

EFFICIENCY OF NON-GOVERNMENTAL ZAKAT INSTITUTIONS IN NIGERIA : AN INTRODUCTION OF DATA ENVELOPMENT ANALYSIS

Tijjani EL-Yakub^{1*}
Dr. Ahmad Khilmy Abd Rahim²

^{1,2} Islamic Business School, College of Business, Universiti Utara Malaysia

*Corresponding author email: telyakub@gmail.com

Abstract: *This study aims to evaluate the effectiveness of Nigeria's non-governmental zakat organisations (NZIs) over five years from 2015 to 2019. Data Envelopment Analysis (DEA) was used to analyse the data, and the findings revealed that non-governmental zakat organisations had a mean technical efficiency of 74.3%. It also demonstrated that when finding the technical efficiency of non-governmental zakat organisations in Nigeria, scale inefficiency predominates over pure technical inefficiency effects. Finally, it suggests that technology needs more consideration to increase productivity.*

Keywords: Fintech, Efficiency, Zakat, Non-governmental Zakat Institutions, Nigeria.

2023 JGBSE

Article Received: 12 December 2022, Revised: 19 December 2022, Accepted 10 January 2023

INTRODUCTION

The Arabic term "zakat" literally translates to "purifying wealth and the spirit" (Al-Fawzan, 2005). Zakat is one of Islam's five mandatory foundations, which were established by Allah (SWT) before the time of the Prophet (PBUH) and carried on by his wise heirs and associates (Al-Qardawi, 2000). Therefore, it proves that zakat is not a levy or a punishment as is commonly believed. Additionally, modern Islamic economics view zakat as a unique tool for decreasing inequality and poverty by transferring wealth from the rich's surplus to the poor's shortage, positively impacting economic development (Asad Ibrahim et al., 2014). As a result, this highlights the significance of an effective zakat management system in order to fulfil the spiritual duty of zakat and fulfil its socioeconomic goals.

Several nations recognise zakat as required by law, while others have no zakat-related laws, and others view it as optional (Powell, 2010). Therefore, when attempting to constitutionalise the zakat system, Muslims who live in a secular nation with no mention of faith in its constitution may encounter fierce opposition. This situation requires some Muslim communities to create non-governmental zakat organisations to support zakat gathering and dispersal through a unified zakat management system (Powell, 2010). Because of the significance of zakat, which varies from voluntary acts of offering alms like sadaqat and infaq, non-governmental zakat organisations must be involved in its implementation (Ibrahim, 2017). For instance, in Indonesia, in addition to BAZ, which collects zakat on a national, provincial, and district level under the supervision of the Ministry of Religious Affairs, there are numerous non-governmental approaches to zakat collection, including Dhuafa Wallet (Dompot Dhuafa), Zakat Home (Rumah Zakat), Islamic boarding schools (Pesantren),

masjids, and individual zakat payers (Lubis & Azizah, 2018). This is done to guarantee that zakat is dispersed correctly and to promote gathering properly.

On the other hand, although people are ready to pay zakat following Shariah, concerns about responsibility and openness sway zakat payers' decisions (Mustafa, Mohamad, & Adnan, 2013; Lawal & Imam, 2016). Poor zakat collection and other issues, such as expensive expenses, may prevent zakat institutions from being practical enough to affect socioeconomic development positively. Most Muslim nations experience these problems regularly, but management strategies differ from area to region. For instance, Malaysia and Indonesia are two Asian nations that stand out in their efforts to increase the effectiveness of zakat management at different levels. For instance, these nations move away from institutionalising zakat and instead use technological advancements in zakat management.

LITERATURE REVIEW

A central government structure in Nigeria does not supervise the zakat management mechanism in the institutions. Ibrahim and Shaharuddin (2015) claim that Nigeria is a multireligious, democratic state where each state is free to follow its legal system. Following this, many states established corresponding zakat organisations and enacted Shariah legal frameworks. However, the goal of the zakat institution's establishment is being thwarted because most of these states cannot handle zakat successfully (Muhammad, 2018). By promoting gathering, dissemination, and public knowledge, establishing non-governmental zakat institutions (NZIs) supports efforts made by different state governments (Ibrahim, 2017). The NZIs are privately incorporated companies that primarily operate as foundations and gather and distribute zakat and other charitable donations. In light of this, numerous researchers have attempted to examine the effectiveness of zakat institutions, focusing on technology and other pertinent elements to highlight the institutions' accomplishments and shortcomings in Muslim-majority nations. The results of these studies help the pertinent nations' zakat organisations operate more effectively.

Numerous academics have also discussed the effectiveness of zakat management in Nigeria using various definitions. According to Ibrahim & Shaharuddin (2015), Nigeria's ineffective zakat administration structure calls for significant change. Despite the lack of studies evaluating the effectiveness of zakat organisations in Nigeria, some researchers highlight the significance of zakat in areas like poverty relief (Kareem & Bankole, 2016). For the first time, the effectiveness of the zakat administration in Nigeria's non-governmental zakat institutions is the subject of this research.

The groundbreaking research on the effectiveness of zakat institutions is in Wahab & Rahman (2011), (2012), and (2013); Ahmad & Ma'in (2014); and Noor et al. (2015). To estimate zakat efficiency, Wahab and Rahman (2011) used three distinct kinds of Data Envelopment Analysis (DEA) techniques: technical efficiency (TE), pure technical efficiency (PTE), and scale efficiency (SE). The Tobit model is also used in the research to assess the effectiveness of Malaysia's zakat institutions. In addition, the productivity of zakat institutions in Malaysia from 2003 to 2007 was examined in another research by the same writers using information from 14 State Islamic Religious Councils (SIRCs) in Malaysia. Based on the Malmquist Index, the DEA technique is used to evaluate efficiency (Wahab & Rahman, 2012). The findings reveal that zakat institutions have an average technical efficiency of 80.6%, while scale inefficiency effects predominate when evaluating the technical efficiency of zakat institutions in Malaysia.

In their research, Zakaria and Malek (2014) examined the impact of Maslow's hierarchy of needs on the effectiveness of zakat distribution and used the Balanced Score Card to assess four dimensions: customer happiness, internal procedure, knowledge worker, and financial management. According to data analysis using the Statistical Package for Social Sciences (SPSS) and Analysis of Moment Structure (AMOS), Maslow's order of requirements favours

the effectiveness of the zakat distribution. It demonstrates that dispersing zakat in environmentally friendly ways can please beneficiaries and guarantee a higher standard of living. Al-Ayubi et al. (2018) used the production method to assess the effectiveness of Indonesian Zakat Institutions (IZI), including TE, PTE, and SE. They then use the DEA procedure to investigate the causes of inefficiency further. The study's input factors are the number of amil, helpers, offices, socialisation costs, staff costs, and running expenses. The quantity of zakat that was gathered, the division of consumptive and productive zakat, the number of *muzakki*, and the number of *mustahiq* are among the study's output factors. The findings indicate that IZI Mass and IZI are having more issues. The expenses of socialisation, the number of volunteers, the quantity of zakat collected, and the distribution of consumptive zakat are non-Mass, and together they diminish the role of the intermediary.

In their study, Saharuddin et al. (2017) compare the Allocation to Collection Ratio (ACR), which compares the distribution ratio with the collection of zakat funds from each programme, the efficiency and effectiveness of the zakat payroll system and digital zakat on the acceptance of zakat funds in BAZNAS for the 2016–2017 period. This research shows that the digital zakat system and the zakat payment system are both highly efficient and successful. According to the study's findings, AMIL needs to take a more active role in developing programmes that are compatible with the situation at hand in order to improve the efficacy and efficiency of zakat organisations' programmes. Similarly, Ahmad & Ma'in (2014) use the two-stage linked DEA model to discover that technological efficiency is lacking in gathering and distribution. The findings also indicate that the dispersal function is less efficient than the gathering function. Last but not least, allocative and economic efficiency ratings exhibit the highest levels of efficiency. The frequent use of DEA in determining zakat effectiveness by different writers demonstrates the technique's applicability.

METHODOLOGY

According to production theory, productivity has two parts (Farrell, 1957). The capacity of a business unit to optimise output given a specific input is known as technical efficiency (TE) (efficiency in terms of quantity). A business entity's capacity to use inputs optimally based on their price is known as allocating efficiency (AE) (efficiency in terms of price). These efficiencies create overall efficiency, which is the product of fiscal and financial efficiency (OE). Allocation Efficiency (AE) by Technical Efficiency from Overall Efficiency (OE). Scale efficiency (SE) can be used to describe technical efficiency (TE), which can then be split down into pure technical efficiency (PTE) and scale efficiency (PTE) (SE). Consequently, $OE = AE \times PTE \times SE$.

A parametric or non-parametric approach can be used to evaluate efficiency. The examples of the stochastic frontier approach (SFA) and the distribution-free strategy are parametric methods (DFA). Using a non-stochastic method, like data envelopment analysis (DEA), to measure efficiency tends to mix disruption with inefficiency. DEA compares a decision-making unit's (DMU) efficiency to that of other comparable DMUs, with the straightforward limitation that all DMUs must be on or below the efficiency boundary. A DMU's efficacy can be enhanced to become more effective using DEA. Non-stochastic methods assume that there are no random mistakes and that all departures from the boundary signify inefficiency. It has the benefit of imposing very little structure on the shape of the efficient border, preventing misspecification, and not requiring an a priori presumption about the analytical form of the production function. A technique called DEA evaluates the management effectiveness and productivity of productive or decision-making units (DMUs) that have the same multiple inputs and multiple outputs. By using the most efficient banks as a standard and quantifying the errors in input combination (slack variables) in other banks compared to the benchmark, DEA enables us to evaluate the relative efficiency of banks. Non-stochastic methods assume that there are no random mistakes and that all departures from the boundary signify

inefficiency. A non-parametric, deterministic technique called DEA identifies the relative efficient output limit. In line with Wahab (2013), this research will use the Malmquist index with DEA in a non-stochastic manner to measure the effectiveness of non-governmental zakat organisations in Nigeria.

By presuming constant returns to scale (CRS), the CCR model of DEA assumes that there is no meaningful connection between the scale of activities and efficiency and provides the total technological efficiency (OTE). The CRS premise can be justified when every DMU runs at its ideal size. However, businesses or DMUs may experience either economies of scale or diseconomies of scale. Therefore, if the CRS assumption is used when not all DMUs are working at the optimum scale, scale efficiencies will contaminate the calculated measures of technological efficiency.

To expand the CCR model, Banker et al. (1984) loosened the CRS premise. The "BCC" model that resulted was used to evaluate the effectiveness of DMUs with varying returns to scale (VRS). The assessment of pure technical efficiency (PTE), or technical efficiency free of the impacts of scale efficiency (SE), is provided by the VRS assumption. When a specific DMU's TE and PTE ratings appear to vary, scale inefficiency is likely present.

The following linear programming issue can be used to illustrate the input-oriented DEA model with VRS technologies:

$$\begin{aligned}
 &\min \varphi, \lambda, \varphi \\
 &\text{subject to } -\varphi y_i, + Y\lambda, \geq 0 \\
 &x_i - X\lambda \geq 0 \\
 \\
 &N1' \lambda = 1 \\
 &\text{and } \lambda \geq 0
 \end{aligned} \tag{1}$$

Where λ is an $N \times 1$ intensity vector of constants and φ is a scalar ($1 \geq \varphi \leq \infty$). $N1$ is an $N \times 1$ vector of ones. For N number of firms, y_i and x_i are the $M \times N$ and $K \times N$ output and input vectors, respectively. Y comprises the data for all the N firms. Given a fixed level of inputs, the proportional increase in outputs to be achieved by the firm is indicated by $\varphi - 1$. Note that without the convexity constraint $N1' \lambda = 1$, equation (1) becomes a DEA model with CRS technology. A convex mixture of observed firms will be the predicted point of an inefficient firm on the DEA frontier because the convexity restriction means that inefficient firms are benchmarked against businesses of comparable size. In other words, production would occur either on or just to the right of each company's convex production possibility boundary. A company is said to be working under CRS if its TE scores are the same, whether or not a convexity constraint is applied. If these numbers vary, the company uses VRS technology. However, it would be essential to determine whether the company or the DMU uses IRS or DRS in such a situation. The assumption of non-increasing returns to scale (NIRS) is imposed in (1), and the convexity constraint $N1' \lambda = 1$ is substituted with $N1' \lambda \leq 1$. This is given as follows:

$$\begin{aligned}
 &\min \varphi, \lambda, \varphi \\
 &\text{subject to } -y_i, - Y\lambda, \geq 0, \\
 &\varphi x_i - X\lambda \geq 0, \\
 &N1' \lambda \leq 1 \\
 &\lambda \geq 0
 \end{aligned} \tag{2}$$

The solution to equation (2) reveals the character of scale economies. If the TE score determined using NIRS technology and the TE values determined using VRS technology diverge, then IRS exists. If both efficiency ratings are identical, the respective company employs DRS. Due to the tiny number of non-governmental zakat institutions, the scope of this research using conventional econometric techniques is somewhat constrained. One advantage of the DEA is that it requires fewer data because it can be used with tiny sample sizes (Canhoto & Dermine, 2003). The small sample size is one factor that prompts us to choose DEA as the preferred method for assessing the effectiveness of non-governmental zakat institutions in Nigeria. The efficient frontier, error, and inefficiency structures of the DMUs can be identified and determined using DEA without the need to put a predetermined structure or functional shape on the data (Bauer et al., 1998).

By combining the constant returns to scale (CRS), or the CCR model, with the variable returns to scale (VRS), or the BCC model, DEA can be used to determine scale efficiency metrics. According to Coelli et al. (1998), the BCC model has been the most popular since the early 1990s. It could be used to optimise outputs or reduce inputs. For example, an output orientation seeks to maximise output levels without using more inputs, whereas an input orientation seeks to minimise input quantities while maintaining at least the current output levels (Cooper et al., 2000).

Running models on a CRS and VRS base is the conventional method for determining scale effects when using DEA. The scale efficiency is then calculated by dividing the CRS model's efficiency score by the VRS model's efficiency score. Therefore, the scale efficiency measures will be from 0 to 1, and the VRS efficiency scores will be more outstanding due to the VRS model's tighter envelopment of the data points. Reporting whether a decision-making unit (DMU) is working at increasing, constant, or declining returns to scale is a helpful aspect of the VRS model compared to the CRS model. When the CRS and VRS efficiency frontiers are tangential to one another, or when the slope of the efficiency frontier equals the ratio of inputs to outputs, constant returns to scale will be the case (Cooper et al., 2000). Below that point, increasing returns to scale must be in effect because the effective frontier's slope, which measures the relative rate of converting inputs into outputs, will be higher than the average rate. Similar to how continuous returns to scale must apply below, declining returns to scale must apply above. Before evaluating the returns to scale state of DMUs that are not on the efficient frontier, the efficient frontier must first be projected onto.

Input-Output Specification

The accessibility of the data primarily influences the choice of inputs and outcomes in this research. This research will use the production method to gauge the effectiveness of non-governmental zakat institutions in Nigeria from 2015 to 2019, following Kurniawan (2018), Al-Ayubi et al. (2018), Ascarya (2017), and Wahab (2013). This research, which is based on Camanho & Dyson (1999) and Wahab (2013), will use (1) expenditure as input and (2) zakat beneficiaries and gathering amount as outputs to assess the effectiveness of non-governmental zakat organisations in Nigeria. Wahab (2013), who studies the effectiveness of zakat organisations in Malaysia, is credited with developing this paradigm.

RESULTS AND ANALYSIS

Descriptive Statistics of Inputs and Outputs

Table 5.1 describes the descriptive data of the inputs and outputs used in the research on the effectiveness of NZIs in Nigeria during the study period. Since most of the data were unavailable in the yearly reports, the analysis used information gathered from NZIs in Nigeria by their employees.

Table 1. Descriptive Statistics of Inputs and Outputs of the NZIs (2015-2019)

	Mean	Median	Maximum	Minimum	Std. Dev.
Input					
Expenditure	50,854,583.96	20,339,548.50	291,458,935	876,991	71,066,180.93
Output					
Recipients	1,200	224	8,820	33	1,952
Collection	53,595,943.05	36,703,356.00	361,390,312.00	876,991.00	82,119,197.00

The outputs and inputs of six non-governmental zakat institutions in Nigeria throughout the research are presented in Table 1 using descriptive statistics. It demonstrates a wide range between the implied minimal and maximum inputs and the outputs generated by Nigeria's non-governmental zakat institutions. It is brought on by the difference in zakat institutions' operational websites and sizes. For instance, the Lagos-based Zakat and Sadaqat Foundation (ZSF) and Abuja-based Jaiz Charity and Development Foundation (JCDF) are both in operation. The ZSF has the most significant percentage of NZIs due to its location in Lagos, a significant business hub and the former Federal Capital with a sizable Muslim community. The JCDF is also located in Abuja, Nigeria's capital, home to numerous federal buildings and a sizable Muslim population. However, despite also being located in Lagos, MUZASAF has the lowest intake and output numbers. The magnitude of the institution might be the cause of this.

Multi-stage DEA Efficiency Measure: Frontier Construction and efficiency

The multi-stage DEA has the advantage of invariance to measurement units and identifying efficient projected points with input and output mixtures comparable to weak points. The research shows the effectiveness of the six NZIs from 2015 to 2019. The display falls under the constant return to scale (CRS) and variable return to scale (VRS), respectively, as shown in tables 2 and 3. According to the principle of unity, the organisation is on edge in the given year. The organisation is below the frontier or formally inefficient if the number is less than unity. In opposition to values closer to the union, institutions are less effective the further away from their unity. The DMUs in the CRS paradigm are performing at their best. According to the CSR model, the TE is shocked by the SE when all DMUs perform at their best. Therefore, the PTE is determined using the VRS algorithm.

Table 2. The efficiency of the Non-governmental Zakat Institutions (2015-2019) - VRS

DMU	NZIs	2015	2016	2017	2018	2019
1	Jaiz Charity & Development Foundation (JCDF)	0.043	1.000	1.000	1.000	1.000
2	Zakat & Sadaqat Foundation (ZSF)	1.000	1.000	1.000	1.000	1.000
3	The Companion Zakat Fund (CZF)	1.000	0.981	0.916	0.917	1.000
4	Al-Hayat Relief Foundation (AHRF)	0.370	0.806	0.924	1.000	0.600
5	NASFAT Agency for Zakat & Sadaqat (NAZAS)	0.034	1.000	1.000	1.000	1.000
6	Muslim Zakat & Sadaqat Foundation (MUZASAF)	1.000	1.000	1.000	1.000	1.000
	Mean	0.575	0.964	0.973	0.986	0.933

In Tables 1 and 2, non-governmental zakat institutions that are efficient under the VRS model are higher than those in the CRS model simply because the CSR model allows for the variable return to scale, combining the DMUs that are efficient with the possibility of operating under increasing or decreasing return to scale with new DMUs that are efficient (VRS). According

to the findings, Muslim Zakat & Sadaqat Foundation (MUZASAF) was consistently effective under the CRS and VRS technology frameworks. The peculiarity of this DMU is that, when compared to other schools during study time, it holds the most gatherings annually. During the study time, it also had the zakat recipients of any zakat organisation. Nevertheless, MUZASAF shows the least quantity of zakat dispersal and collection during that time. However, Al-Hayat Relief Foundation (AHRF) is the least effective school in both the CRS and VRS versions. It is likely because it has the lowest percentage of total accumulation to employee and branch counts. In AHRF, the collection-to-branch ratio was 122 to 164 thousand per branch during the research time, while the collection-to-staff ratio was 114 to 159 thousand per staff. Compared to the highest ratios reported by Zakat & Sadakat Foundation (ZSF), which were 170 to 128 million per branch and 145 to 73 million per employee, these ratios are paltry.

Table 3. The Efficiency of the Non-governmental Zakat Institutions (2015-2019) - CRS

DMU	NZIs	2015	2016	2017	2018	2019
1	Jaiz Charity & Development Foundation (JCDF)	0.011	1.000	0.624	0.821	0.468
2	Zakat & Sadakat Foundation (ZSF)	0.026	0.911	0.889	0.568	0.425
3	The Companion Zakat Fund (CZF)	0.056	0.972	0.912	0.790	1.000
4	Al-Hayat Relief Foundation (AHRF)	0.025	0.801	0.912	0.655	0.267
5	NASFAT Agency for Zakat & Sadaqat (NAZAS)	0.030	0.986	1.000	1.000	0.480
6	Muslim Zakat & Sadaqat Foundation (MUZASAF)	1.000	1.000	1.000	1.000	1.000
	Mean	0.191	0.945	0.889	0.806	0.607

The percentage of the output level achieved concerning the highest possible output level at the given input blend, as in Tables 2 and 3. For instance, Jaiz Charity & Development Foundation (JCDF) generated 14.3% of its maximum production in 2015, while The Companion Zakat Fund (CZF) created 37% of its maximum output when using the VRS version. Under the CRS version, DMU6 generated 100% of its highest possible output in the same year. The weighted geometric mean shown in Tables 2 and 3 indicates a rise in the industry's average productivity from 2016 to 2017 but a decline from 2018 to 2019. Most effective DMUs operating under VRS and CRS use technology to administer zakat. Their zakat payment method also has a website payment entry option, allowing zakat payment from The institution's website. Based on VRS and CRS, non-governmental zakat organisations in Nigeria generally operate with a high level of effectiveness. It is more of a technical issue than one of magnitude or size, which is the same for all the non-governmental zakat institutions.

Summary Statistics of the Efficiency Scores (TE, PTE, and SE)

Results from non-governmental zakat institutions' productivity and effectiveness from 2015 to 2019 are shown above. Table 4 summarises the statistics of the TE, PTE, and SE efficiency scores of the non-governmental zakat organisations in Nigeria during this time frame as determined by the findings and used in the second stage of DEA analysis.

Table 4. Summary Statistics of Efficiency Scores (TE, PTE and SE) by Year

According to table 4, the non-governmental zakat organisations' TE score was most remarkable in 2016 (0.945), while the lowest TE score was recorded in 2015 (0.191). The lowest PTE score (0.575) and best PTE score (0.986) were recorded in 2015. However, the findings demonstrate that Nigeria's non-governmental zakat organisations' effectiveness score has changed significantly between 2015 and 2016. Therefore, 2015 and 2016 should be considered more when examining variations in the effectiveness of non-governmental zakat organisations. The more striking PTE findings compared to SE results, which suggest that the effectiveness of Nigeria's non-governmental zakat organisations may be due to technological factors rather than scale or size, are another intriguing aspect of the results that merits attention. The findings show that scale inefficiency outweighs pure technological inefficiency in Nigeria's non-governmental zakat organisations. It shows that non-governmental zakat organisations in Nigeria depended more on technology than on the size of their operations to be effective.

Return to Scale in Non-governmental Zakat Institutions in Nigeria

The topic of non-governmental zakat organisations' returns to scale in Nigeria will now be the focus of our talk. The efficiency score (TE, PTE, and SE) is summarised in Table 6.4, which also displays values for DMUs with rising, constant, and declining returns to scale.

Years/Types of Efficiency	Mean	Min	Max	SD
2015				
TE	0.191	0.011	1.000	0.396
PTE	0.575	0.034	1.000	0.482
SE	0.382	0.026	1.000	0.443
2016				
TE	0.945	0.801	1.000	0.779
PTE	0.964	0.806	1.000	0.780
SE	0.980	0.911	1.000	0.343
2017				
TE	0.889	0.624	1.000	0.139
PTE	0.973	0.916	1.000	0.041
SE	0.916	0.624	1.000	0.149
2018				
TE	0.806	0.568	1.000	0.176
PTE	0.986	0.917	1.000	0.339
SE	0.818	0.568	1.000	0.177
2019				
TE	0.607	0.267	1.000	0.314
PTE	0.933	0.600	1.000	0.163
SE	0.636	0.425	1.000	0.282
All Years				
TE	0.743	0.346	1.000	0.299
PTE	0.842	0.579	1.000	0.198
SE	0.848	0.562	1.000	0.191

Table 5. Summary of Efficiency (TE, PTE, and SE)

DMU	NZIs	TE	PTE	SE	Scale
1	Jaiz Charity & Development Foundation (JCDF)	0.384	0.579	0.663	DRS
2	Zakat & Sadakat Foundation (ZSF)	0.879	1.000	0.879	DRS
3	The Companion Zakat Fund (CZF)	1.000	1.000	1.000	CRS
4	Al-Hayat Relief Foundation (AHRF)	0.848	0.862	0.984	IRS
5	NASFAT Agency for Zakat & Sadaqat (NAZAS)	1.000	1.000	1.000	CRS
6	Muslim Zakat & Sadaqat Foundation (MUZASAF)	0.346	0.615	0.562	DRS

DMU: Decision Making unit; TE: Technical efficiency; PTE: Pure technical efficiency; SE: Scale efficiency; DRS: Decreasing return to scale; IRS: Increasing return to scale; CRS: Constant return to scale.

According to the findings, CZF and NAZAS remain prominent, and their efficiency boundaries are tangential to one another, as indicated by their constant efficiency score (CRS). JCDF, ZSF, and MUZASAF all reported decreasing return to scale throughout the research time. Growing return to scale with AHRF. Table 6 shows the overall numbers and percentages of returns to scale under CSR, DRS, and IRS yearly throughout the study period, allowing us to examine the changes in returns to scale for non-governmental zakat organisations in Nigeria.

Table 6. Return to Scale in Non-governmental Zakat Institutions in Nigeria

	2015		2016		2017		2018		2019	
	No. of NZIs	% Share	No. of NZIs	% Share	No. of NZIs	% Share	No. of NZIs	% Share	No. of NZIs	% Share
CRS	1	17	2	33	2	33.33	2	33.33	2	33
DRS	2	33	4	67	2	33.33	2	33.33	3	50
IRS	3	50	-	-	2	33.33	2	33.33	1	17
TOTAL	6	100	6	100	6	100	6	100	6	100

CRS: Constant return scale; DRS: decreasing return to scale; IRS: increasing return to scale.

The most significant number of institutions with a DRS (decreasing scale of efficiency score) in 2016 was 4, or 67 per cent of all institutions. It suggests that, despite the lack of an organisation that would have benefited from economies of scale, the effectiveness of the zakat institutions was stable during this time (IRS). The constant organisations, decreasing and growing on their efficiency measure (CRS, DRS, and IRS, respectively) are each at 2 in 2017, while there is a drop in efficiency in 2018. In 2019, only 17% of zakat institutions saw economies of scale (IRS), with 50% of institutions seeing a decline in their savings (DRS). In statistics, **correlation** refers to the strength and direction of a relationship between two variables. The value of a correlation coefficient can range from -1 to 1, with -1 indicating a perfect negative relationship, 0 indicating no relationship, and 1 indicating a perfect positive relationship. The common ways to measure correlation are **Pearson and Spearman Correlations**. Pearson Correlation measures the correlation between two continuous variables like height and weight. Spearman Correlation is the correlation measurement between two ranked variables.

Table 7. Pearson (p) Kendall's (k) Correlation Coefficients and Spearman Rho Rank Order (s) among the efficiency score components and Selected Variables

Variables	TE	PTE	SE	MPop	ZC
TE (p) (s)	1.0000 1.0000				
PTE (p) (s)	0.6507*** 0.4381	1.0000 1.0000			
SE (p) (s)	0.8920*** 0.9537***	0.3621* 0.2339	1.0000 1.0000		
MPop (p) (s)	0.4312*** 0.1656	0.5071*** 0.2989	0.2996 0.0800	1.0000 1.0000	
ZC (p) (s)	-0.2058 -0.7884	0.1494 0.2587	-0.2859 -0.3818	0.1731 0.2260	1.0000 1.0000

TE: Technical Efficiency; PTE: Pure Technical Efficiency; SE: Scale Efficiency; MPop: Muslim Population; ZC: Total Zakat Collection; No. of observations: 30; * significant at 5 percent level; ** significant at 10 percent level

Table 7 indicates the Pearson (p), Spearman (s), and Kendall's (k) correlation coefficients between TE, PTE, and SE efficiency scores and total *zakat* collection (ZC) and whole *zakat* collection (ZC). The table also shows levels of significance. In line with the results, the Pearson (s), Spearman (s), and Kendall's (k) correlations all have a disparity with zero statistically, which indicates that they are strongly associated with the variables evaluated. In addition, the results suggest that the Muslim population has a positive relationship with both TE and PTE efficiency scores significantly and equally has a positive relationship with SE efficiency scores but not considerably. This significant relationship may be because the scope of the non-governmental *zakat* institutions is not on a state-by-state basis but instead covers the country's general population. The results also show that the total *zakat* collection (ZC), the proxy of size, is negatively associated with efficiency scores TE and SE, meaning that the lower *zakat* collecting non-governmental *zakat* institution is likely to be less efficient.

CONCLUSION

The effectiveness of non-governmental *zakat* institutions in Nigeria during the research time is examined in this part (2015 to 2019). Our favoured methodology, Data Envelopment Analysis (DEA), enabled us to distinguish between the three efficiency types known as technical (TE), pure technical (PTE), and scale (SE). The findings show that the mean technical efficiency of non-governmental *zakat* organisations was 74.3%. It also demonstrated that when finding the technical efficiency of non-governmental *zakat* organisations in Nigeria, scale inefficiency predominates over pure technical inefficiency effects. It suggests that in order to increase productivity, technology needs more consideration. Regarding return to scale, the findings suggested that most non-governmental *zakat* organisations function at non-CRS levels. Therefore, if the technical inefficiency brought on by technically unreliable *zakat* organisations could be addressed, total efficiency could be increased.

REFERENCES

- Abd Wahab, N., & Abdul Rahman, A. R. (2013). Determinants of efficiency of zakat institutions in Malaysia: A non-parametric approach. *Asian Journal of Business and Accounting*, 6(2), 33–64.
- Ahmad, I. H., & Ma'in, M. (2014). *The Efficiency of Zakat Collection and Distribution: Evidence from Two-Stage Analysis*. 3, 133–169.
- Al-Ayubi, S., Ascarya, & Possumah, B. T. (2018). Examining the Efficiency of Zakat Management: Indonesian Zakat Institutions Experiences. *International Journal of Zakat*, 3(1), 37–55.
- Al-Fawzan, S. (2005). *Summary of Islamic Jurisprudence: Volume 1*.
- Al-Qardawi, Y. (2000). *Fiqh Al-Zakat: A Comparative Study (VOL. II)* (M. Kahf (ed.)). King Abdulaziz University.
- Asad Ibrahim, A., Jamal Elatrash, R., & Omar Farooq, M. (2014). Hoarding versus circulation of wealth from the perspective of maqasid al-Shari'ah. *International Journal of Islamic and Middle Eastern Finance and Management*, 7(1).
- Ibrahim, S. M. (2017). *Towards Institutionalizing Zakat Management In Kano State, Nigeria: An Exposition* (Issue 4110034). Universiti Sains Islam Malaysia, Nilai.
- Ibrahim, S., & Shahrudin, A. (2015). In Search of an Effective Zakat Distribution System in Kano State Nigeria. *Journal for Studies in Management and Planning*, 1(7), 259–285.
- Kareem, M. K., & Bankole, A. S. (2016). Zakah, Poverty Alleviation, and Inclusive Growth in Nigeria. *Journal of Islamic Finance*, 5(2), 53–65.
- Lawal, I. M., & Imam, U. B. (2016). Islamic Finance and Economic Growth: Empirical Evidence from Nigeria. *Issn*, 7(16), 2222–1700.
- Lubis, M., & Azizah, A. H. (2018). Towards Achieving the Efficiency in Zakat Management System: Interaction Design for Optimisation in Indonesia. In *Communications in Computer and Information Science* (Vol. 886, Issue August 2017). Springer Singapore.
- Muhammad, A. D. (2018). Appraisal of Application of ICT in Zakat Management in Nigeria. *E-Proceedings of the Global Conference on Islamic Economics and Finance 2018, October*, 60–80.
- Mustafa, M. O. A., Mohamad, M. H. S., & Adnan, M. A. (2013). Antecedents of zakat payers' trust in an emerging zakat sector: an exploratory study. *Journal of Islamic Accounting and Business Research*.
- Noor, A. H. M., Rasool, M., Ali, R., & Rahman, R. A. (2015). The efficiency of Islamic Institutions: Empirical Evidence of Zakat Organizations' Performance in Malaysia. *Journal of Economics, Business and Management*, 3(2), 282–286.
- Powell, R. (2010). Zakat: Drawing Insights for Legal Theory and Economic Policy from Islamic Jurisprudence. *Seattle University School of Law Digital Commons*, 1(1), 8–23.
- Sahrudin, D., Anggraini, T., & Jamila, S. (2017). Efficiency and Effectiveness of Zakat Payroll System. *Jurnal Kajian Ekonomi Islam*, 4(1), 36–44.
- Wahab, N. A., & Rahman, A. R. A. (2011). The efficiency of Zakat Institutions and Its Determinants. *8th International Conference on Islamic Economics and Finance*, 1–19.
- Wahab, N. A., & Rahman, A. R. A. (2012). The efficiency of Zakat Institutions in Malaysia: An Application of Data Envelopment Analysis. *Studies in Economics and Finance*, 29(3), 197–210.
- Zakaria, M., & Malek, N. A. A. (2014). The Effects of Maslow's Hierarchy of Needs on Zakah Distribution Efficiency in Asnaf Assistance Business Program. *Jurnal Pengurusan*, 40(1), 41–52.