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Evaluating the Efficiency of Waqf Fund Management in Indonesia's Leading Philanthropic Institutions (2018–2022)

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Abstract

Purpose *– This research aims to measure the efficiency of waqf funds managed by philanthropic institutions in Indonesia from 2018 to 2022, using four prominent waqf institutions as samples: Dompet Dhuafa, Baitulmaal Muamalat, Waqf Al-Azhar, and Waqf Salman.*

Methodology *- The method used is to use a quantitative approach using non-parametric Data Envelopment Analysis (DEA) data analysis techniques. The efficiency measurement is obtained from the using input variables (human resource costs, operational costs, and fixed assets) and output variables (collection and distribution of waqf funds).*

Findings *- Findings reveal variations in waqf fund management efficiency over the years, with minimal impact from the COVID-19 pandemic. Dompet Dhuafa emerged as the most efficient institution and a benchmark for other waqf organizations. The practical implications of waqf fund efficiency are significant for supporting broader social and economic goals, including poverty alleviation, educational advancement, healthcare improvement, and infrastructure development. Efficient management of waqf funds ensures that these resources contribute maximally to societal welfare, aligning with Indonesia's economic and social development objectives.*

Keywords: *Efficiency; waqf institutions; Data Envelopment Analysis (DEA); Islamic philanthropy; Nonprofit efficiency*

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1. INTRODUCTION

The Indonesian government established the waqf law as detailed in Article 5 of Law No. 41 of 2004, which underscores waqf's role in maximizing the economic potential of property, fulfilling religious needs, and contributing to the advancement of general welfare. Additionally, waqf serves an important distributive function, promoting inclusive economic growth. As a sharia financial instrument, waqf plays a crucial role in the social and economic development of society (Putra & Simpen, 2020). Waqf management institutions, referred to as Nazhir in Indonesia and known as Mutawalli in other Muslim countries, act as administrators, collectors, managers, and distributors of waqf funds to benefit the public (Suryamah & Lita, 2021). According to the 2019 World Giving Index and data from the National Committee for Sharia Economics and Finance (KNEKS), Indonesia ranks among the most generous countries (BWI, 2022).

Waqf, as described by Chowdhury, Fahmi, & Ibrahim (2011), refers to the Islamic practice of endowing assets or property for charitable purposes, managed by appointed institutions. While Islamic scholars traditionally limited waqf assets to immovable property such as land and buildings (Khamis & Salleh, 2018), they also permit waqf assets to be movable, provided these assets are managed to optimize benefits for waqf beneficiaries.

As charitable institutions, waqf organizations are foundational to economic systems, addressing basic needs and providing vital infrastructure for communities (Fawwaz et al., 2021; Sadeq, 2002; Islahi, 2003). They are often regarded as pillars of community growth and welfare enhancement, contributing to equality, poverty reduction, and national development (Mahri et al., 2022; Kakah et al., 2020). Therefore, efficient management of waqf assets is essential to maximize the benefits provided to beneficiaries (Saad & Anuar, 2009; Tohirin & Hudayati, 2011; Saifuddin et al., 2014; Khamis & Salleh, 2018).

The potential for waqf in Indonesia is considerable, with an estimated annual value of up to 2000 trillion rupiah and 1.5 billion square meters of land waqf across approximately 400,000 locations (BWI, 2020). However, optimal management of cash and land waqf assets is crucial, as these assets represent significant investments with the potential to improve community welfare (Adirestuty et al., 2021). Despite its vast potential, public awareness of waqf remains low, as evidenced by the National Waqf Literacy Index, which scored an overall 50.48, falling into the "low" category. This includes a basic understanding score of 57.67 and an advanced understanding score of 37.97 (BWI, 2020). Furthermore, in 2017, BWI reported a total waqf collection of only 400 billion IDR (Saptono, 2019), indicating that the collection remains far from reaching its potential.

The efficient and optimal use of cash waqf is essential to support Indonesia's future development (Arzam et al., 2023). Cash waqf investments can be directed to enhance social welfare, improve education and healthcare, promote economic empowerment, strengthen religious and social infrastructure, and create social benefits for the community (Noordin et al., 2017). Managers of waqf institutions bear the responsibility to measure and report performance systematically to ensure transparency and accountability to funders. Therefore, it is critical to encourage stakeholders, including Nazhir, to enhance efficiency and avoid errors, corruption, or resource mismanagement (Noordin et al., 2017).

Assessing the efficiency of waqf institutions is a fundamental step in improving waqf management. This study evaluates the efficiency of waqf institutions overseeing waqf funds in Indonesia. Existing literature on waqf efficiency includes six primary studies that apply Data Envelopment Analysis (DEA) to measure waqf efficiency (Juliana et al., 2022; Rusydiana et al., 2022; Herindar & Rusydiana, 2021; Hasan et al., 2020; Pyeman et al., 2016; Bakri et al., 2020).

Building on this literature, this study measures the efficiency of waqf funds managed by Indonesian waqf institutions from 2018 to 2022, using financial reports from institutions such as Dompet Dhuafa, Salman Waqf, Al-Azhar Waqf, and Baitulmaal Muamalat, recognized as top Nazhir managers by the Indonesian Waqf Board (BWI) in the Waqf Core Principles Implementation Index (IIWCP). This research identifies input and output variables requiring improvement to enhance waqf fund performance.

Using the DEA approach, this research extends the efficiency analysis to include data up to 2022. The objective of this study is to analyze the financial performance efficiency of waqf institutions in Indonesia, evaluate cost efficiency, and explore opportunities for optimizing waqf fund collection and distribution. This research aims to serve as a valuable guide for waqf institutions in planning and decision-making, provide a reference for further studies on waqf institutions' financial performance, and promote public awareness to build trust and encourage donations to waqf institutions.

The second section of this research discusses the theoretical framework and reviews relevant studies. The third section outlines the research methodology, followed by a presentation and discussion of findings in the fourth section, and a final section summarizing conclusions, recommendations, and implications for future research.

2. LITERATURE REVIEW

2.1. Waqf Concept

Etymologically, the term "Waqf" has its origins in the Arabic word "Waqafa." The word "Waqafa" means "to hold back," "stop," "stay in place," or simply remain standing (Lubis et al., 2010). The concept of waqf uses this term to protect the assets from damage, sales, and other activities that conflict with the waqf's objectives (Alam et al., 2024). In addition, the term "hold" signifies the concept of withholding the benefits and results of waqf assets from only those who are eligible for them. Thus, waqf can be interpreted as an action to hold assets that provide benefits and remain eternal, hand over these assets to places determined by the Shari'a, and be prohibited from being free in their use (Juliana et al., 2023).

Islamic charities like waqf are recommended because the rewards will not be interrupted as long as the assets donated are still used by others and because the assets donated are Allah's property and cannot be owned, sold, inherited, or given to anyone. Waqf is a form of Islamic philanthropy, along with zakat, donations, and alms (Kasdi, 2016). The role of waqf is very efficient in optimizing productivity and has the potential to reduce unemployment as well as overcome economic stagnation (Zahro' & Agustin, 2022). Waqf is maintained to avoid damage, sales, and actions that are not in accordance with the purpose of the waqf because the benefits and results are retained and only for the entitled parties (Jamal et al., 2020).

Waqf is a social charity practice in which someone transfers ownership of an asset to be managed and utilized by the community. The waqf process involves the transfer of resources for productive activities, describing waqf as a form of savings and investment (Juliana et al., 2024). The goal of waqf is to achieve a more even distribution of wealth and improve community welfare in the long term through various non-income aspects such as the provision of public facilities, health services, and educational institutions (Paksi et al., 2018; Napitulu et al., 2021).

According to research conducted by Amrullah et al. (2022), four leading Islamic scholars put forward the concept of waqf with various interpretations. Abu Hanifah stated that waqf is the act of retaining material objects owned by the wakif (giver of waqf) by providing zakat (waqf) benefits according to wishes for the sake of virtue. Al-Dasuqi, also known as Maliki, defines waqf as the process of making the benefits of an owned property, even rentable, available to those who have an agreement for a certain period of time based on the wishes of the wakif. Al-Sharbini, who follows the views of the Shafi'iyah school, explains that waqf is the management of assets that provide benefits and material goods and are eternal, with management rights handed over to the *Nazhir*, which is permissible. Meanwhile, Al-Kabisi, who comes from the Hanabilah circle, explains that waqf is a process of retaining the origin of assets (for example, land) and giving charity to the benefits it produces. Even though there are differences in definitions, these scholars agree on the basic principles of giving waqf, which originate from the Al-Quran and As-Sunnah.

The arguments underlying the existence of waqf are found in the understanding of the Al-Quran and Sunnah verses. Although there is no verse in the Koran that explicitly mentions waqf, its interpretation is related to pious deeds, as in HR. Muslim:

"From Ibn Umar ra., said that, Umar ra.'s friend. He obtained a plot of land in Khaibar, then went to Rasulullah to ask for guidance. Umar said, O Messenger of Allah, I have obtained such good wealth, so what do you order me to do? Rosululloh answered: If you like, you keep (essentially) the land, and you donate the proceeds. Then Umar did sadaqah, not sell, inherit, or give away. Ibn Umar said: Umar gave it to the poor, relatives, slaves, Ibn Sabil, Sabilillah, and guests. "And it is not prohibited for those who control the waqf land (the administrators) to eat from the proceeds in a good (appropriate) manner or to eat without the intention of accumulating wealth." (HR. Muslim).

From this hadith, it is explained that Umar bin Khattab used the proceeds from his land to make donations to the poor and their relatives, free slaves, and help individuals in need, such as Ibn Sabil, Sabilillah, abandoned people, and guests. Thus, it can be implicitly concluded that Umar bin Khattab invested in the ownership of the land that was donated. Then the results are distributed to the groups mentioned previously.

2.2. Efficiency Concept

According to Alexander (2009), efficiency is the ability to achieve goals by using resources optimally. In various contexts, efficiency is defined as the level of success in achieving goals by utilizing available resources effectively. This concept is important in various fields, such as engineering, industry, and resource management. In its application, it can increase productivity, reduce waste, and achieve optimal results with minimal costs. In addition, efficiency measurement

involves input, output, and efficiency standard variables, with input-output comparison as the method (Parisi, 2017).

Farrell (1957) first introduced the concept of efficiency measurement, which was based on the theory developed by Koopmans (1951) and Debreu (1951). According to Farrell, the efficiency of a company can be explained in a simple way, namely by considering several inputs. Farrell identified two main components of corporate efficiency, namely technical efficiency, which describes the company's ability to produce maximum output with available inputs, and allocative efficiency, which assesses the optimal use of inputs through prices and production technology. These two concepts are then combined to form a measurement of total economic efficiency (Tanjung & Devi, 2018).

Discussions about efficiency emphasize the optimal use of resources to achieve certain goals, especially in an economic context. Economic efficiency describes the ability to achieve maximum results with limited resources, which involves appropriate resource allocation, efficient use of technology, and rational decision-making (Pasour et al., 2016). This concept also includes other aspects such as internal organizational efficiency, market efficiency, and efficiency in overall resource allocation. By understanding and implementing this efficiency concept, economic entities can improve their performance and productivity and achieve economic goals in the most effective and efficient way.

The basic concept of efficiency comes from microeconomic theory, especially production theory, which aims to understand how producers can achieve maximum profits from their production (Karim, 2016). Production theory explains the company's behavior in using inputs to produce output that can be sold (Case et al., 2014; Mankiw, 2021), so that it can show the company's ability to maximize profits and efficiency. Efficiency can be achieved when a company can maximize output with the same input or use minimal input to achieve the same output level (Karim, 2016).

According to Ali & Ascarya (2010) and Rusmini & Aji (2019), there are three types of efficiency. First, technical efficiency (TE), which describes the ability of a business unit to produce optimal output using existing inputs, second is allocative efficiency (AE), which reflects the ability of a business unit to use inputs optimally based on prices and production technology. If input is used well to produce output, then allocative efficiency is considered good. Third, economic efficiency (OE), which is a combination of technical and allocative efficiency, is when a business unit is able to minimize production costs to produce a certain output by using technology that is generally used and prevailing market prices.

Thus, efficiency has significant relevance, both for organizations that prioritize profit and those that do not. Efficiency is interpreted as carrying out tasks correctly. Generally, it is related to the way companies carry out activities to achieve their goals. Therefore, the concept of efficiency is often evaluated by considering costs as input and profits as output (Nurasyiah et al., 2019).

2.3. The concept of efficiency according to Islam

The term efficiency in the conventional economic sense is not found in Islamic literature. (Karim, 2012). In Islamic literature, this concept is known through several understandings, one of which is the effort to achieve the best results. Since the beginning of the development of Islam, the Prophet Muhammad ﷺ always taught his friends to carry out all work (charity) as effectively and efficiently as possible. With the various understandings taught by him, the friends understood how to apply the concept of efficiency correctly (Cholik, 2013).

This concept also includes the idea of doing useful work and abandoning useless work. Allocative efficiency, or Pareto efficiency, was formulated first in Islamic economics. This is extracted from the words of Ali Ibn Abi Talib in the book Nahjul Balaghah: "Let not the welfare of one of you increase, but at the same time the welfare of the others decrease." This friend's words are the basis for the fact for the fact that Islamic economics prohibits increasing personal welfare, which causes a decrease in the welfare of others (Mardiyah, 2018).

The concept of efficiency is implicitly alluded to in the Qur'an, Surah Al-Isra' verse 27, which states that people who waste money are considered to be Satan's brothers and sisters who are ungrateful to their God. This verse emphasizes the importance of avoiding wasteful and excessive behavior when spending wealth. According to Ibn Mas'ud, the term "tabzir" in this verse refers to the improper expenditure of assets. Individuals who commit waste are considered to be Satan's brothers in waste, who tend to commit stupid and immoral acts against Allah. Satan, as a negative example, refuses to be grateful for the blessings given by Allah and disobeys Him, even acting against His commands (Katsir, 2015a). In this verse, there is a prohibition on humans being wasteful or excessive. In the Qur'an, Allah Subhanahu wa ta'ala explains the teachings about efficiency by emphasizing Islam as a warning against excessive luxury behavior. The concept of efficiency is also mentioned in the Qur'an, Surah Al-Isra' verse 29: "And do not make your hands shackled to your neck and do not stretch them too much, because then you will become disgraced and regretful." Allah Subhanahu wa ta'ala revealed this verse to teach His servants to be economical in life, namely forbidding stinginess and excess. In this verse, Muslims are prohibited from withholding or refusing to give something to those who ask for or need it, and they are prohibited from excessive spending of wealth. Stinginess will make someone disgraced and shunned, while excessive spending of wealth will cause regret because they have nothing left to spend (Katsir, 2015b).

Thus, to achieve efficiency, Muslim producers must try to use input wisely without overdoing it or being too restrained, so as to produce optimal output. This involves using reason and conscience to understand and adapt to existing situations. In addition, Muslim producers must also ensure that their production complies with Sharia principles and provides benefits to society.

2.4. Data Envelopment Analysis (DEA)

Data Envelopment Analyst (DEA) is a non-parametric method that uses linear programming to assess the efficiency of the Decision Making Unit (DMU). According to Ayuningtyas (2020), there are different input and output variations in the DMU. According to Rahmawati (2017), DEA is

used to meet the need for efficiency measurements that involve many inputs and outputs without the need to convert input or output values into uniform units.

In implementing data envelope analysis (DEA), there are two main aspects to focus on, as mentioned by Savira and Abdullah (2019). First, the input and output variables must have positive values. Second, the efficiency value must be normal and cannot be exceeded. The use of DEA has several advantages, as explained by Ayuningtyas (2020). DEA can measure many input and output variables without the requirement of a relationship between the two and allows input and output variables to have different units of measurement without conversion or adjustment of values.

Meanwhile, the application of DEA in research involves two main models. The first model is the CCR model (Charnes, Cooper, and Rhodes), which is the initial model in DEA theory. This model, which is a type of nonlinear (nonconvex) programming, provides a new definition of efficiency that is used to evaluate the activities of non-profit entities participating in public programs (Charnes et al., 1978). At the same time, this model is based on the assumption that the ratio of additional input and output is constant or has a fixed return to scale. Then, the second model is the BCC Model (Banker, Charnes, and Cooper), which is a development of the CCR Model. The BCC model assumes that the ratio of input additions is not always the same as output additions (Cooper et al., 2011).

The steps in measuring efficiency using DEA, as explained by Putra and Simpen (2020), involve several stages. First, collect data related to input and output from the Decision Making Unit (DMU), which will be evaluated. Second is the selection of DMU, which can be a company, organization, or other unit. Next, identify relevant input and output variables, group input and output based on characteristics, calculate efficiency by comparing output with input, and determine the classification of DMUs as efficient or inefficient. The final stage involves summarizing the evaluation results and providing recommendations or improvement measures if necessary, providing insight into the operational efficiency of the DMU being evaluated.

According to Juliana et al. (2022), the study used the Data Envelopment Analysis (DEA) method to measure the efficiency of private waqf institutions in Indonesia, such as Dompet Dhuafa, Global Waqf, and Baitulmaal Muamalat, from 2015 to 2019. The results showed that Dompet Dhuafa was efficient until 2018, while Global Waqf and Baitulmaal Muamalat were inefficient in certain years. The study highlights the importance of separate financial reporting and the competent management of waqf assets in line with PSAK standards. Recommendations include improving the wise use of costs.

Pyeman et al. (2016) conducted a DEA analysis of the efficiency of waqf departments under the Islamic Religious Council of States (MAIN) in Malaysia between 2007 and 2012. The findings showed that Penang had the highest efficiency and became a benchmark for other states in Malaysia. Bakri et al. (2020) proposed a conceptual model for waqf institution efficiency, using DEA-based efficiency scores as benchmarks for performance, identifying the most efficient decision-making units (DMUs) as models for others. Hasan et al. (2020) used DEA to measure waqf efficiency in three MAIN states in Malaysia, with Penang showing the highest efficiency. Meanwhile, the Kelantan and Pahang departments needed operational improvements.

Herindar & Rusydiana (2021) examined the efficiency of waqf management at eight zakat institutions in Indonesia between 2013 and 2020. Their findings revealed significant variation in efficiency, with Laziz Dewan Da'wah, Darut Tauhid, and Dompet Dhuafa serving as the best models. Finally, Rusydiana et al. (2022) assessed the efficiency of nine philanthropic institutions

managing waqf funds in Indonesia from 2013 to 2021 using DEA. The results showed that only one institution was efficient, while the others were considered inefficient due to managerial inefficiencies. Recommendations included enhancing transparency and utilizing technology to optimize the management of waqf funds.

To strengthen the theoretical foundation, the study should incorporate comparisons between existing research findings and explicitly identify research gaps, offering a more comprehensive understanding of waqf management efficiency in Indonesia.

3. METHODOLOGY

3.1. Types of research

This research employs descriptive analysis aimed at describing, explaining, and summarizing performance metrics. It adopts a quantitative approach to study a specific population or sample, utilizing research instruments for data collection and conducting statistical or quantitative analysis to test predetermined hypotheses (Sugiyono, 2008). The study uses non-parametric data analysis techniques, specifically the Data Envelopment Analysis (DEA) method. DEA is chosen due to its capability to measure efficiency in scenarios involving multiple inputs and outputs, without requiring explicit assumptions about the functional relationship between variables. Unlike other efficiency analysis techniques, DEA is particularly suited for evaluating non-profit organizations like waqf institutions, as it provides a relative efficiency score and facilitates benchmarking among similar units.

3.2. Research Population and Sample

The population in this study consisted of 432 waqf management institutions registered with the Indonesian Waqf Board. However, the researchers will only select the top eight waqf management institutions, as determined by the Indonesian Waqf Board in 2022. These institutions include Dompet Dhuafa, Baitulmaal Muamalat, Salman Waqf, Al-Azhar Waqf, Sinergi Foundation, PPPA Darul Qur'an, Waqf Mulia, and Rumah Waqf. The researchers employed a purposive sampling technique, which, according to Sugiyono (2010), involves selecting samples based on specific considerations (judgment sampling) to align with the research objectives. The research sample is based on the following considerations:

1. The Indonesian Waqf Board has registered the Waqf management institution and recognized it as the best Waqf Nazir in the 2022 Waqf Core Principles Implementation Index (IIWCP).
2. Have an annual waqf financial report for the 2018–2022 period.
3. We will examine the input variables (operational costs, human data source costs, and fixed assets) as well as the output variables (collection and distribution of waqf funds).

Due to data limitations, the researchers chose four well-regarded institutions—Dompet Dhuafa, Wakaf Al-Azhar, Wakaf Salman, and Baitulmaal Muamalat—as the focus of their study. Although this small sample size may limit the ability to apply the findings to a larger group, it provides valuable insights for other similar institutions and establishes benchmarks for effective

waqf management. Future research should include a larger sample size to offer a more comprehensive understanding of waqf management.

3.3. Data collection methods

This research employs secondary data, which is pre-existing and not directly acquired by the researchers, but rather acquired through intermediaries or documented by related parties. We conducted the data collection process by searching for financial reports from waqf institutions, specifically Dompet Dhuafa, Wakaf Salman, Wakaf Al-Azhar, and Baitulmaal Muamalat, covering the period from 2018 to 2022. We obtained these financial reports from the official websites of the waqf institutions and directly contacted their management.

3.4. Data analysis method

In quantitative analysis, to measure the level of efficiency, researchers used data envelope analysis (DEA) with the Banxia Frontier Analyst software application. Measuring efficiency Ascarya and Yumanita (2006) explain how to express the DEA formulation mathematically to measure the level of efficiency.

$$Efisiensi = \frac{\sum_{i=1}^{m} Ui\ Yis}{\sum_{i=1}^{n} Vj\ Xjs} \leq 1, Ui\ dan\ Vj \geq 0$$

m = observed institutional output
n = observed institutional input
Ui = weight of output *i* produced by the institution
Yis = amount of output *i* produced by the institution
Xjs = number of input *j* used by the institution
Vj = weight of input *j* given by the institution and *i* is calculated from 1 to m and *j* is calculated from 1 to n

The equation above states that performance is considered relatively efficient if the efficiency value is equal to 1 (100% efficient). Conversely, if the efficiency value is less than 1, then the performance is considered relatively inefficient. Coelli et al. (2005) proposed several crucial aspects, as presented by Singgih (2017), that require consideration when using DEA.

a. Positivity: The DEA emphasizes that all input and output variables must have positive values (> 0).
b. Isotonicity: Every increase in the input variable must lead to at least one increase in the output variable, and no output variable must experience a decrease.
c. The number of DMUs or units of the entity under study (the organization) should be a minimum of 3 DMUs for each input and output variable used in the model.
d. Homogeneity: The DEA requires all DMUs under evaluation to have similar types of input and output variables.

DEA is figuring out how efficient different production units are and how well decision-making units (DMU) are doing as managers by looking at a set of inputs and outputs and guessing the correlation function between them (Blose et al., 2005).

Table. 1 Efficiency Level Assessment

Definition	Efficiency Intensity	Information
Very Weak Efficient	0,0 – 0,19	Very Inefficient
Weak Efficient	0,20 - 0,39	Not low efficiency
Passable Expected	0,40 – 0,59	Inefficient, on average
Strong Expected	0,60 - 0,79	Not efficient but still very possible to optimize
Very Strong Expected	0,90 - 0,99	Not efficient, but still high and expected to remain efficient
Not Efficient	<1	Not Efficient less than 100%
Fully Efficient	1	Highest Efficiency 100%

Source: (Abidin & Endri, 2009)

The efficiency categories in Table 1 can be applied to improve waqf management as follows:

1. Very Weak Efficient (0.0 - 0.19): Focus on identifying inefficiencies, improving resource allocation, and enhancing staff capabilities through training and better systems.
2. Weak Efficient (0.20 - 0.39): Improve transparency, streamline operations, and monitor performance to address gaps in efficiency.
3. Passable Expected (0.40 - 0.59): Optimize processes, incorporate feedback, and introduce technology to improve decision-making and resource management.
4. Strong Expected (0.60 - 0.79): Benchmark against successful institutions, refine strategies, and invest in staff development to enhance overall efficiency.
5. Very Strong Expected (0.90 - 0.99): Sustain high performance by innovating, adapting, and fostering strategic partnerships for growth.
6. Not Efficient (<1): Restructure and overhaul management practices, focusing on governance, technology, and staff training.
7. Fully Efficient (1): Maintain excellence by continuously innovating, setting new standards, and sharing best practices with other institutions.

This framework helps waqf institutions assess their performance and take targeted actions to improve efficiency and impact.

4. RESULTS AND DISCUSSION

4.1. Characteristics of Waqf Management Institutions

Table. 2 scores Efficiency and Distribution of Waqf Management Institutions

No	Waqf Management Institution	Year				
		2018	2019	2020	2021	2022
1	Baitulmaal Muamalat	*Fully Efficient 100%*	*Very Weak Efficient 13,4%*	*Weak Efficient 31,6%*	*Fully Efficient 100%*	*Passable Expected 49,6%*
2	Dompet Dhuafa	*Fully Efficient 100%*	*Very Strong Expected 91,9%*	*Fully Efficient 100%*	*Fully Efficient 100%*	*Fully Efficient 100%*
3	Wakaf Al-Azhar	*Very Weak Efficient 12,8%*	*Very Weak Efficient 8,6%*	*Strong Expected 75,2%*	*Fully Efficient 100%*	*Strong Expected 67,7%*
4	Wakaf Salman	*Strong Expected 60%*	*Passable Expected 59,2%*	*Fully Efficient 100%*	*Fully Efficient 100%*	*Passable Expected 42,3%*

Source: Author Processed Data Using Frontier Analysis Software (2024)

The data in Table 2 reveals that the efficiency of the Decision Making Units (DMUs) varies, with some operating efficiently and others inefficiently, as categorized in Table 1. Of the 20 Waqf institutions, nine are fully efficient (100%), while 11 have efficiency levels below 100%. Among these, three DMUs fall into the "Very Weak Efficient" category (0-19%), two in the "Passable Expected" range (40-59%), and three at the "Strongly Expected" level (60-79%). The least common levels are "Weak Efficient" (20-39%) and "Very Strong Expected" (80-99%), each represented by just one DMU.

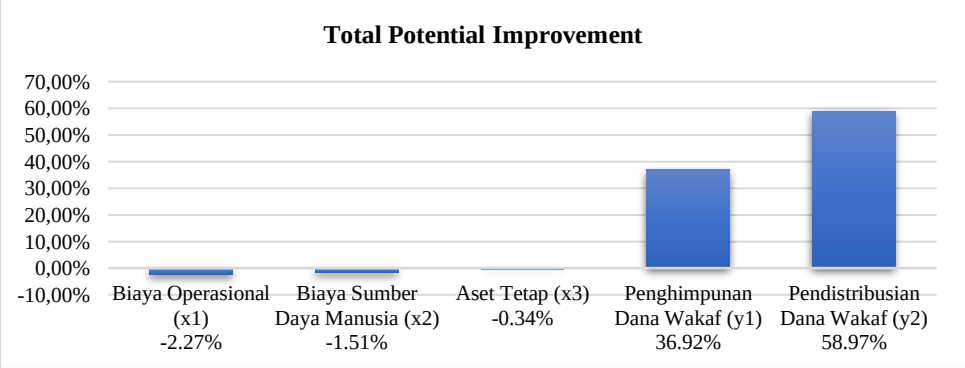
From the analysis in Table 4, it is clear that 11 DMUs have efficiency values below 100%, with nine DMUs achieving full efficiency. Notable fully efficient DMUs include Baitulmaal Muamalat (2018), Dompet Dhuafa (2018, 2020, 2021, 2022), Salman Waqf (2020, 2021), and Waqf Al-Azhar (2021). Over the 2018–2022 period, Dompet Dhuafa maintained a consistently high efficiency, except in 2019, compared to other institutions. In contrast, Al-Azhar Waqf showed the lowest efficiency in 2019, highlighting areas where less efficient institutions can improve.

These efficiency variations provide a basis for setting benchmarks and identifying specific areas for improvement, particularly for institutions in the "Very Weak Efficient" category. To enhance their efficiency, institutions can focus on optimizing resource use and increasing outputs without increasing inputs, or conversely, producing the same outputs with fewer resources. As Hayati & Putri (2020) note, efficiency improvements are achieved by maximizing output while minimizing input or increasing output with greater input. By focusing on these areas, underperforming institutions can work towards achieving full efficiency.

4.2. Total Potential Improvement for Waqf Management Institutions

To understand the root causes of inefficiency in waqf institutions, the following provides a clear picture of those institutions at the Very Weak Efficient level. The total potential improvement graph reveals that, to reach Fully Efficient status, waqf management needs to reduce HR costs by 1.51%, operational costs by 2.27%, and fixed assets by 0.34%. Additionally, to achieve optimal efficiency, increasing fund collection by 36.92% and adjusting fund allocation by 58.97% is necessary. This analysis helps to identify specific areas of improvement, guiding institutions towards more efficient practices and highlighting the necessary adjustments to move towards higher efficiency levels.

Figure 1. Total Potential Improvement for waqf management institutions
Source: Author's Processed Data (2024)



4.3. References DMU

This section discusses the DMUs (Decision Making Units) and how they serve as benchmarks for other DMUs that have not yet reached full efficiency. The frontier analysis reveals that in 2018, 10 DMUs used Dompet Dhuafa, the largest DMU, as their reference. In subsequent years—2020, 2021, and 2022—nine DMUs continued to reference Dompet Dhuafa. Additionally, in 2021, Al-Azhar Waqf became the second most referenced institution, with nine DMUs following it. Baitulmaal Muamalat served as a reference for nine DMUs in both 2018 and 2021, while Salman Waqf was referenced by four DMUs in 2020 and 2021.

This analysis highlights which institutions are seen as the most efficient and why other DMUs look to them as models. By examining the reasons behind the efficiency of these institutions, the study can offer more detailed insights into what improvements are needed for other DMUs to reach similar levels of performance. Specific benchmarks for inputs and outputs could further clarify the areas where these institutions excel and where others can make adjustments to improve.

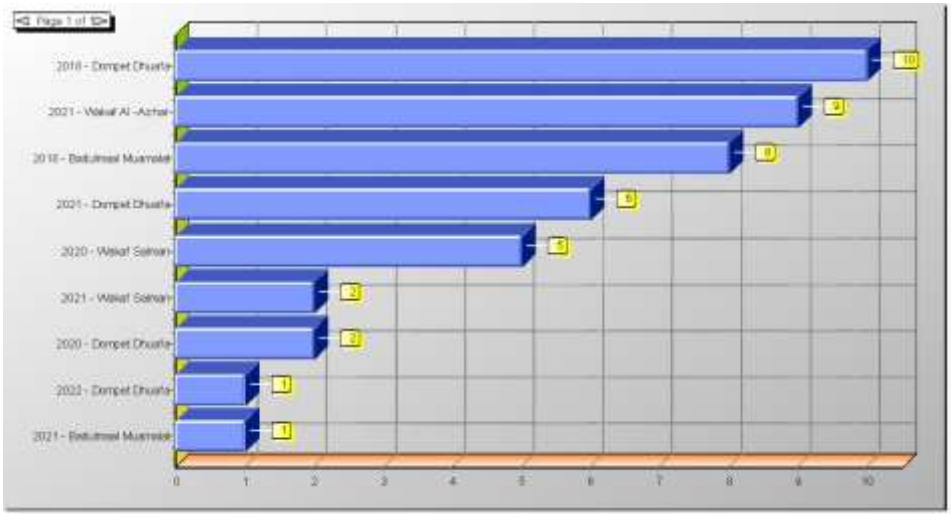


Figure 2. DMU Reference Frequency
Source: Author's Processed Data (2024)

4.4. Analysis of the Inefficiency of Waqf Management Institutions

The To streamline the discussion, we focus on identifying the causes of inefficiency in waqf institutions categorized as "Very Weak Efficiency." This can be achieved by calculating the improvement potential, which is the gap between actual and projected values for inefficient units (DMUs) with efficiency scores below 100%. This gap highlights areas where institutions can optimize their input and output variables to achieve better efficiency, as explained by Rustyani and Rosyidi (2018) in the context of zakat institutions.

Key input and output variables, such as human resource costs (Rusydiana et al., 2022), fixed assets (Sidang & Feriyanto, 2021), operational costs (Nurhasanah & Lubis, 2017), waqf fund collection (Herindar & Rusydiana, 2021), and waqf fund distribution (Juliana et al., 2022), all contribute to inefficiencies in certain waqf institutions over time. Each variable impacts efficiency differently, making it challenging to pinpoint the most influential factors for a particular institution’s inefficiency. When institutions are not operating efficiently, Data Envelope Analysis (DEA), using Frontier Analysis software, can provide projections or target values for each input and output variable, guiding institutions toward optimal performance. By comparing the actual values with the projected values, inefficiencies become clear, and the difference can be used to calculate potential improvements in the institution's performance. This approach offers a clear path to boosting efficiency in underperforming waqf institutions.

The following points and table will describe the financial performance of each variable in each Waqf institution that experienced inefficiency in the 2018–2022 period:

Table. 3 Potential Improvements for Inputs of Each Waqf Institution

	Input														
	Operational Cost (x1)					Human Resource Cost (x2)					Fixed Assets (x3)				
Year	18	19	20	21	22	18	19	20	21	22	18	19	20	21	22
Dompet Dhuafa	0,00	-32,29	0,00	0,00	0,00	0,00	-6,05	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Baitulmaal Muamalat	0,00	0,00	-84,57	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Al-Azhar Waqf	-10,77	-29,61	0,00	0,00	-16,17	0,00	-33,28	-26,44	0,00	-8,56	0,00	0,00	0,00	0,00	0,00
Salman Waqf	0,00	-26,24	0,00	0,00	0,00	0,00	-21,36	0,00	0,00	-37,36	0,00	0,00	0,00	0,00	-29,66

Source: Data processed by the author from the results of Frontier Analysis Software (2024)

The four sampled waqf institutions demonstrated increasing efficiency from 2018 to 2022, except for Salman Waqf and Al-Azhar Waqf. Salman Waqf's performance declined in 2019 across several input and output variables, including operational and human resource costs. Data on potential improvements indicated that in 2019, operational costs decreased by 26.24% and human resource costs dropped by 21.36%, reflecting inefficiency. However, by 2022, human resource costs had further decreased by 37.36% and fixed assets by 29.66%, signaling a need for future efficiency improvements. Up to 2018, Al-Azhar Waqf experienced significant financial performance changes that indicate the urge of improvements. In 2019, operational costs rose from -10.77% to -29.61%, and human resource costs increased from 0% to -33.28%. In 2020, operational costs reached 0% and human resource costs reached -26.44%. By 2021, the waqf achieved 100% efficiency, showing improved financial performance. However, in 2022, potential increases in operational and human resource costs decreased to -16.17% and -8.56%, respectively, indicating a need for further improvements.

From 2018 to 2022, Baitulmaal Muamalat's financial performance declined in 2020, with operational cost efficiency dropping from 0% in 2019 to -84.57%, indicating inefficiency. Meanwhile, although Dompet Dhuafa's financial performance was not fully efficient at 100%, it also declined in 2019. The discrepancy between actual and target values for input and output variables contributed to this decline. The data showed that operational costs exceeded the target, requiring a reduction of -32.29% to achieve efficiency, and human resource costs also needed a reduction of -6.05%.

Table. 4 Potential Improvements for Outputs of Each Waqf Institution

	Output									
	Collection (y1)					Distribution (y2)				
Year	18	19	20	21	22	18	19	20	21	22
Dompet Dhuafa	0,00	8,78	0,00	0,00	0,00	0,00	8,78	0,00	0,00	0,00
Baitulmaal Muamalat	0,00	647,22	216,28	0,00	101,54	0,00	742,88	838,62	0,00	158,29
Al-Azhar Waqf	681,00	1062,23	32,91	0,00	50,99	681,00	1062,23	1384,53	0,00	47,66
Salman Waqf	125,55	68,81	0,00	0,00	257,16	66,61	68,81	0,00	0,00	136,43

Source: Data processed by the author from the results of Frontier Analysis Software (2024)

In the time between the analysis, the fund collected and distribution of waqf funds of Dompet Dhuafa were the most improved among other institutions. It is showed below target in the period of 2019, by 8.78%, indicating a need to increase these values by 8.78% to reach 100% efficiency. Dompet Dhuafa achieved 100% efficiency from 2018 to 2022, except in 2019, when improvements were needed to reach full efficiency again.

Al Azhar in terms of output variables, the fund raising and distribution of waqf funds fluctuated. From 2018 to 2019, there was an increase from 681% to 1062.23%, followed by a decrease to 32.91% in 2020. Despite 100% efficiency in 2021, potential increases in revenue and distribution rose again in 2022. Waqf fund fund raised dropped to 50.99% and distributions to 47.66%, suggesting further improvement is needed for optimal efficiency.

Salman Waqf In the collection and distribution of waqf funds, the percentage of potential increase decreased. Waqf fund fund raised fell from 125.55% to 68.81%, while distribution increased from 66.61% to 68.81%. Despite achieving 100% efficiency in 2020 and 2021, potential

increases surged in 2022, with fund fund raised at 257.16% and distribution at 136.43%. Future improvements are needed to meet efficiency standards.

Baitulmaal Muamalat's In terms of collecting and distributing waqf funds, the percentage of potential increase dropped. Waqf fund fund raised decreased from 647.22% to 216.28%, and fund distribution from 742.88% to 838.62%. Despite achieving 100% efficiency in 2021, the potential increase rose again in 2022, with fund fund raised at 101.54% and distribution at 158.29%. Future improvements are necessary to lower these percentages and achieve efficiency standards.

4.5. Analysis on Waqf Institution Management

Management The management of Al-Azhar Waqf Institution only achieved efficiency in 2021. In other years (2018–2022), inefficiencies persisted due to high operational costs and suboptimal human resource management (Nurhasanah & Lubis, 2017; Ariansyah & Roni, 2023). These inefficiencies hindered the institution's ability to meet its mission and objectives, as effective management is crucial to success (Arshad & Zain, 2017). A key solution is digitalization, which can reduce costs and improve the efficiency of waqf fund management (Mohamed Yusof et al., 2014).

Similarly, the financial performance of the Salman Waqf Institution from 2018 to 2022 showed significant fluctuations, driven by high operational costs and inefficient human resource allocation (Subardi et al., 2020; Chatra & Syofya, 2024). These inefficiencies impacted the institution's performance, highlighting the need for a thorough analysis of the causes and the development of targeted strategies. Understanding efficiency and implementing better management practices are critical to improving performance (Rubio-Picón et al., 2022).

The Baitulmaal Muamalat Waqf Institution also faced inefficiencies, particularly during the COVID-19 crisis, due to suboptimal asset utilization, such as excessive cash allocations (Sidang & Feriyanto, 2021). Strategic solutions, including leveraging internet banking and promoting online waqf, are necessary to enhance efficiency and support waqf programs (Ikhwan & Riani, 2022). Digital literacy, particularly among younger generations, can play a significant role in improving operational efficiency during financial reporting, especially in challenging times like the pandemic.

Dompet Dhuafa reached the Very Strong Expected level in 2019, despite earlier inefficiencies from 2015 to 2019, primarily due to suboptimal fund collection and distribution (Juliana et al., 2022). However, Dompet Dhuafa consistently achieved full efficiency from 2018 to 2022, setting a benchmark for other waqf institutions (Hasan et al., 2020). This consistency highlights the importance of refining fund collection processes, addressing competition and financial issues, and navigating government regulations, as inefficiency often stems from these challenges (Coelli et al., 2005).

The innovative programs implemented by waqf institutions, such as effective systems and capacity-building in human resources, can serve as models for achieving full efficiency (Bekti, 2022). Despite the pandemic, the consistency in waqf fund collection from 2020 to 2022 shows the potential of digital waqf to expand donation reach (Fanani et al., 2021). The key to success lies in professional, accountable management, supported by transparent financial reporting, which

builds trust and ensures the effective use of waqf funds (Sulaiman & Zakari, 2015; Yaacob et al., 2015). Djunaidi & al. Asyhar (2005) emphasize the need for comprehensive legal frameworks to maintain accountability and maximize effectiveness in waqf management.

5. CONCLUSION

The findings of this research highlight that waqf institutions in Indonesia exhibited low efficiency during the 2018–2022 period, with several institutions showing efficiency levels below 100%. The inefficiencies stem from factors such as high operational and human resource costs, as well as underutilized assets. Furthermore, the accumulated and distributed waqf funds have not reached optimal levels. However, Dompet Dhuafa stands out as a benchmark for innovation and professionalism, and other institutions could benefit from adopting similar practices to improve their efficiency.

For policymakers and waqf institutions, these findings suggest several strategies for improvement. Resource optimization is crucial, including better management of assets, human resources, and operational costs. Digital transformation could play a significant role by streamlining processes, improving transparency, and enhancing financial reporting. Adopting targeted efficiency programs focused on financial planning, staff development, and innovation could also help increase the overall efficiency of waqf institutions.

Specific areas for future research include exploring the role of digital waqf tools in improving efficiency and examining how external factors, such as regulatory changes or government policies, could impact the performance of waqf institutions. By considering these factors, future studies can provide deeper insights into the evolving landscape of waqf management in Indonesia.

In conclusion, while this study has limitations, such as the small sample size and time frame, it provides valuable policy recommendations and serves as a reference for future research aimed at enhancing the efficiency of waqf institutions in Indonesia.

Author contribution statement

Conceptualization, Anas Faqih Abdurrahman and Dwi Retno Widiyanti; Methodology, Anas Faqih Abdurrahman; Investigation, Anas Faqih Abdurrahman and Ihsan Hafidzuddin; Analysis, Anas Faqih Abdurrahman and Dwi Retno Widiyanti; Original draft preparation, Anas Faqih Abdurrahman; Review and editing, Anas Faqih Abdurrahman and Ihsan Hafidzuddin; Visualization, Anas Faqih Abdurrahman and Dwi Retno Widiyanti.

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