Assessing the Productivity and Technological Changes of Indonesian Zakat Institutions

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Measurement of the productivity level of Islamic financial institutions in Indonesia has been widely carried out. However, not much research with the object of research in Islamic social fund institutions, one of which is zakat institutions in Indonesia. This study tries to measure the productivity performance of zakat institutions. This study uses the Malmquist Productivity Index method with DEAP 2.1 software. Data were obtained from eleven zakat institutions with a five-year research period from 2016 to 2020. This study uses the Malmquist Productivity Index method with DEAP 2.1 software. Data were obtained from eleven zakat institutions with a five-year research period from 2016 to 2020. This study is the first study to calculate the productivity level of eleven Indonesian zakat institutions with a research period of the last five years.

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INTRODUCTION

Zakat is a kind of income redistribution and the most prominent Islamic charitable system. As Islam's third pillar, zakat is both a form of prayer and muamalah. Zakat for muzakki (zakat givers) is a kind of obedience or devotion that shows how, fundamentally, every human being's property belongs to Allah. Zakat alleviates the economic burden of mustahiq (zakat beneficiaries) and strengthens the brotherhood between mustahiq and muzakki in terms of muamalah. Zakat serves as a tool to assist mustahiq in resolving economic issues, but it may also serve as a means of balancing the national economy's sectors (Rustyani & Rosyidi, 2018; Wahab & Rahman, 2012).

Zakat has been recognized as a social institution and a tool for enhancing Muslims' socioeconomic well-being. The formation of Zakat Collection and Distribution Units and the appointment of Zakat officials at the state level to administer Zakat norms and regulations were the initial steps toward establishing zakat as a social institution. Zakat can then accelerate its goal of reducing poverty in the Muslim world by making income from industrial, commercial, and financial activities of corporate organizations *zakatable* (Ismail & Masturah, 2014).

The most critical aspect of controlling the use of zakat money, and one that must not be overlooked, is the position of zakat *amil* (managers)in the Zakat Administration Organization as trustee for the management of zakat funds. If the zakat amil manages it appropriately, it can substantially influence other mustahik *ashnaf* (types of receivers). However, suppose the zakat amil is unable to manage it effectively. In that case, it is presumed that the other ashnaf mustahik rights would be violated, which is the strategic purpose of zakat amil. In other words, the most critical aspect of zakat is how to handle the money (management) to maximize their production. Performance management methods must be created (Parisi, 2017). This is an attempt to ensure the accountability of entities responsible for zakat management.

At the time, zakat, which was administered by amil zakat in a trustworthy and professional manner, was able to significantly improve the welfare of the people and alleviate poverty in a relatively short period. When it comes to zakat, Indonesia has a plethora of national amil zakat institutions.

Between 2002 and 2015, the development of significant zakat acquisitions revealed a massive gap compared to the available potential. Prof. Didin Hafidhudin, who served as Chair of the National Amil Zakat Agency (BAZNAS) from 2004 to 2015, stated that Indonesia's zakat potential was considerably more significant in 2009 than Indonesia's zakat potential reached 19.9 trillion per year. Then, in 2011, according to a study undertaken by BAZNAS in partnership with the Bogor Agricultural Institute and the Islamic Development Bank (IDB), Indonesia's zakat potential was estimated to be 3.4 percent of the country's gross domestic product (GDP), or around 217 trillion (Maulana & Fanani, 2020).

Zakat requires adequate supervision and oversight to ensure its effectiveness. Because of the critical role of zakat, institutions must administer it to enhance and create effective zakat management procedures to earn public confidence. To this end, many zakat institutions have undertaken various attempts to enhance their institutions' productivity to maximize zakat collection and provide additional advantages for poverty alleviation. The review was undertaken to demonstrate that many stakeholders questioned the efficacy of these funds' management in administering zakat matters (Djaghballou et al., 2018).

Offering a transparent, equitable, and efficient service to the public is a must for any organization seeking to follow Islamic principles, much alone the zakat intuitions. Nonetheless, various segments of society have expressed their unhappiness and skepticism regarding the efficacy of zakat organizations. This demonstrates that each zakat intuition is responsible for evaluating how efficiently they have performed in the past to implement appropriate remedial actions for future progress (Krishnan & Hamzah, 2017).

Researchers have carried out the scientific literature on the efficiency and productivity of zakat. This study seeks to update existing data focusing on calculating the level of zakat productivity using the Malmquist Productivity Index. Through this method, the results of this study can identify the level of fluctuations in the productivity of zakat institutions during the research period. The contribution of this research is to provide the latest information on the productivity level of several zakat institutions in Indonesia by explaining the factors that need to be improved, whether the level of effectiveness of the technology. In addition, the novelty of this study is to provide an overview of the grouping of zakat in four quadrants which are calculated based on the level of technology and efficiency so that the performance position of each zakat institution is known.

As a result, it is essential to assess the functioning of zakat institutions to determine their productivity. Determining the limiting element that serves as the yardstick for determining whether a zakat organization has operated efficiently is a distinct matter (Rusydiana & Widiastuti, 2019). The research then attempts to quantify the output of Indonesia's zakat institutions.

LITERATURE REVIEW

Zakat is one of Islam's five fundamental foundations. Zakat carries three distinct connotations: linguistic, religious, and legal. Zakat is a term that refers to the washing or purifying of anything from dirt or filth. Theologically, it refers to the spiritual cleansing that occurs as a result of zakat donation. Zakat is a legal term that refers to the transfer of ownership of a particular property to specific persons under specified circumstances. Muslims are obligated to contribute a particular portion of their income (according to specific circumstances and criteria) to recipients known as *al-mustahik* (receivers) with the primary goal of achieving socioeconomic justice (Wahab & Rahman, 2012).

Zakat is regarded as one of the cornerstones of Islam and its enormous root, as both the Noble Qur'an and the Sunnah make abundantly clear. Allah stated in the Qur'an Surah Al-Baqarah: 43 and also in Surah At-Tawbah: 5. According to the Prophet (PBUH), "Islam is founded on five principles: testifying that there is no god but Allah and that Muhammad is His Messenger; doing the obligatory congregational prayers regularly and flawlessly, and paying Zakah." Furthermore, Abu Bakr As-Sidiq, the first Caliph after Allah's Messenger, stated: "By Allah! I shall combat those who make a distinction between Prayer and Zakah." Muslim scholars unanimously agree that zakat is the third pillar of Islam, that it is a required deed, that anyone who denies this is deemed disbelievers, and that those who refuse to provide it face persecution. Zakat is a one-of-a-kind social security system. Unquestionably, current economists view it as a critical source of economic health (Djaghballou et al., 2018).

The concept of zakat is a basic tenet of Islamic economics since it balances the rich and poor and strengthens the nation's economy as a whole. Given its status as a philanthropic organization, the Zakat institution plays a critical and strategic role in assisting the government with COVID-19 recovery. This job applies to various sectors, including health, economics, social work, Islamic preaching, and education (Hambari et al., 2020).

Among the recommendations for the zakat institution is in the health sector, where the Zakat institution supports a study involving the development of a COVID-19 vaccine to prevent the virus's spread. The pandemic of COVID-19 has a detrimental effect on the economy. The impact is more significant on micro-firms than on larger enterprises. Entrepreneurs face business closures or income reductions due to the loss of various supporting industries, such as retail and transportation. At this point, they require assistance to continue operating their firm. Because this is included in the distribution of productive zakat, zakat organizations can aid small enterprises. Zakat is allocated in principle in two ways: consumptive and productive. Zakat institutions distribute zakat in a variety of ways. One of them is the distribution of zakat to productive zakat receivers in the form of business capital. Thus, it is clear that zakat plays a critical role in helping recovery after the pandemic COVID-19.

Productivity is a term that refers to the ratio of the outcome of comparing input and output. Both ratios demonstrate that efficiency and productivity may be increased or decreased by changing input and output management, or even both. Productivity may be used to assess an economic unit's performance (Rusydiana & Widiastuti, 2019). Productivity is the difference between the value of products produced by a production activity and the expenses associated with producing those items over a specified period (Parisi, 2017). In Indonesia, there are two types of zakat management organizations: the government-run BAZ (Badan Amil Zakat/zakat management agency) and the community-run LAZ (Lembaga Amil Zakat/zakat management agency). To exist and operate, a LAZ must be inaugurated by the government. This is critical because LAZ's operationalization would require public funds. Additionally, evidence of zakat contribution to LAZ may qualify as a tax deduction (Rustyani & Rosyidi, 2018).

Many researchers have researched the productivity of zakat institutions. For example, research on increasing the productivity of zakat institutions in Malaysia using the Malmquist Productivity Index and Data Envelopment Analysis methods (Wahab & Rahman, 2012). Likewise, research on the effect of type and regulation on the efficiency level of zakat institutions in Indonesia (Sanrego & Rusydiana, 2017) and research that focuses on technological change and efficiency in zakat institutions in Indonesia (Rusydiana & Widiastuti, 2019). Other studies on the productivity

of zakat institutions were also conducted in Algeria (Djaghballou et al., 2018) and other countries, proving the importance of calculating the productivity of zakat institutions (Abd. Wahab et al., 2017; Shaikh, 2016; Shirazi & Bin Amin, 2009). This study examines the productivity of zakat institutions in Indonesia using several famous zakat institutions with the latest data from 2016 to 2020.

RESEARCH METHODS

The DEA-based Malmquist Productivity Index (MPI) method was initially introduced by Caves, Christensen, and Diewert (CCD) in 1982 and empirically applied by Färe, Grosskopf, Lindgren, and Roos in 1992 and Färe, Grosskopf, Norris, and Zhang in 1994. Non-parametric (Malmquist) and parametric (Fischer and Tornqvist) indices vary in their behavioral assumptions and recognize random errors in the data, also known as noise. The advantage of applying the MPI index compared to others is that it does not require a price while eliminating assumptions about the technology structure.

In this study, changes in the productivity of zakat institutions are measured using output-oriented MPI and assign changes in Total Factor Productivity Change (TFPCH) to Technological Change (TECHCH) and Efficiency Change (EFFCH). EFFCH changes are associated with Pure Technical Efficiency Change (PTECH), and Scale Efficiency Change (SECH) changes. The interaction between efficiency indices is shown in figure 1:
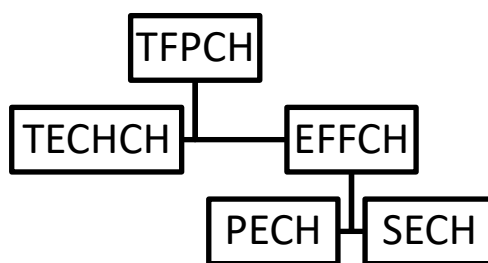

Figure 1. Index Productivity

The efficiency change index can be further decomposed into a mutually comprehensive PECH (pure efficiency changes) component, calculated relative to the VRS technology and the SECH (scale changes) component, capturing deviations between VRS and CRS technologies according to the suggestion of Färe.

The first-generation model was developed by Caves et al. (1982). There are 2 (two) Malmquist productivity index models, namely the 'Malmquist input quantity index' and the 'Malmquist output quantity index.' The Malmquist input quantity index for production units, at the time of observation t and t + 1, for the reference technology in the period k, k = t, and t + 1. The Malmquist input quantity index measures the change in the quantity of the input observed between times t and t + 1, where:

$$MI_k (y_k, x_t, x_{t+1}) = \frac{E_k^I (y_k, x_t)}{E_k^I (y_k, x_{t+1})} , \ k = t, \ t + 1 \quad (1)$$

The Malmquist output quantity index for production units, at observation times t and t + 1, for the reference technology in periods k, k = t, and t + 1. The Malmquist output quantity index only measures the change in the quantity of output observed between times t and t + 1, where:

$$MO_k (y_t, y_{t+1}, x_k) = \frac{E_k^O (y_{t+1}, x_k)}{E_k^O (y_t, x_k)} , \ k = t, \ t + 1 \quad (2)$$

Bjurek (1996) introduced a new definition of the Malmquist productivity index for units of production between t and t + 1 based on the level of technology at times k, k = t, and k = t + 1, following the tradition of most productivity indices. The index constructed is the ratio between the output index and the input index, according to the Tornqvist productivity index, where:

$$MTFP_k = \frac{MO_k(y_t, y_{t+1}, x_k)}{MI_k(y_k, x_t, x_{t+1})} = \frac{E_k^O (y_{t+1}, x_k)/E_k^O (y_t, x_k)}{E_k^I (y_k, x_t)/E_k^I (y_k, x_{t+1})} ,$$
$$k = t, \ t + 1 \quad (3)$$

The equation describes the ratio between the output and Malmquist input indices. If the productivity index value is more significant than the number 1, productivity has increased. However, if the index value is less than 1, the productivity level will decrease. Meanwhile, if it equals 1, then the productivity level will stagnate. As for the estimation of TFP growth and components that refer to the Malmquist Index using the Cobb-Douglas theory. The Cobb-Douglas production function can be written as follows:

$$Y = A * L^a * K^{(1-a)} \quad (4)$$

The equation is expressed as a measure of total factor productivity, where scalar A has economic value. The geometric weighted average of the inputs is used to produce the actual output. Thus, A can be interpreted as real output per unit of input. The method used to measure efficiency in this study is the Malmquist Productivity Index as an extension of Data Envelopment Analysis (Khairunnisa, 2023). This is a better productivity measure than Y/L and Y/K, which are partial productivity measures that do not consider the possible number of other inputs used.

Factors of change in productivity can be seen through the value of the Efficiency Change Index (EFFCH) and Technology Change Index (TECHCH) to explain the change in productivity. Meanwhile, the Pure Efficiency Change Index (PECH) and Scale Efficiency Change Index (SECH) were used to determine the cause of changes in the efficiency change index (EFFCH). The Total Factor Productivity (TFP) value shows the change in the index. If the value of M > 1 indicates an increase in productivity, M = 1 indicates no increase in productivity, and M < 1 indicates a decrease in productivity in zakat institutions.

This study also tries to group zakat institutions in Indonesia into four quadrants based on the categories of technological change (TECH) and changes in efficiency (EFFCH), with high and low-level categories. Categorization is done by identifying the TECH and EFFCH values from the Malmquist Index Summary, where a value above 1 indicates a high category while below 1 indicates a low category. The division of the quadrant is divided into 4, namely Quadrant 1 is a zakat institution that has High Technology and High Efficiency, Quadrant 2 is a zakat institution that has High Technology and Low Efficiency. Then Quadrant 3 is a zakat institution with Low Technology and High Efficiency, and Quadrant 4 is a zakat institution with Low Technology and Low Efficiency.

This research was conducted on 11 zakat institutions in Indonesia within five years, from 2016 to 2020. All data were obtained by directly accessing the website of each zakat institution, then referring to the annual report every year during the study period, which is five years. The number of zakat institutions that became the object of this study was 11 zakat institutions operating in Indonesia based on the total amount of data obtained in full because of the method, and In this case, the incoming panel data must be complete. Indonesian zakat institutions, whose data is relatively complete based on input and output factors for five years (2016 to 2020), only number 11 zakat institutions, while other zakat institutions are not registered because the data collected is incomplete.

In this study, the variables used to analyze productivity are input variables consisting of salary expenses, operating costs, and total assets. In contrast, the output variables consist of collected zakat and distributed zakat. The analytical tools used in this study to measure the Malmquist productivity index are using DEAP 2.1 software. Calculation of the productivity of zakat institutions is carried out using the BCC or VRS approach with an output orientation.

RESULTS AND DISCUSSION

Sten Malmquist first created the Malmquist Productivity Index (MPI) in 1953 to measure productivity. However, this MPI was introduced by Caves et al. (1982) in its development. Two things are calculated in the measurement of the Malmquist index, namely the catch-up effect and the frontier shift effect. The catch-up effect measures the rate of change.

Factors of change in productivity can be seen through the value of the Efficiency Change Index (EFFCH) and Technology Change Index (TECHCH) to explain the change in productivity. Meanwhile, the Pure Efficiency Change Index (PECH) and Scale Efficiency Change Index (SECH) are used to determine the cause of changes in the efficiency change index (EFFCH). The value of Total Factor Production (TFP) shows a change in the index. If the value of M>1 indicates an increase in productivity, M=1 indicates no increase in productivity, and M<1 indicates a decrease in the value of productivity at the zakat institution.

Table 1 describes the results of the estimated Malmquist Productivity Index (MPI) values of zakat institutions in Indonesia included in the observations.

Table 1. Malmquist Index Summary Based On Annual Average

Year	effch	techch	pech	sech	tfpch
2016-2017	1.035	0.757	0.996	1.039	0.784
2017-2018	1.042	0.936	1.050	0.993	0.975
2018-2019	0.709	1.390	0.832	0.852	0.986
2019-2020	1.144	1.016	1.146	0.998	1.162
Mean	**0.967**	**1.000**	**0.999**	**0.968**	**0.967**

Table 1 shows that there is an increase in productivity growth every year as indicated by the TFPCH value, namely from the 2016-2017 to 2019-2020 period, where the last period, 2019-2020, shows a productivity level with a score of more than one, which is 1,162. The increase in TFPCH with an average score of 0.967 is influenced by changes in the efficiency with an EFFCH score of 0.967 and changes in technology with a TFPCH score of 1,000. At the same time, the EFFCH value is lower, with a score of 0.967. This shows that the increase in the productivity of zakat institutions in Indonesia is much influenced by the high level of technology with a TFPCH score of 1,000.

This research was conducted by measuring the productivity levels in each zakat institution in Indonesia in the 2016-2020 period. The results of these calculations can be seen in Table 2.

Table 2. Malmquist Index Summary by Zakat Institution

DMU	effch	techch	pech	sech	tfpch
BAMUIS BNI	1.000	1.251	1.000	1.000	1.251
BAZNAS	1.222	0.767	1.094	1.118	0.937
BMM	0.987	1.099	1.000	0.987	1.085
LAZ DD	0.850	0.941	0.851	0.999	0.800
LAZ IZI	1.095	1.137	1.090	1.004	1.245
LAZ RZ	1.000	0.872	1.000	1.000	0.872
LAZIS NU	1.000	0.910	1.000	1.000	0.910
RUMAH YATIM	0.913	1.071	1.000	0.913	0.978
YATIM MANDIRI	1.000	0.697	1.000	1.000	0.697
YBM BRI	0.850	0.976	1.000	0.850	0.829
YBM PLN	0.796	1.535	0.979	0.814	1.223
Mean	0.967	1.000	0.999	0.968	0.967

Based on Table 2 as a whole, the zakat institution that has the highest level of productivity among other zakat institutions is BAMUIS BNI, with a TFPCH value of 1,251. The most important factor affecting the high productivity level at BAMUIS BNI is technological innovation (TECH) carried out by zakat institutions of 1,251. Meanwhile, the rate of change in efficiency (EFFCH) at BAMUIS BNI tends to stagnate with a score of 1,000.

In addition, the zakat institution with the lowest productivity value compared to other zakat institutions sampled in the study were YATIM MANDIRI with a low productivity level (TFPCH) of 0.697, one of which was because it had a low level of technological innovation among other zakat institutions of 0.697. Meanwhile, YATIM MANDIRI's level of efficiency change is still relatively high, at 1,000. So one of the factors that cause the low level of productivity at YATIM MANDIRI is the low level of technological innovation, even though the productivity level of zakat institutions in Indonesia has increased.

Zakat institutions in Indonesia are grouped into four quadrants based on the categories of technological change (TECH) and efficiency changes (EFFCH), with high and low-level categories. Tech and EFFCH numbers above 1 indicate a high category, while below 1 indicate a low category.

Quadrant 1 includes zakat institutions with technological and high-efficiency changes, which can be considered zakat institutions with high productivity. Two zakat institutions fall into this category, namely BAMUIS BNI and LAZ IZI.

Quadrant 2 includes zakat institutions that have significant technological changes, but on the other hand, have low-efficiency changes. This group's collection of zakat institutions can be considered zakat institutions with low "catching up" capabilities. The increase in the number of DMU zakat institutions in this second quadrant is a sign of their ineffectiveness in producing efficiency (technical changes and levels of efficiency changes are classified into high and low categories based on their average scores). Three zakat institutions are included in this quadrant, namely BMM, YATIM HOUSE, and YBM PLN.

Quadrant 3 includes groups of zakat institutions that have low technical changes, but on the other hand, have relatively significant efficiency changes. The collection of zakat institutions in

quadrant three can be considered zakat institutions with low production technology improvements but relatively able to achieve a high-efficiency value. Four zakat institutions are included in this quadrant, namely BAZNAS, LAZ RZ, LAZIS NU, and YATIM MANDIRI.

Table 3. Zakat Institution Quadrant Malmquist Index

Quadrant	Zakat Institution
Quadrant 1 (High Technology, High Efficiency)	BAMUIS BNI LAZ IZI
Quadrant 2 (High Technology, Low Efficiency)	BMM RUMAH YATIM YBM PLN
Quadrant 3 (Low Technology, High Efficiency)	BAZNAS LAZ RZ LAZIS NU YATIM MANDIRI
Quadrant 4 (Low Technology, Low Efficiency)	LAZ DD YBM BRI

On the other hand, Quadrant 4 is a group of zakat institutions with low technological and efficiency changes. The collection of zakat institutions in this group can be considered as zakat institutions whose productivity growth rate is relatively stagnant due to the small value of TECH and EFFCH. Two zakat institutions are included in this quadrant, namely LAZ DD and YBM BRI.

FINDINGS

For zakat institutions, one of the Islamic social fund management institutions, productivity growth is important because zakat must be appropriately managed to provide more benefits to the recipients, resulting in a more significant positive impact. When productivity increases, zakat institutions can convert resources into income, pay for needs, and maintain cash flow for growth and broader benefits in the future. Measuring the productivity of zakat institutions allows zakat institutions to make operational changes, add employees or equipment to increase the benefits provided. Understanding the labor productivity of zakat institutions also allows zakat institutions to measure overall efficiency and whether zakat institutions can manage the funds received well and can be trusted to manage more considerable zakat funds to improve the welfare of the zakat recipient community.

This study indicates that the productivity value of zakat institutions in Indonesia continues to increase every year, even in 2020 when the COVID-19 pandemic begins to impact the economic and financial sectors. This shows that the performance of zakat institutions in Indonesia is experiencing positive development and can be used as an instrument of social funds whose benefits can be felt by the community in an inclusive manner. Zakat can stimulate the economy when it is used for economic development. Numerous studies demonstrate that zakat has a significant positive effect on the quality of life in communities. Online zakat applications should become more prevalent as a result of technology advancement and globalization in order to maximize zakat potential, particularly when the scenario embraces a new permanent normal condition. Zakat also plays a part in recovering the COVID-19 pandemic through Islamic financial applications (Faturohman et al., 2021).

Zakat can assist close the present financing shortfall in humanitarian aid. Payment of zakat helps alleviate the undesired concentration of wealth among the few wealthy in society, bridging the divide between affluent and poor. This distributive fairness will be promoted through the multiplier impact of private expenditure, trade, and commerce, resulting in economic growth (Hamed, 2020). Zakat optimization is inextricably linked to how zakat institutions allocate it. This circumstance is possible because if zakat is distributed correctly and adequately, it will optimize the function of the zakat fund's utilization (Ferdaus et al., 2020).

It is critical for a zakat institution to review and comprehend its past performance to design optimal strategies for future progress (Krishnan & Hamzah, 2017). Previous research has revealed that the organizational performance of zakat management institutions in Indonesia has not been ideal for raising

the number of muzakki (Maulana & Fanani, 2020). Additionally, it was determined that the primary reason for the inefficiency of five zakat institutions between 2005 and 2014 was the allocation of zakah to *ashnaf*, which is still not ideal. It hence cannot alleviate poverty (Parisi, 2017). Other research discovered that the zakat institution in Indonesia was inefficient between 2010 and 2013 due to allocating funds from zakat institution programs, which is still less than ideal (Rusydiana et al., 2016).

According to certain studies, the productivity growth of zakat organizations in Indonesia is generally due to technology advancements rather than efficiency improvements. Thus, zakat organizations must provide more innovative services in light of future technological advancements (Rusydiana & Widiastuti, 2019). This is consistent with the study's findings, which indicate that the score of technical change affects the productivity level of zakat organizations. These findings are critical for critical application evaluation, taking into account research input variables such as salaries, operational costs, and socialization costs, as well as research output variables such as zakat fund and zakat distribution, both of which take maqasid sharia aspects into account (Ryandono et al., 2021).

On the other hand, inversely proportional to Indonesia's superior score in terms of technological progress, the zakat institution in Malaysia lags in terms of resources, particularly technical efficiency. The public perception of inefficiencies in distribution is severe, as the distribution function has a lower efficiency mean than the collecting function (Ismail & Masturah, 2014). Zakat's economic effects can theoretically benefit critical economic variables such as consumption, saving, poverty eradication, and economic growth (Wahab & Rahim Abdul Rahman, 2011). Human resource variables have a considerable negative effect on the efficiency level of zakat institutions, whereas type and regulation variables have a significant beneficial effect (Sanrego & Rusydiana, 2017). There are numerous improvements that zakat organizations could make to increase overall production if efficiency and technology advancements could be made (Wahab & Rahman, 2012).

The Malmquist quadrant results thus indicate that certain zakat institutions have attained a high level of technology and efficiency. Among their efforts are developing a website and a mobile application, collaboration with rising local fintech enterprises, and the provision of QR codes. Each exemplifies Indonesian zakat institutions' efforts to respond to fintech, most notably by increasing Zakat collection. This is compelling proof that zakat institutions are adaptable to technological advancements (Hudaefi et al., 2019; Rusydiana & Nailah, 2020). The use of technology in the zakat institution system results in new goods, services, and strategic models, affecting the zakat institution system's efficiency, smoothness, security, and reliability (Friantoro & Zaki, 2019).

CONCLUSION

The average productivity value of zakat institutions in Indonesia increases every year, especially tends to decrease, especially at the end of the research period, namely the 2019-2020 period coinciding with the COVID-19 pandemic, from a TFPCH score of 0.986 to 1,162. This shows that COVID-19 does not have a negative impact on the productivity performance of zakat institutions in Indonesia. The average value of the productivity of zakat institutions as a whole is 0.967, where several zakat institutions achieve a productivity level with a score above one, namely BAMUIS BNI, BMM, LAZ IZI, and YBM PLN, where the most productive zakat institution is BAMUIS BNI with a productivity value of 1,251. The zakat institution considered the least productive is YATIM MANDIRI, with a productivity value of 0.697.

This study found that the factor that affects the productivity level of zakat institutions is the TECHCH technology change score of 1,000. On the other hand, the EFFCH efficiency change score factor has a value of 0.967. The TECHCH and EFFCH scores determine the division of zakat institutions into four productivity quadrants, where zakat institutions included in quadrant 1 (technology and high efficiency) are two zakat institutions, quadrant 2 (high technology, low efficiency) are three zakat institutions, quadrant 3 (high efficiency, low technology) amounting to 4 zakat institutions and quadrant 4 (technology and low efficiency) totaling two zakat institutions.

Zakat institutions that have achieved a high level of productivity are expected to maintain their performance by maintaining the amount of input and continue to strive to increase output. So that the level of welfare of zakat institutions can be maintained or even increased in the future period. As for zakat institutions that have not yet achieved a good level of productivity, it is hoped that they will be able to improve their performance by choosing the right strategy to achieve a better level of productivity.

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