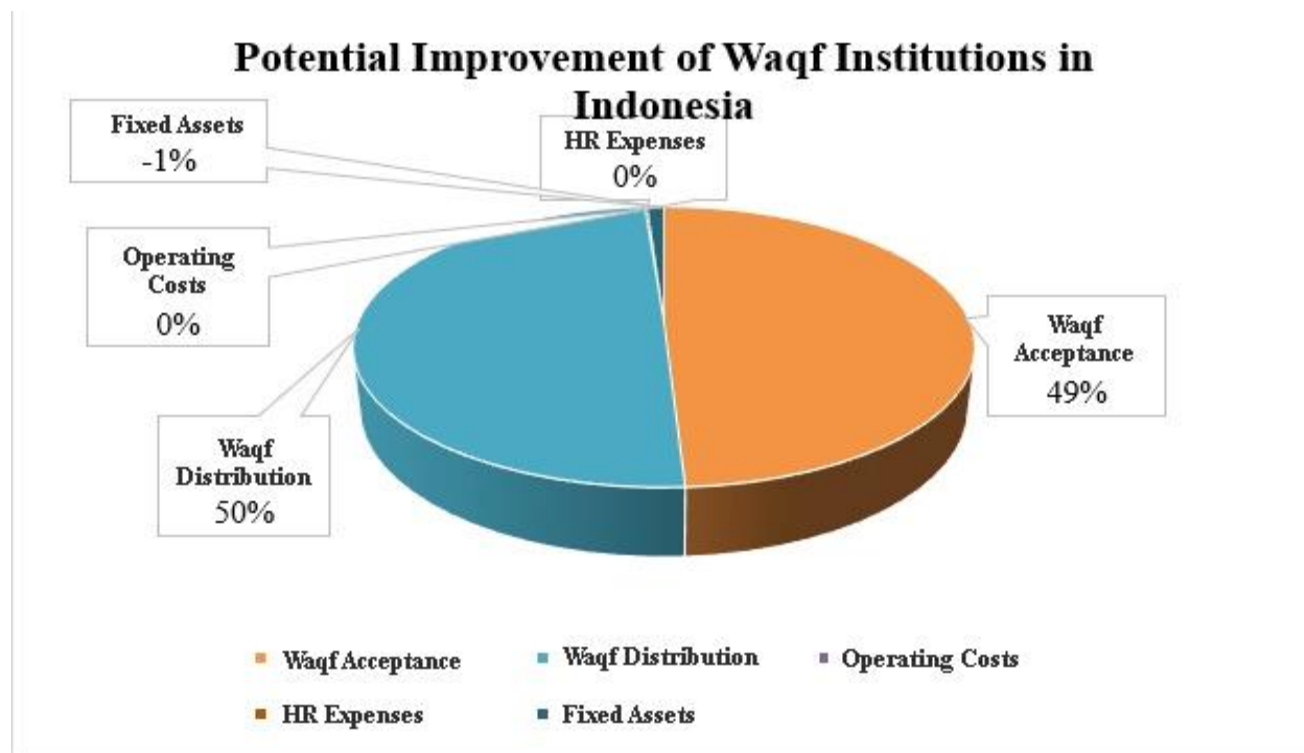


Figure 3. Potential Improvement of Waqf Institution

The figure above provides general information regarding the input and output variables that are the source of inefficiency of waqf institutions in Indonesia. The input variable that causes inefficiency in waqf institutions in Indonesia only comes from fixed assets. Furthermore, on the output variable, the source of inefficiency of waqf institutions in Indonesia is the receipt and distribution of waqf. Based on the potential improvement analysis, if waqf institutions in Indonesia want to achieve the optimal level of efficiency, the fixed assets need to be reduced by 1%. Then, the output variables of waqf revenue and distribution need to be increased by 49% and 50%, respectively.

Findings

Research on the efficiency of waqf institutions in Indonesia over the period 2015 to 2021 found several aspects that need to be examined. The main finding is that no waqf institution in Indonesia managed to reach the optimum level of efficiency during the period. The

efficiency analysis shows a general downward trend in the efficiency of waqf institutions in Indonesia from year to year. Although no waqf institution has yet reached the optimum efficiency level, the CCR model highlights that Dompot Duafa is the waqf institution with the highest efficiency score, while LAZ Muhammadiyah shows the lowest efficiency level. The BCC model, on the other hand, shows that Griya Yatim & Duafa and Dompot Duafa have the highest pure technical efficiency among other waqf institutions. It is important to deepen the understanding especially with regard to the BCC model, as it may indicate that waqf management institutions may not have been operating optimally in technical aspects. Coelli et al. (2005) argue that imperfect competition, financial constraints, government regulations, etc. may cause decision-making units to operate at the optimal scale. Abas & Raji (2018) also emphasized that good waqf asset management is the most important factor that must be implemented appropriately and sustainably in order to increase value.

In addition, good and efficient waqf management can provide more rewards and opportunities to maximize social or religious benefits.

The second finding in this study highlights the relatively stable trend in the efficiency of waqf institutions in Indonesia during the Covid-19 pandemic period, as illustrated in Figure 2. Technical Efficiency (TE), Pure Technical Efficiency (PTE), and Scale Efficiency (SE) show stability with a downward trend. This proves that the Covid-19 pandemic has adversely affected the efficiency level of waqf institutions. This decline is believed to be related to the lack of waqf funds that can be collected and channeled during the Covid-19 pandemic, as stated by Herindar & Rusydiana (2022). Thus, a breakthrough is needed to increase the efficiency level. Therefore, in the face of this condition, innovations and breakthroughs are needed to increase the efficiency level of waqf institutions. It is important to remember that the success of waqf fundraising does not only depend on the fact that Indonesia has the largest Muslim community, but also requires effective marketing activities (Abdulkareem et al., 2015). (Abdulkareem et al., 2020).. Waqf institutions need to develop effective media to assist in marketing and fundraising activities. According to Fanani et al. (2021) the massive adoption of technology as a medium for collecting waqf funds can be a considered solution. This step is expected to provide significant efficiency for waqf fund management institutions. Moreover, digitalization can also encourage youth participation in digital waqf transactions. (Berakon et al., 2022). Therefore, special attention needs to be paid to the development of technology and more effective marketing strategies to overcome the efficiency challenges faced by waqf institutions during the pandemic.

The next finding reveals the potential for improvement in the efficiency of waqf institutions in Indonesia, especially in the last year of the study, 2021, as illustrated in Figure 3. The analysis of potential improvements shows that to achieve the optimal level of efficiency, waqf institutions need to reduce fixed assets by 1%. In addition, an increase of 49% and 50% is needed in the output variables of waqf revenue and distribution, respectively. This suggests that waqf institutions need to adopt improvement strategies, especially in managing fixed assets and increasing efficiency in the collection and distribution of waqf funds. Inefficient institutions require the implementation of innovations that are appropriate to the challenges faced. This finding is in line with research by Fanani et al. (2021), which highlights that the lack of

collection and distribution of waqf funds is a wake-up call to consider the widespread integration of technology in waqf practices. For example, Mohd Thas Thaker (2018) showed that digital waqf platforms are positively received by Malaysians, particularly in terms of convenience and usability. Perceived usefulness and ease of use are factors that influence donors' intention to donate through digital platforms. These findings provide valuable insights for waqf institutions in Indonesia to consider utilizing digital platforms as an alternative way to increase fundraising and improve the efficiency value of waqf institutions.

CONCLUSION

The results show that throughout the observation period, no waqf institution has been able to achieve the optimum efficiency score. In addition, there is a downward trend in the efficiency of waqf institutions, especially during the Covid-19 pandemic that hit at the end of 2019 to 2021. This pandemic has a negative impact on the efficiency of waqf funds due to a decrease in funds raised and channeled. Furthermore, the analysis of potential improvements in the 2021 data successfully identified the main factors causing the inefficiency of waqf institutions. Output variables such as waqf fund revenue and disbursement become the main focus for efficiency improvement. Therefore, an improvement of 49% and 50% is required to achieve a more optimal level of efficiency, respectively. These findings provide important direction for stakeholders and policymakers in an effort to improve the performance of waqf institutions in Indonesia, especially in the face of external challenges such as the pandemic.

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