

Analysis of the Impacts of the Covid-19 Pandemic on Rice Farming Efficiency Level: An Empirical Study in Central Java Province, Indonesia

Sucihatningsih Dian Wisika Prajanti¹, Talitha Widiatningrum², Subiyanto³, Dalila Daud^{4*} and Fauzul Adzim⁵

¹*Department of Development Economics, Faculty of Economics and Business, Universitas Negeri Semarang, Indonesia*

²*Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Negeri Semarang, Indonesia*

³*Department of Electrical Engineering, Faculty of Engineering, Universitas Negeri Semarang, Indonesia*

⁴*Accounting Research Institute (ARI) (HICOE), Universiti Teknologi MARA, Selangor, Malaysia and Faculty of Accountancy, Universiti Teknologi MARA, Negeri Sembilan, Malaysia*

⁵*Department of Development Economics, Faculty of Economics and Business, Universitas Negeri Semarang, Indonesia*

ABSTRACT

This research aimed to analyze the impact of the Covid-19 pandemic on the efficiency level of rice farming in Central Java Province. There were 100 rice farmers in Central Java as the research sample. The research consisted of dependent and independent variables. The dependent variable was the production of rice plants in tons. Meanwhile, the independent ones included harvested area (X1), workforces (X2), seeds (X3), urea fertilizer (X4), SP-36 fertilizer (X5), Mutiara fertilizer (X6), and pesticides (X7). The rice farming efficiency was the efficiency of cob-douglas production using the Stochastic Frontier Analysis (SFA) approach. The results showed that the Covid-19 pandemic negatively influenced rice productivity. The value of technical efficiency in rice farming during the Covid-19 pandemic was $0.605 < 1$. This indicated that the level of technical efficiency was achieved and required a reduction in the production factor. Next, the level of price efficiency in rice farming was also not efficient. It had a value of $21.55 > 1$. It meant that to achieve price efficiency, it was necessary to add production inputs. The economic efficiency was still low because the value was $13.03 > 1$. To realize an efficient rice farming business in terms of technical and economical aspects, the farmers should use an appropriate composition of production inputs. Therefore, the government must provide assistance and training to farmers on how to use rice agricultural production inputs based on appropriate portions and the right size.

Keywords: Covid-19, Rice Farming, Efficiency, Central Java, Stochastic Frontier Analysis

ARTICLE INFO

Article History:

Received: 09 October 2023

Accepted: 29 January 2024

Available online: 01 April 2024

* Corresponding Author: Dalila Daud; Level12, SAAS Building, Accounting Research Institute (ARI); Email: daliladaud@uitm.edu.my; Tel: +601111866607

INTRODUCTION

The Covid-19 pandemic started in December 2019 in Wuhan, China. In early March 2020, the virus Covid-19 came and spread in Indonesia. The outbreak of the Covid-19 pandemic has had a very significant impact on various sectors. The Indonesian government-imposed restrictions on public activities. This policy declined the economic growth rate drastically. This decline certainly affected the sluggish sector in the economic sector, including the agricultural field (Mashadi et al., 2021). The restrictions on community activities by the government on a large scale made the agricultural sector experience a decline in performance. It is because it has a strong relation to the agricultural sector. Other related sectors are culinary and industries that require agricultural raw materials.

Agriculture plays a vital role in supplying food in Indonesia. The Central Java Province is one of the regions in Indonesia which has become the supplier of national food. The following chart presents the harvested areas and rice productivity levels in Central Java which tended to decrease due to the pandemic:

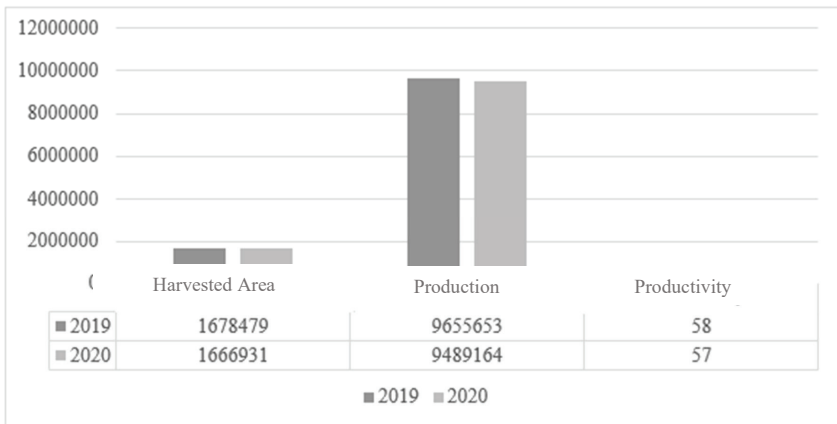


Figure 1: Harvested Area, Production, and Productivity of Rice in Central Java
 Source: Central Bureau of Statistics, 2022

Figure 1 shows that from 2019 to 2020, the harvested areas and rice productivity levels experienced a decreasing performance. This meant that the Covid-19 pandemic greatly affected the rice production rate. During the

Covid-19 pandemic, the rice demand declined when there was a restriction policy. This made rice farming experience inefficiency to the detriment of many farmers.

The concept of efficiency includes three points, namely technical efficiency, allocative efficiency, and economic efficiency (Puspitasari, 2017; Ahmad & Wibowo, 2021; Margi & Balkis, 2016; Hua, 2020). Technical efficiency reflects the farmers' ability to obtain maximum outputs from certain inputs (Shen, 2019). A farmer is more technically efficient than others if farmer can produce greater outputs at the same level of production technology use or use smaller inputs. Farmer should also be able to produce the same outputs at the same production technology level (Anum et al., 2020; Firmana et al., 2016; Wu, 2019). Allocative efficiency means the farmers' relative ability to use inputs in optimal proportions at each input price level and certain technology to produce maximum outputs and profit. Allocative efficiency can be obtained in technically efficient farming conditions. The two combined efficiency measures will generate economic efficiency (Lasmini et al., 2016; Sinabang et al., 2021; Tsai, 2019). Economic efficiency is the product of technical and allocative efficiency. In simple words, economic efficiency can be measured by maximum profits and minimum costs. There will be economic efficiency if the Marginal Value Product is equal to the Marginal Factor Cost ($MVP = MFC$).

These descriptions show that production efficiency is a relative measure of the ability of a farmer to use inputs and produce outputs at a certain technological level. Therefore, there should be a specific measure of efficiency, namely the maximum ability to produce output using certain inputs and technology levels (Iqbal, 2019). One of the methods commonly used to measure efficiency is the frontier production function approach (Cendrawasih et al., 2018) (Wang, 2019). It is a function that describes the maximum output that can be achieved from each level of input use (Coelli et al., 1998).

The relationship between the Cobb-Douglas production function and agricultural efficiency lies in the way it models the use of inputs to achieve output. If an agricultural or economic sector operates according to the Cobb-Douglas production function, then optimal efficiency can be achieved when the parameters α and β are adjusted in such a way that labor and capital inputs are used efficiently to produce maximum output (Wang et al., 2021).

Anas et al., (2020) stated the reasons for the importance of measuring efficiency: (1) The problem of measuring farming efficiency is important for economic theorists and agricultural policy makers; (2) If theoretical reasons for the relative efficiency of various economic systems are to be tested, it is important to be able to make measurements of actual efficiency; (3) If economic planning is closely related to a particular industry it is important to know how far that industry can be expected to increase its output by increasing efficiency, without absorbing other additional resources. In standard microeconomic theory, the concept of production function forms the basis for the description of input-output relationships for farmers. If homogeneous production factors and complete information about existing technology are assumed, the production function represents a number of methods for producing output. Benedek et al., (2023) suggests that in economic terms, technical inefficiency refers to the failure to operate the production function caused by the timing and manner of application of production inputs. Potential causes of technical inefficiency are imperfect information, low technical capability, and inadequate motivation (Pishga et al., 2021).

There must be accurate methods to calculate the efficiency of rice farming in Central Java before and during the Covid-19 pandemic. The results can provide information on the impacts of the Covid-19 pandemic on the performance of the agricultural sector, especially rice farming. The efficiency calculation can use Stochastic Frontier Analysis, which has been used by some previous studies. The theory used in this research was the Cob-Douglas production function theory. There have been some studies and different findings that examined the efficiency of farming, especially rice. Some previous findings research explained that rice farming efficiency can be influenced by seed quality (Aprianti et al., 2020; Hou, 2019), land area (Tando, 2019; Iqbal, 2019), fertilizer (Yuliana et al., 2017; Ding, 2018), and some workers (Novia & Satriani, 2020; Rahaman, 2018; Dissanayaka, 2018). Also, no research has analyzed the comparison of the efficiency of rice farming before and during the Covid-19 pandemic in Central Java. There are different and varied findings of previous studies that provide a gap for further research. Therefore, this research aimed to analyze the impact of the Covid-19 pandemic on the efficiency level of rice farming in Central Java Province.

RESEARCH METHODS

This research uses a quantitative approach. It focussed on calculating the level of technical efficiency, price efficiency (allocative efficiency), and economic efficiency of rice farming in Central Java. The population was 100 rice farmers in Central Java. The sampling technique used was purposive sampling. This technique selects the samples with certain considerations. It included the farmers who grow rice before and during the Covid-19 pandemic. Because the population was 100, the number of samples taken was the entire population, namely 100 respondents (Hair, 2014).

This research had dependent and independent variables. The dependent variable was rice production in tons. Meanwhile, the independent ones include harvested area (X1), workforces (X2), seeds (X3), urea fertilizer (X4), SP-36 fertilizer (X5), Mutiara fertilizer (X6), and pesticides (X7). The rice farming efficiency was the efficiency of cob-douglas production using the Stochastic Frontier Analysis (SFA) approach. Stochastic Frontier Analysis (SFA) is used to determine efficiency values over time. The resulting efficiency value is a score from 0-1. The closer to 1, the more efficient the company is and vice versa, the closer to 0, the more inefficient the company is. The Stochastic Frontier Analysis (SFA) method uses u (controllable error) to obtain this efficiency value.

The analysis model in this study used the Cob-Douglas production function efficiency model written as follows:

$$Y = aX_1^{b1} \cdot X_2^{b2} \cdot X_3^{b3} \cdot \dots \cdot X_n^{bn} e^u \quad (1)$$

Note:

Y: Production

X_i : Type of production factor I, where $i= 1,2,3,\dots,n$

a: Intercept

b_i : Regression coefficient of the i -variable estimator

u : Error

e : natural logarithm $E^{-2,178}$

To facilitate the estimation, equation 1 was converted into a linear form by transforming it into a logarithmic form. It was to set the optimal input and the level of technical efficiency achieved in rice farming in Central Java. Equation 1, after being transformed into a natural logarithm, is:

$$\log Y = a + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + b_5 \ln X_5 + b_6 \ln X_6 + b_7 \ln X_8 + e \tag{2}$$

Note:

- Y: Logarithm of rice production
- LnX1: Natural logarithm of harvested area
- LnX2: Natural logarithm of workforce
- LnX3: The natural logarithm of seed
- LnX4: Natural logarithm of urea fertilizer
- LnX5 : Natural logarithm of SP-36 fertilizer
- LnX6: Natural logarithm of Mutiara fertilizer
- LnX7: Natural logarithm of pesticides
- b1-b7: coefficient value
- e: error

The first efficiency analysis in this research was technical efficiency. The following formula aimed to measure technical efficiency:

$$TE = \exp \left(-E \left[\frac{u_i}{\varepsilon_i} \right] \right) \tag{3}$$

It is known that:

$$E \left[\frac{u_i}{\varepsilon_i} \right] = \left(\frac{\sigma_u \sigma_v}{\sigma} \right) \left\{ \frac{f(\varepsilon_i \lambda \sigma^{-1})}{1 - F(\varepsilon_i \lambda \sigma^{-1}) - (\varepsilon_i \lambda \sigma^{-1})} \right\} \tag{4}$$

Note:

- ε = Sum of v_i and u_i
- σ = Persamaan unequation fortuk $(\sigma_v^2 + \sigma_u^2)^{1/2}$
- λ = Ratio of σ_u and σ_v

f and F are the standard normal density, and the distribution function over evaluation $(\varepsilon_i \lambda \sigma^{-1})$. The value of Technical Efficiency (TE) is between

0 and 1, or $0 \leq TE \leq 1$. If the value of TE is close to 1, the efficiency is more technically efficient. If it is close to 0, it is technically inefficient.

The second analysis was price efficiency. Price efficiency will be achieved if the ratio of the marginal product value of each input to the price is equal to 1. So, the formula was:

$$NPM_x = P_x, \text{ or}$$

$$\frac{NPM_x}{P_x} = 1 \quad (5)$$

Or in another form:

$$\frac{b.Y.P_y}{X} = P_x \quad (6)$$

or

$$\frac{b.Y.P_y}{X.P_x} = 1 \quad (7)$$

Note:

b = elasticity of production

Y = average rice production

P_y = average production price Y

X = average factor of production X

P_x = average price of production factor X

The terms are as follows

1. If $\frac{NPM_x}{P_x} > 1$, the use of production factor x is not efficient, and there must be production factor x to achieve efficient production.
2. If $\frac{NPM_x}{P_x} < 1$, the use of production factor x is not efficient, and there must be reduced production factor x to achieve efficient production.

The third analysis was economic efficiency. Economic efficiency is a production condition that uses minimal inputs and costs but can still produce a certain number of outputs or by using certain inputs and costs to produce maximum outputs. Economic efficiency can be achieved if there have been technical efficiency and price efficiency. Economic efficiency can be calculated in the following way:

$$EE = ET \times EH \tag{8}$$

Note:

EE = Economic Efficiency

ET = Technical Efficiency

EH = Price Efficiency

RESULTS AND DISCUSSIONS

Results of Production Efficiency Analysis Using the Stochastic Frontier Analysis Approach

Efficiency calculations provide an overview of what is actually in the agricultural sector. The results of the efficiency calculation describe the level of elasticity. It is because the model used is the natural logarithm model. Table 1 below presents the results of the estimation of rice farming efficiency.

Table 1: Estimation of Rice Production Efficiency

No.	Variable	Coefficient	t-ratio
1.	Constant	2.634	2.756
2.		0.312	2.641
3.		0.335	2.542
4.		0.348	3.241
5.		0.375	1.235
6.		0.261	0.643
7.		0.285	2.255
8.		0.291	0.723
9.	Average Technical Efficiency Score	0.605	
N		100	

$$\text{Estimation Model: } \text{LnY} = \beta_0 + \beta_1 \text{LnX}_1 + \beta_2 \text{LnX}_2 + \beta_3 \text{LnX}_3 + \beta_4 \text{LnX}_4 + \beta_5 \text{LnX}_5 + \beta_6 \text{LnX}_6 + \beta_7 \text{LnX}_7 + \varepsilon$$

$$\text{Estimation result: } \text{LnPr} = 2.634 + 0.312\text{LnLp} + 0.335\text{LnTk} + 0.348\text{LnBb} + 0.375\text{LnPu} + 0.261\text{LnPsp} + 0.285\text{LnPm} + 0.291\text{LnPes} +$$

Note:

LnPr: Rice production

LnLp: Harvested area

LnTk: Workforces

LnBb: Seeds

LnPu: Urea Fertilizer

LnPsp: SP-36 Fertilizer

LnPm: Mutiara Fertilizer

LnPes: Pesticides

Table 1 explains that the initial input is transformed into the form of the natural logarithm (Ln) so that the unit is a percentage. A more detailed explanation of the value of the elasticity coefficient is presented in the following sections:

1. The elasticity coefficient for harvested area input was 0.312. It meant that when the input of harvested area increases by 1%, the farmers will get an increase in production yield of 0.312% with the assumption of *ceteris paribus*.
2. The coefficient of elasticity for workforce input was 0.335. It meant that when the workforce input is added by 1%, the farmer will get an increase in production output of 0.335% with the assumption of *ceteris paribus*.
3. The coefficient of elasticity for seedling input was 0.348. It meant that when the input of seeds is added by 1%, the farmer will get an increase in production yield of 0.348% with the assumption of *ceteris paribus*.

4. The coefficient of elasticity for the input of urea fertilizer was 0.375. It meant that when the input of urea fertilizer is added by 1%, the farmer will get an increase in production yield of 0.375% with the assumption of *ceteris paribus*.
5. The elasticity coefficient for SP-36 fertilizer input was 0.261. It meant that when the input of SP-36 fertilizer is added by 1%, the farmer will get an increase in production yield of 0.261% with the assumption of *ceteris paribus*.
6. The elasticity coefficient for the Mutiara fertilizer input was 0.285. It meant that when the input of Mutiara fertilizer is added by 1%, the farmer will get an increase in production yield of 0.285% with the assumption of *ceteris paribus*.
7. The elasticity coefficient for pesticide input was 0.291. It meant that when the input of pesticides is added by 1%, the farmer will get an increase in production yield of 0.291% with the assumption of *ceteris paribus*.

Calculation of Technical Efficiency of Rice Farming

The estimation of technical efficiency using Frontier Version 4.1 software showed an average value of rice production efficiency of 0.605. It meant that the use of production factors in rice farming was not yet efficient because it is lower than 1. The value of 0.605 is close to 1, which means that there was excessive use of production factors in rice farming, thereby reducing the efficiency value. Therefore, it is necessary to reduce production factors in rice farming. Rice farming still used excessive fertilizers and drugs, so there must be an adequate reduction to achieve efficient production.

Calculation of Price Efficiency of Rice Farming

Price efficiency can be explained as the value of the marginal product (NPM) of the input with the value of the marginal product (NPM) of the output (Nicholson, 2002). Three possibilities occur in price efficiency, including:

1. If the efficiency value is lower than 1, the use of production factor x is not efficient, so there must be a necessary reduction to achieve efficiency.
2. If the efficiency value is higher than 1, the use of production factor x is not yet efficient, so there must be a necessary addition to achieve efficiency.
3. If the efficient value is equal to 1, the use of production factor x is efficient and maximum profit is earned.

Table 2: Calculation of Price Efficiency in Rice Farming

No.	Production Factor	Calculation of Price Efficiency	Note
1.	Harvested Area	2.62	Not yet efficient
2.	Workforces	2.47	Not yet efficient
3.	Seeds	2.05	Not yet efficient
4.	Urea Fertilizer	3.27	Not yet efficient
5.	SP-36 fertilizer	3.73	Not yet efficient
6.	Mutiara fertilizer	2.68	Not yet efficient
7.	Pesticides	4.73	Not yet efficient
Price Efficiency		21.55	

Table 2 shows that the use of production factors in rice farming in Central Java Province has not been price efficient because the value of price efficiency was still higher than 1 (> 1).

The calculation of the price efficiency of the production factor of harvested area generated a value of 2.62. It meant that the use of the production factors of the harvested area was not yet efficient based on the price aspect. It is because the value was higher than 1. To achieve an efficiency level in price, the farmers must increase the use of the harvested areas.

The calculation of the price efficiency of the workforce generated a value of 2.47. It meant that the use of the workforce in the production factor was not yet efficient based on the price aspect. It is because it was higher than 1. To achieve an efficiency level in price, the rice farmers must increase the use of the workforce.

The calculation of the price efficiency of the seed production factor generated a value of 2.05. It meant that the use of the seeds was not yet efficient based on the price aspect. It is because it was higher than 1. To achieve an efficiency level in price, the rice farmers must increase the use of the seeds.

The calculation of the efficiency of the urea fertilizer production factor generated a value of 3.27. It meant that the use of urea fertilizer was not yet efficient based on the price aspect. It was higher than 1. To achieve an efficiency level in price, rice farmers must increase the use of urea fertilizer.

The calculation of the price efficiency of SP-36 fertilizer generated a value of 3.73. It meant that the use of the SP-36 fertilizer was not yet efficient based on the price aspect. It was higher than 1. To achieve the efficiency level in price, the rice farmers must increase the use of SP-36 fertilizer.

The calculation of the price efficiency of Mutiara fertilizer generated a value of 2.68. It meant that the use of Mutiara fertilizer was not yet efficient based on the price aspect. It is because it was higher than 1. To achieve an efficiency level in price, the rice farmers must increase the use of Mutiara fertilizer.

The calculation of the price efficiency of the pesticide production factor generated a value of 4.73. It meant that the use of the pesticide production factor was not yet efficient based on the price aspect. It is because the value was higher than 1. To achieve an efficiency level in price, rice farmers must increase the use of pesticides.

Calculation of Economic Efficiency of Rice Farming

Economic efficiency is a condition in which production using lower inputs and costs can produce a higher amount of output. Using certain inputs and production costs can produce maximum outputs. There will be economic efficiency if there are also technical efficiency and price efficiency. The following equations present the calculation of economic efficiency.

$$EE = \text{Technical Efficiency (ET)} \times \text{Price Efficiency (EH)}$$

$$EE = 0,605 \times 21,55 = 13,03$$

The calculation of economic efficiency in rice farming was 13.03. This meant that the economic efficiency was higher than 1, which meant that rice farming in Central Java Province was not yet economically efficient. To achieve economic efficiency, it is necessary to increase the use of production factors.

DISCUSSIONS

Some factors can affect the efficiency level of rice farming. They are harvested area, workforces, seeds, urea fertilizer, SP-36 fertilizer, Mutiara fertilizer, and pesticides. Rice farming also requires several production factors to achieve high productivity. The results showed that the harvested area influenced rice production with a coefficient value of 0.312. Harvested area is a production input that has a vital role in rice production. The availability of harvested areas will certainly affect rice production. To increase rice production, it is necessary to increase the harvested area. However, it is not an easy thing to do because the farmers must consider the costs carefully (Mashadi et al., 2021; Chen, 2017; Guo, 2017).

The next production factor in rice farming is the workforce. The value of the workforce's coefficient was 0.335. The workers in rice farming play a role in the cultivation the marketing of the rice. The worker is a production factor that is influential and ignored because the quality workforce will affect the product quality. This is in accordance with previous research which explained that most workers in rice farming are personal family members or neighbors (Noer et al., 2020; Defidelwina et al., 2019; Huda, 2016).

Besides harvested area and workforce, other production factors that also have a vital role in rice farming are seeds. Seeds are a very sensitive factor because it is not easy to obtain quality rice seeds. The seeds' quality will affect the rice's quality. The seed coefficient value in rice farming was 0.348. There have been many types of developed rice seeds in Central Java (Ulpah et al., 2018; Mori, 2016). This is in accordance with previous research which explains that superior rice seeds will provide the best and most efficient results (Yuldashev & Marupov, 2019; Dagar et al., 2020).

In rice farming, urea fertilizer also had a vital role to produce fertile rice plants. Urea fertilizer is influential on the production with a coefficient value of 0.375. This is in accordance with previous research which explained that use of urea fertilizer must be taken into account to achieve optimal production (Sulistyorini & Sunaryanto, 2020; Yousaf, 2016; Octrina dan Mariam, 2021). SP-36 fertilizer is also vital in rice farming. It had an effect on production with a coefficient value of 0.261. The use of SP-36 fertilizer needs to be measured in appropriate portions to provide optimal rice quality (Fauzan, 2020; WANG, 2017; Ouyang, 2017).

Next, there is Mutiara fertilizer which is also important in rice farming. It influenced production with a coefficient value of 0.285. The use of Mutiara fertilizer must not be arbitrary considering its uncertain price and great affecting the yield of rice production (Handayani et al., 2018; Vandamme, 2016).

The last factor of farming production is pesticides. The use of pesticides in rice farming influences the quality of rice plants to be free from all diseases. In rice farming, pesticides had an effect on production with a coefficient of 0.291. This is in accordance with previous research which explains that the pesticides should be applied carefully and the dosage must be appropriate. It is because the excessive use of pesticides will damage the quality of the rice plants (Sinabang et al., 2021; Gu, 2017; Liu et al., 2020).

Rice farming in Central Java Province was not technically efficient with an efficiency value of $0.605 < 1$. A technical efficiency value of lower than 1 means that there is excessive use of inputs. Therefore, they should be reduced to achieve technical efficiency. The reduced production factors should be the use of pesticides and the workforce. Although most farmers deployed the workforce from their family members, they also had to estimate the costs incurred for the time and energy spent. The excessive production factors badly affected farm production due to the enactment of The Law of Diminishing Return (Nazeb et al., 2019; Tsujimoto, 2019; Zhang, 2020).

The calculation of price efficiency in rice farming generated a value of $21.55 > 1$. It meant that rice farming was not yet efficient in price. An efficiency value higher than 1 means there should be the addition of production inputs in rice farming. However, it is not easy given the limited

capital owned by the farmers. There should be innovation in the provision of production inputs such as fertilizers and pesticides. The farmers can mix the fertilizers independently. However, there is also still limited availability of materials for making and combining fertilizers and pesticides (Yu, 2019).

The calculation of economic efficiency generated a value of $13.03 > 1$. This explained that economic efficiency in rice farming had also not been achieved. An efficiency value that is higher than 1 means it is necessary to add production inputs to achieve economic efficiency. As explained in previous research, when there is no technical and price efficiency, there is also not economic efficiency. The results of this research are in accordance with what has been explained by previous research, namely that increasing the efficiency of the agricultural sector requires careful calculations in the use of production inputs (Singh et al., 2021; Apazhev et al., 2020).

CONCLUSIONS

Based on the results and discussions presented above, rice farming in Central Java Province is strongly influenced by some production factors like harvested area, workforces, seeds, urea fertilizer, SP-36 fertilizer, Mutiara fertilizer, and pesticides. The Covid-19 pandemic negatively influenced and decreases rice productivity levels. The calculation of technical efficiency in rice farming during the Covid-19 pandemic generated a value of $0.605 < 1$. It indicated that the level of technical efficiency was not yet optimal. There should be a reduction in the production factor. The level of price efficiency in rice farming was also not yet efficient because the value is $21.55 > 1$. This means that to achieve price efficiency, it is necessary to other add production inputs. Meanwhile, the economic efficiency was not there yet because the value is $13.03 > 1$. To realize an efficient rice farming business in terms of technical and economic aspects, it is necessary to use an appropriate composition of production inputs. There should be assistance and counseling for the farmers on the proper use of production inputs.

The researchers suggest that rice farming is a potential sub-sector of food crops. It is because rice is the staple food of most Indonesian people. Therefore, the demand continues to increase along with the increasing population. However, developing rice farming is not an easy task because

it requires skills and competencies of quality human resources. Also, the dependence of rice farming on chemical fertilizers and pesticides must be reduced. The residues produced from chemical fertilizers and pesticides will negatively affect the people's health who consume the rice. This research has the limitation of only comparing two countries, namely Indonesia and Malaysia. Suggestions for further research could consider expanding the research area to several countries in the world.

ACKNOWLEDGEMENT

This research was supported by the Universiti Teknologi MARA through the SRP INT Grant Scheme (Grant No. 100-RMC 5/3/SRP INT (045/2022)). The authors would like to thank the anonymous participants for their cooperation and time in providing the researcher with all the needed information.

REFERENCES

- Ahmad, Z., & Wibowo, R. (2021). Dampak Kebijakan Kartu Tani terhadap Produksi dan Efisiensi Usahatani Padi di Kabupaten Jember. In *Jurnal Pangan*. jurnalpangan.com. <http://jurnalpangan.com/index.php/pangan/article/download/540/439>
- Anum, H., Kardi, C., & Sukanteri, N. P. (2020). Efisiensi Penggunaan Faktor Produksi Pada Usahatani Padi Ciherang Di Kelurahan Sempidi Kecamatan Mengwi Kabupaten Badung. *Agrimeta: Jurnal Pertanian* <https://e-journal.unmas.ac.id/index.php/agrimeta/article/view/785>
- Aprianti, A., Noor, T. I., & Isyanto, A. Y. (2020). Analisis Efisiensi Teknis Usahatani Padi Sawah Di Desa Ciganjeng Kecamatan Padaherang Kabupaten Pangandaran Analysis Of Technical Efficiency Of In *Padaherang District, Pangandaran Regency*.
- Cendrawasih, R. R., Tinaprilla, N., & Adhi, A. K. (2018). Efisiensi Teknis Usaha Tani Padi pada Sistem Tanam Jajar Legowo di Kabupaten Lamongan, Provinsi Jawa Timur. In *Jurnal Agro Ekonomi*.

- Chen, J. (2017). pOsNAR2.1:OsNAR2.1 expression enhances nitrogen uptake efficiency and grain yield in transgenic rice plants. *Plant Biotechnology Journal*, 15(10), 1273–1283. <https://doi.org/10.1111/pbi.12714>
- Defidelwina, D., Jamhari, J., Waluyati, L. R., & ... (2019). Dampak kepemilikan lahan padi sawah terhadap efisiensi teknis dan efisiensi lingkungan di Kabupaten Rokan Hulu. *AGRARIS: Journal of ...*. <http://journal.umy.ac.id/index.php/ag/article/view/6207>
- Ding, W. (2018). Improving yield and nitrogen use efficiency through alternative fertilization options for rice in China: A meta-analysis. *Field Crops Research*, 227, 11–18. <https://doi.org/10.1016/j.fcr.2018.08.001>
- Dissanayaka, D. M. S. B. (2018). Molecular mechanisms underpinning phosphorus-use efficiency in rice. In *Plant Cell and Environment* (Vol. 41, Issue 7, pp. 1483–1496). <https://doi.org/10.1111/pce.13191>
- Fauzan, M. (2020). Efisiensi Ekonomi Usahatani Padi Lahan Kering di Kabupaten Lampung Selatan. *Agrimor*. <http://faperta-unimor.id/savana-cendana.id/index.php/AG/article/view/1018>
- Firmana, F., Nurmalina, R., & Rifin, A. (2016). efisiensi teknis usahatani padi di kabupaten karawang dengan pendekatan data envelopment analysis (DEA). *Forum Agribisnis: Agribusiness ...*. <https://journal.ipb.ac.id/index.php/fagb/article/view/17255>
- Gu, J. (2017). Rice (*Oryza sativa* L.) with reduced chlorophyll content exhibit higher photosynthetic rate and efficiency, improved canopy light distribution, and greater yields than normally pigmented plants. *Field Crops Research*, 200, 58–70. <https://doi.org/10.1016/j.fcr.2016.10.008>
- Guo, J. (2017). The rice production practices of high yield and high nitrogen use efficiency in Jiangsu, China. *Scientific Reports*, 7(1). <https://doi.org/10.1038/s41598-017-02338-3>
- Handayani, S., Anggraini, N., & ... (2018). Efisiensi Usahatani Padi Organik di Kecamatan Candipuro. *Prosiding Seminar ...*. <https://jurnal.polinela.ac.id/PROSIDING/article/view/1135>

- Hou, W. (2019). Nitrogen rate and plant density interaction enhance radiation interception, yield, and nitrogen use efficiency of mechanically transplanted rice. *Agriculture, Ecosystems and Environment*, 269, 183–192. <https://doi.org/10.1016/j.agee.2018.10.001>
- Hua, K. (2020). Simplified adenine base editors improve adenine base editing efficiency in rice. *Plant Biotechnology Journal*, 18(3), 770–778. <https://doi.org/10.1111/pbi.13244>
- Huda, A. (2016). Floodwater ammonium, and nitrogen use efficiency and rice yields with fertilizer deep placement and alternate wetting and drying under triple rice cropping systems. *Nutrient Cycling in Agroecosystems*, 104(1), 53–66. <https://doi.org/10.1007/s10705-015-9758-6>
- Iqbal, A. (2019). Organic manure coupled with inorganic fertilizer: An approach for the sustainable production of rice by improving soil properties and nitrogen use efficiency. *Agronomy*, 9(10). <https://doi.org/10.3390/agronomy9100651>
- Lasmini, F., Nurmalina, R., & Rifin, A. (2016). Efisiensi teknis usaha tani padi petani peserta dan petani nonpeserta program SL-PTT di Kabupaten Sukabumi. *Jurnal Manajemen & Agribisnis*. <https://jurnal.ipb.ac.id/index.php/jmagr/article/view/12259>
- Margi, T., & Balkis, S. (2016). Analisis Pendapatan dan Efisiensi usahatani Padi sawah Di Desa Kota Bangun Kecamatan Kota Bangun. *Ziraa'ah Majalah Ilmiah Pertanian*. <https://ojs.uniska-bjm.ac.id/index.php/ziraah/article/view/322>
- Mashadi, M., Mahrani, M., & Hadi, N. (2021). Analisis Efisiensi Usahatani Padi Sawah Tadah Hujan Di Kecamatan Gunung Toar. *Agrilan: Jurnal Agribisnis* <https://ojs.unpatti.ac.id/index.php/agrilan/article/view/1226>
- Mori, A. (2016). The role of root size versus root efficiency in phosphorus acquisition in rice. *Journal of Experimental Botany*, 67(4), 1179–1189. <https://doi.org/10.1093/jxb/erv557>

- Nazeb, A., Darwanto, D. H., & Suryantini, A. (2019). Efisiensi alokatif usahatani padi pada lahan gambut di Kecamatan Pelalawan, Kabupaten Pelalawan, Riau. *Jurnal Ekonomi Pertanian Dan ...* <https://jepa.ub.ac.id/index.php/jepa/article/view/168>
- Noer, S. R., Zakaria, W. A., & Murniati, K. (2020). Analisis efisiensi produksi usahatani padi ladang di Kecamatan Sidomulyo Kabupaten Lampung Selatan. *Jurnal Ilmu Ilmu Agribisnis ...* <https://jurnal.fp.unila.ac.id/index.php/JIA/article/view/2492>
- Novia, R. A., & Satriani, R. (2020). Analisis efisiensi teknis usahatani padi sawah tadah hujan di kabupaten banyumas. *MEDIAGRO*. <https://publikasiilmiah.unwahas.ac.id/index.php/Mediagro/article/view/3389>
- Ouyang, W. (2017). Stomatal conductance, mesophyll conductance, and transpiration efficiency concerning leaf anatomy in rice and wheat genotypes under drought. *Journal of Experimental Botany*, 68(18), 5191–5205. <https://doi.org/10.1093/jxb/erx314>
- Puspitasari, M. S. (2017). Analisis Efisiensi Penggunaan Faktor Produksi pada Usahatani Padi Dengan Menggunkan Benih Bersertifikat dan Non Sertifikat di Desa Air Satan Kecamatan Muara *Societa: Jurnal Ilmu-Ilmu Agribisnis*. <https://jurnal.um-palembang.ac.id/societa/article/view/622>
- Shen, B. (2019). Engineering a New Chloroplastic Photorespiratory Bypass to Increase Photosynthetic Efficiency and Productivity in Rice. *Molecular Plant*, 12(2), 199–214. <https://doi.org/10.1016/j.molp.2018.11.013>
- Sinabang, L., Anggraeni, D., & ... (2021). Elastisitas Produksi Dan Efisiensi Penggunaan Faktor Produksi Padi Sawah Pada Berbagai Tingkat Luas Lahan Garapan Di Kabupaten Tangerang. In *Jurnal Ilmu Pertanian ...* [jurnal.untirta.ac.id. https://jurnal.untirta.ac.id/index.php/JIPT/article/viewFile/13738/8461](https://jurnal.untirta.ac.id/index.php/JIPT/article/viewFile/13738/8461)
- Sulistyorini, S., & Sunaryanto, L. T. (2020). Dampak Efisiensi Usahatani Padi Terhadap Peningkatan Produktivitas. *Jambura Agribusiness Journal*. <https://ejournal.ung.ac.id/index.php/jaj/article/view/2680>

- Tando, E. (2019). Upaya efisiensi dan peningkatan ketersediaan nitrogen dalam tanah serta serapan nitrogen pada tanaman padi sawah (*Oryza sativa* L.). *Buana Sains*. <https://jurnal.unitri.ac.id/index.php/buanasains/article/view/1190>
- Tsai, Y. C. (2019). Chlorophyll fluorescence analysis in diverse rice varieties reveals the positive correlation between the seedlings' salt tolerance and photosynthetic efficiency. *BMC Plant Biology*, 19(1), 403. <https://doi.org/10.1186/s12870-019-1983-8>
- Tsujimoto, Y. (2019). Challenges and opportunities for improving N use efficiency for rice production in sub-Saharan Africa. In *Plant Production Science* (Vol. 22, Issue 4, pp. 413–427). <https://doi.org/10.1080/1343943X.2019.1617638>
- Ulpah, A., Tinaprilla, N., & Baga, L. M. (2018). Analisis efisiensi teknis usahatani penangkaran benih padi pola kemitraan di Kabupaten Subang: Pendekatan Stochastic Frontier Analysis. In *Jurnal Pengkajian dan Pengembangan core.ac.uk*. <https://core.ac.uk/download/pdf/326453498.pdf>
- Vandamme, E. (2016). Integration of P acquisition efficiency, P utilization efficiency, and low grain P concentrations into P-efficient rice genotypes for specific target environments. *Nutrient Cycling in Agroecosystems*, 104(3), 413–427. <https://doi.org/10.1007/s10705-015-9716-3>
- WANG, F. (2017). Yield potential and nitrogen use efficiency of China's super rice. In *Journal of Integrative Agriculture* (Vol. 16, Issue 5, pp. 1000–1008). [https://doi.org/10.1016/S2095-3119\(16\)61561-7](https://doi.org/10.1016/S2095-3119(16)61561-7)
- Wang, J. (2019). xCas9 expands the scope of genome editing with reduced efficiency in rice. In *Plant Biotechnology Journal* (Vol. 17, Issue 4, pp. 709–711). <https://doi.org/10.1111/pbi.13053>
- Wu, D. (2019). Improved lignocellulose degradation efficiency based on Fenton pretreatment during rice straw composting. *Bioresource Technology*, 294. <https://doi.org/10.1016/j.biortech.2019.122132>

- Yousaf, M. (2016). Nitrogen fertilizer management for enhancing crop productivity and nitrogen use efficiency in a rice-oilseed rape rotation system in China. *Frontiers in Plant Science*, 7. <https://doi.org/10.3389/fpls.2016.01496>
- Yu, S. (2019). Biowaste to treasure: Application of microbial-aged hydrochar in rice paddy could improve nitrogen use efficiency and rice grain-free amino acids. *Journal of Cleaner Production*, 240. <https://doi.org/10.1016/j.jclepro.2019.118180>
- Yuliana, Y., Ekowati, T., & Handayani, M. (2017). Efisiensi alokasi penggunaan faktor produksi pada usahatani padi di Kecamatan Wirosari Kabupaten Grobogan. *AGRARIS: Journal of...* <http://journal.umy.ac.id/index.php/ag/article/view/2443>
- Zhang, Q. (2020). Effects of six-year biochar amendment on soil aggregation, crop growth, and nitrogen and phosphorus use efficiencies in a rice-wheat rotation. *Journal of Cleaner Production*, 242. <https://doi.org/10.1016/j.jclepro.2019.118435>.
- Benedek, A., Rokicki, T., & Szeberényi, A. (2023). Bibliometric evaluation of energy efficiency in agriculture. *Energies*, 16(16), 5942.
- Anas, M., Liao, F., Verma, K. K., Sarwar, M. A., Mahmood, A., Chen, Z. L.,... & Li, Y. R. (2020). Fate of nitrogen in agriculture and environment: agronomic, eco-physiological and molecular approaches to improve nitrogen use efficiency. *Biological Research*, 53(1), 1-20.
- Yuldashev, G., & Marupov, A. A. (2019). Main ways to improve the efficiency of agricultural land use in the Fergana valley sample. *Scientific and Technical Journal of Namangan Institute of Engineering and Technology*, 1(8), 68-74.
- Singh, R. P., Handa, R., & Manchanda, G. (2021). Nanoparticles in sustainable agriculture: An emerging opportunity. *Journal of Controlled Release*, 329, 1234-1248.

- Apazhev, A. K., Fiapshev, A. G., Shekikhachev, I. A., Khazhmetov, L. M., Khazhmetova, A. L., & Ashabokov, K. K. (2020, September). Energy efficiency of improvement of agriculture optimization technology and machine complex optimization. In *E3S Web of Conferences* (Vol. 124, p. 05054).
- Adzim, F. (2022). Agribusiness-Based Farmer Empowerment Model with a Sustainable Integrated Farming System Approach to Increase Income Multiplier Effect. *ABAC Journal*, 42(2), 267-292.
- Dagar, V., Bhattacharjee, M., Ahmad, F., Charan, A., & Jit, P. (2020). A comparative stochastic frontier analysis for technical efficiency of irrigation in Haryana. *Int. J. Agricult. Stat. Sci*, 16(1), 199-209.
- Octrina, F., & Mariam, A. G. S. (2021). Islamic bank efficiency in Indonesia: Stochastic frontier analysis. *The Journal of Asian Finance, Economics and Business*, 8(1), 751-758.
- Liu, S., Xiao, W., Li, L., Ye, Y., & Song, X. (2020). Urban land use efficiency and improvement potential in China: A stochastic frontier analysis. *Land Use Policy*, 99, 105046.
- Prajanti, S. D. W., Litaay, C., Widiatningrum, T., Amelia, D. R., & Daud, D. (2023). Application of Rabbit Urine and Manure Based Fertilizer on the Growth of Arabica and Robusta Coffee Seedlings. *Biosaintifika: Journal of Biology & Biology Education*, 15(3), 441-449.

Refining the Cash-Waqf Blended Finance Model for Infrastructure Development

Resi Ariyasa Qadri^{1*}, Raditya Hendra Pratama¹

Akhmad Khabibi¹ and Reza Syam Pratama²

¹*Polytechnic of State Finance STAN, Indonesia*

²*National Committee of Sharia Economics and Finance, Indonesia*

ABSTRACT

This study aimed to refine the formulation of an innovative cash waqf management model designed to address the infrastructural and economic demands of Nusantara, the future capital of Indonesia. Employing a multi-method qualitative research approach, the study integrated qualitative insights from a comprehensive literature review and a comprehensive qualitative analysis through the grounded theory method, underpinned by principles of Islamic finance and contemporary financial innovation. The findings revealed that the proposed cash waqf model leveraged communal wealth for long-term developmental projects, ensuring sustainability and adherence to Islamic jurisprudence. The study concludes with the establishment of a specialized waqf institution to manage these funds, advocating for transparency and accountability to foster trust and a culture of philanthropy. The proposed model not only holds significant potential for transforming the economic landscape of Indonesia's new capital but also offers a blueprint for integrating Islamic philanthropic principles with modern financial strategies, setting a precedent for similar initiatives globally. The research contributes to create a practical and sustainable financial framework that aligns with Indonesia's cultural context and Islamic generosity traditions, facilitating infrastructure development and economic growth.

Keywords: Cash, Waqf, Model, Infrastructure, Financing

ARTICLE INFO

Article History:

Received: 16 December 2023

Accepted: 02 February 2024

Available online: 01 April 2024

* Corresponding Author: Resi Ariyasa Qadri; Polytechnic of State Finance STAN Campus, Bintaro Utama Street, South Tangerang, Banten, Indonesia; Email: resi.ariyasa@pknstan.ac.id; Tel: +6285771294838

INTRODUCTION

Blended finance, which strategically combines public, private, and non-profit funds, is increasingly recognized as essential for achieving Sustainable Development Goals, particularly in Indonesia's ambitious infrastructure projects. This approach emphasizes the growth of regional capital markets and the creation of innovative financial instruments to bolster public infrastructure, addressing the pressing need for substantial financial resources beyond what the State Revenue and Expenditure Budget (APBN) can provide (Jung, 2020; Khan & Badjie, 2022). The relocation of Indonesia's capital to "Nusantara," mandated by Law No. 3 of 2022, encapsulates this need, requiring extensive funding for the transition period slated between 2025 to 2045 (Farida, 2021; Shimamura & Mizunoya, 2020). Faced with the limitations of the APBN, alternative financing methods, such as cash waqf schemes, are being considered to mitigate budget deficits while supporting the capital's move (Bonita & Wadley, 2022; Mubaroq & Solikin, 2019). The legal framework governing cash waqf, enshrined in Law Number 41 of 2004, ensures compliance with Sharia law and validates the integration of funds into the broader financing structure (Iqlima et al., 2018).

Pratama et al. (2023) had made significant contributions to the field of Islamic finance by introducing innovative methods for the systematic mobilization of Islamic philanthropy donations using cash-waqf system. The monies collected from waqf donors are then allocated exclusively towards infrastructure projects, thereby creating new opportunities for development in this sector. The theoretical framework put forward by Pratama et al. (2023) aligns with the perspectives presented by Thaker (2018) regarding the promotion of financial inclusivity in Malaysia. Thaker (2018) highlighted the significant importance of corporate governance and fiscal restraint as fundamental elements that support the sustainability and profitability of Islamic economic initiatives. Khan et al. (2018) provided more insights into the complexities associated with financing the involvement of the private sector in Islamic finance models in the absence of adequate regulatory backing. In their study, Ambrose and Asuhaimi (2021) presented the notion of Islamic crowdfunding as a viable financial option. They suggested that the strong social solidarity among the Muslim community can be utilized to facilitate public financing for infrastructure initiatives. Yasni and Erlanda (2020) argued for the integration of zakat into a country's national revenue sources.

Although these studies (Ambrose & Asuhaimi, 2021; Khan et al., 2018; Pratama et al., 2023; Thaker, 2018; Yasni & Erlanda, 2020) offer useful insights into the field of Islamic finance, they fail to present a complete approach for effectively incorporating various funding sources into a cohesive financial framework. In response to this gap in the literature, our research endeavored to develop a comprehensive financial framework that combines monetary waqf with public support in a synergistic manner. Through this action, we utilized the Islamic concept of productive waqf and the significant examples outlined in historical hadith, such as the endowment of Bani Najjar land (Bulut & Korkut, 2019; Zabri & Mohammed, 2018). These instances exemplify the social motivation for the advancement of infrastructure through Islamic generosity. The approach being discussed is strongly rooted in the goals of *maqashid sharia*, which place a high priority on protecting waqf assets and ensuring that the intended beneficiaries receive immediate and direct benefits.

In addressing the financial quandaries faced by the Indonesian government, the fusion of waqf-based financial support with public fiscal mechanisms emerges as a viable solution. Nurfalah and Rusydiana (2021) articulated that the adoption of such a blended Islamic financing framework must safeguard the welfare of Indonesian citizens across temporal bounds, spanning the immediate and the hereafter. It is, therefore, incumbent upon government to consider alternative financing schemas for public infrastructure projects, particularly in the context of the new Indonesian capital, Nusantara. Amidst the research landscape, there is a discernible paucity of scholarship on the application of cash waqf models for infrastructure funding. Our study sought to bridge this paucity by proposing a viable cash waqf financing blueprint that the government may adopt to bolster infrastructural initiatives within the nascent capital. Consequently, *the cornerstone of our inquiry was the formulation of a cash waqf management model tailored for the infrastructural exigencies of Nusantara.*

To achieve our research aims, we employed the grounded theory methodology, embracing a constructivist paradigm to crystallize decision-making criteria, thereby yielding actionable insights (Burns et al., 2022; Cullen & Brennan, 2021). Notwithstanding the subjective dimensions inherent to qualitative methodologies, our theoretical exposition promises

to enrich the discourse on community-centric funding mechanisms, whilst elucidating the versatility of Sharia economic doctrines in contemporary public finance. Our study introduces empirical innovation by advancing a blended-finance archetype to facilitate infrastructural funding in Indonesia, an area relatively uncharted in extant cash waqf literature. It also augments the seminal contributions of Pratama et al. (2023), who offered an array of strategic frameworks for waqf institutions. Diverging from Pratama et al. (2023) our work distinctively concentrates on the determinants shaping the cash waqf paradigm and articulates a detailed implementation strategy for stakeholders in the field.

LITERATURE REVIEW

Cash Waqf Conception

Cash is important for liquidity status (Zakaria et al., 2009), while cash waqf represents an essential vehicle for Islamic philanthropy, through which monetary resources are endowed, ensuring the perpetuation of social welfare as decreed by Allah *Azza wa Jalla*, and channelled towards charitable purposes (Cahyono & Hidayat, 2022; Pratama et al., 2023). This endowment system is a manifestation of a waqif's commitment to societal well-being, reflecting the deep-rooted Islamic ethos of communal support and generosity (Kamal et al., 2019; Suliaman & Yaakob, 2019). The essence of cash waqf is encapsulated in the act of bequeathing monetary assets to a waqf institution, which assumes responsibility for the preservation and deployment of these assets. The returns of these assets are then systematically distributed to benefit not just the waqif's family but the community at large, establishing an enduring legacy of charity (Aldeen et al., 2022; Ascarya & Masrifah, 2022). Underpinning this concept is the principle of perpetuity; the assets endowed in cash waqf are eternally earmarked for charitable works and are hence considered the property of Allah *Jalla Sya'nuhu*. These assets are safeguarded from transactional activities such as sales, exchanges, or inheritance, thereby preserving their integrity for continuous benefit (Ambarwati et al., 2021; Amrullah et al., 2022; Qadri, 2019a). The governance of cash waqf is entrusted to a nazir—a custodian or trustee—who ensures that the *mauquf alaih*, the beneficiaries, receive the intended advantages from the endowment, reinforcing the foundational

Islamic value of stewardship (Adhasara et al., 2022; Ghani et al., 2018). The theological justification and doctrinal support for the practice of cash waqf are deeply embedded in Islamic history, particularly in the prophetic teaching known as hadith (Berakon et al., 2022; Shatar et al., 2021). The emphasis on charitable disbursement endorsed by the Prophet himself provides a critical interpretive lens through which modern cash waqf contracts are viewed—highlighting the charitable intent as a primary component of cash waqf engagements (Ambrose & Asuhaimi, 2021; Pratama et al., 2023).

Cash Waqf Role in Infrastructure Financing

In the ambitious venture of constructing Nusantara, Indonesia's envisaged new capital, the cash waqf scheme represents an innovative financial paradigm that promises to invigorate infrastructure development (Mubarq & Solikin, 2019; Pratama et al., 2023). This Islamic philanthropic mechanism is designed to mobilize funds through the voluntary contributions of cash as endowments, which are then invested in sharia-compliant ventures to yield continuous financial returns. Such an approach is transformative, ensuring the permanence of the capital endowed and generating perpetual benefits. The utilization of cash waqf aligns with the principles of sustainable development and social solidarity, crucial for the infrastructure of Nusantara (Cahyono & Hidayat, 2022; Pratama et al., 2023). The profits from these endowments are dedicated to the development of communal amenities — roads, hospitals, schools — catalyzing a cycle of renewable financing that elevates public infrastructure without imposing additional fiscal burdens on the state's coffers (Aldeen et al., 2022). By engaging the community through this Islamic financing model, the government can leverage collective societal wealth, fostering a sense of ownership and responsibility among citizens towards national development (Ubaidillah et al., 2021). The strategic application of cash waqf in funding Nusantara's development reflects Indonesia's commitment to upholding Islamic economic principles, specifically those advocating for social justice and equitable wealth distribution (Aldeen et al., 2022; Pratama et al., 2023). The adoption of this financial instrument within the broader context of the country's economic framework demonstrates an innovative blending of faith-based directives with pragmatic economic strategies.

Methodology

This study employed an Islamic constructivist paradigm alongside a qualitative approach. The selected qualitative research design incorporated a multi-method strategy, consisting of two principal phases of inquiry. **The first phase** entailed identifying the motivations for relocating the capital and establishing a preliminary blended-financing model. This stage utilized a scoping review method, adapted from Qadri's (2019b) framework. Data collection was conducted primarily through document analysis, focusing on the acquisition of secondary data that included authoritative Quranic verses, hadiths, waqf-related legislation, scholarly articles from national and international journals on waqf and capital development, as well as other pertinent documents. **The second phase** was devoted to refining the blended-financing model by employing the principles of grounded theory, specifically adapting Charmaz's (2014) methodology. Data collection during this stage involved primary data obtained from focus group discussions (FGD) with eight informants representing various agencies engaged in waqf management. Table 1 presents detailed information about the informants who participated in the research.

In the second phase of this study, the data analysis method utilized grounded theory techniques, structured by the precepts of muamalah fiqh and anchored in the objectives of maqashid sharia, serving as analytical tools. The analytical procedure adhered to the process delineated by Charmaz (2014) for grounded theory analysis, which includes six stages: initial coding, line-by-line coding, focused coding and categorizing, axial coding and memo writing, and finally, selective coding for theory construction. This process of grounded theory analysis is succinctly depicted in Figure 1. *The first stage* involved initial coding, a process where each sentence or paragraph of the transcript is meticulously labeled (Charmaz, 2014). This stage was approached through three distinct coding strategies: descriptive coding, where sentences were labeled using nouns to formulate codes; process coding, which involved labeling sentences with verbs to guide the coding, and in-vivo coding, where phrases from the sentences themselves were employed to create the codes (Corbin & Strauss, 2014). To facilitate this coding procedure, the researchers utilized the interview transcript with informant 1, named Bahry, as a preliminary testing ground.

Table 1: Research Informants

Pseudonym	Cluster	Competence	Job Title	Organization
Bahri	Waqf Expert	Waqf Management	Member	Community Empowerment Committee, Indonesian Ulema Council (KPEU-MUI)
Dzulqarnain	Fiqh Scholar	Contemporary Muamalah	Sheikh	As-Sunnah Islamic Boarding School Makassar
Erwandi	Fiqh Scholar	Contemporary Muamalah	Partner	Erwandi Tarmizi & Associates (ETA)
Lukman	Waqf Practitioner	Waqf Management	Director	Waqf Institution i-Salaam
Agus	Sharia Financing Regulator	Sharia Fund Management	Supervisor	Sharia Financing Agency, Ministry of Finance of Indonesia
Iqbal	Sharia Financing Regulator	Sukuk Governance	Manager	Sharia Financing Agency, Ministry of Finance of Indonesia (DPS-Kemenkeu)
Maksum	Waqf Expert	Waqf Fatwa	Member	National Sharia Committee, Indonesian Ulema Council (DSN-MUI)
Greget	Blended Finance Expert	Blended-financing Governance	Consultant	United Nations Development Program (UNDP)

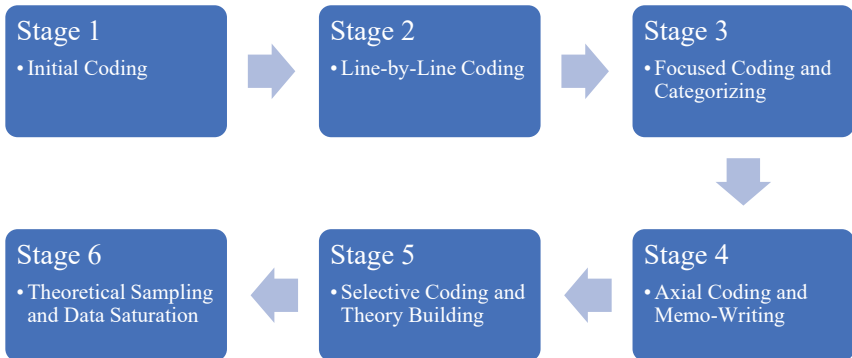
**Figure 1: Grounded Theory Process**

Table 2: Categorizing Results for Cluster Code: “Waqf Governance”

Code Name	Total File	Reference
Waqf Governance	4	102
Governance Form	2	44
Cash Waqf Governance	1	39
Key Success Factors	1	11
High Demand on Products	1	1
Prudent Feasibility Study	1	2
Investment in Potential Business	1	1
Investment in Existing Business	1	2

Upon completing the labeling of all sentences and paragraphs in the transcript using the previous coding types, a further review was conducted to develop a coding template that would streamline the subsequent stage of analysis. *The second stage* comprised the line-by-line coding process. The researchers applied the coding template developed in the first stage to be applied in the coding process for each sentence and paragraph in the interview transcripts from the remaining seven informants (El-Tawy, 2010). The researchers developed code by code from each transcript evaluated at this point. The process of adding, modifying, or eliminating was carried out frequently until a code was developed that was appropriate for the topic being explored relating cash waqf and blended-financing. As a result, the final codes that researchers managed to develop at this stage were 111 codes.

The third stage consisted of the focused coding and categorizing process, which was that the researcher re-read all the codes that have been formulated, then carried out classification between codes, then grouped codes that have close meaning into one group, and deleted codes that were not related to the research topic (Abdellah, 2016). In the third stage, we collected all the codes that have been identified in the second stage into three broad groupings, namely “Cash Waqf,” “Cash Waqf,” and “Waqf Governance.” Table 2 illustrates part of the findings of the categorization procedure for one of the three primary codes, namely “Waqf Governance”. *The fourth stage* is the axial coding and memo-writing process. In the axial coding procedure, the researcher joined all the codes that have been categorized in the third stage using an inductive technique (Corbin & Strauss, 2014). Researchers examined the big picture of cash waqf, waqf through cash, and the administration of both to characterize the interconnections between one code and another and between one group of codes and another.

Subsequently, we carried out a memo-writing procedure, essentially the process of producing memos to narrate the theoretical constructions that have been established and told the concerns of the informants participated in the research (Charmaz, 2014). Writing this note was necessary for researchers to not lose course when performing study. A typical qualitative study is research with a long duration and complex data. Therefore, this memo will keep researchers “sane” in their research and able to monitor the latest advances in their research. *The fifth stage*, the selective coding and theory building process, is the process of creating all the codes that have been connected in the fourth stage into a theoretical construct that is developed using an inductive approach (El-Tawy, 2010). The researchers formulated a theoretical framework for managing cash waqf and waqf through cash to optimize the benefits that will be gained by the waqf beneficiaries. This stage is the most essential stage in the grounded theory analysis due to the process of developing the final theoretical construct originated from the output produced from this theoretical coding process.

The key in working on this stage was that there must be a starting point leading to the end point of the theoretical framework formulated, where the end point of theoretical coding, in the context of this research, was optimizing the benefits for waqf beneficiaries as the central phenomenon (Charmaz, 2014). *The sixth stage* encompassed the implementation of theoretical sampling and the attainment of data saturation. The researchers conducted a comprehensive search to gather supplementary data pertaining to waqf, private, and APBN funding, with the aim of developing a theoretical framework (Corbin & Strauss, 2014). The sixth stage of the study was conducted in parallel with the initial five stages, involving a continuous process of data collection from one informant to another until data saturation was achieved. Data saturation in this research refers to the point at which academics have exhaustively explored the topic of waqf-based blended finance and ceased to discover novel insights or information. The available material was extensive, hence obviating the necessity for researchers to incorporate additional informants. Upon the fulfillment of data saturation, the stage of the grounded theory approach is deemed to be completed. The researchers achieved this milestone on November 3, 2022, culminating in an interview with informant 8, Greget.

RESULTS AND DISCUSSION

The Informants' Associative Link to Construct Cash Waqf Pillars

Yaakob et al. (2022) identify the structural components underpinning a cash waqf scheme, extracting four pivotal pillars from the hadith. The first element, the waqf donor or *waqif*, is defined as an autonomous, lucid, and of-age individual who willingly offers a cash asset for waqf. This element represents the philanthropic spirit of willing to contribute personal wealth to the communal good (Ascarya & Masrifah, 2022). The second element, the waqf asset or *mauquf*, is the cash asset itself, which must be legally permissible, recognized as valuable, and, importantly, of enduring utility. Once endowed, the cash property transitions to divine ownership, rendering it immune to inheritance, sale, or gift—thus preserving its sanctity and ensuring its continued service to the community (Thaker, 2018). The third component, the waqf beneficiary or *mauquf alaih*, encompasses the recipient of the cash waqf, ranging from the waqif's relatives to the broader public. This beneficiary class may include the waqif's descendants, maintaining a familial connection to the endowment, or may extend to the general populace—scholars, the indigent, or institutions like mosques, hospitals, and schools—illustrating the cash waqf's expansive charitable reach (Pratama et al., 2023).

The pillars of the cash waqf structure are equally critical to its efficacy. The fourth pillar, the waqf contract or *sighot*, represents the contractual articulation of the waqf, encompassing both verbal declarations and actions in alignment with local traditions, binding the waqif to the waqf agreement (Ambrose & Asuhaimi, 2021). This contract ensures that the waqf's establishment and objectives are clearly communicated and understood within the community. The fifth pillar, the waqf institution, waqf administrator, or *nazir*, emerges as a guardian of the waqf's mission. This institution must embody trustworthiness, honesty, and the requisite acumen to manage the cash waqf asset effectively, ensuring that the endowment fulfills its intended purpose for all beneficiaries. This framework, as outlined by Berakon et al. (2022), enshrines a comprehensive structure that guides the establishment, management, and preservation of cash waqf, thereby enabling it to serve as an enduring source of social and economic welfare.

Our research was intricately aligned with waqf principles, aiming to devise a cash waqf management framework for infrastructure development in Indonesia’s future capital, Nusantara. The study was centered on the mezzo level, drawing upon data collected from various analytical units which included experts in contemporary muamalah jurisprudence, the Sharia Financing Agency of the Ministry of Finance of Indonesia (DPS-Kemenkeu), the Community Empowerment Committee of the Indonesian Ulema Council (KPEU-MUI), the National Sharia Committee of the Indonesian Ulema Council (DSN-MUI), Waqf Institution i-Salaam, and the United Nations Development Program (UNDP). In an approach akin to piecing together a puzzle to visualize the complete picture, the insights provided by informants from these diverse analytical sectors represented the puzzle pieces. Figure 2 illustrates the visual representation of the relationship between the analytical unit and the informants who serve as its representatives.

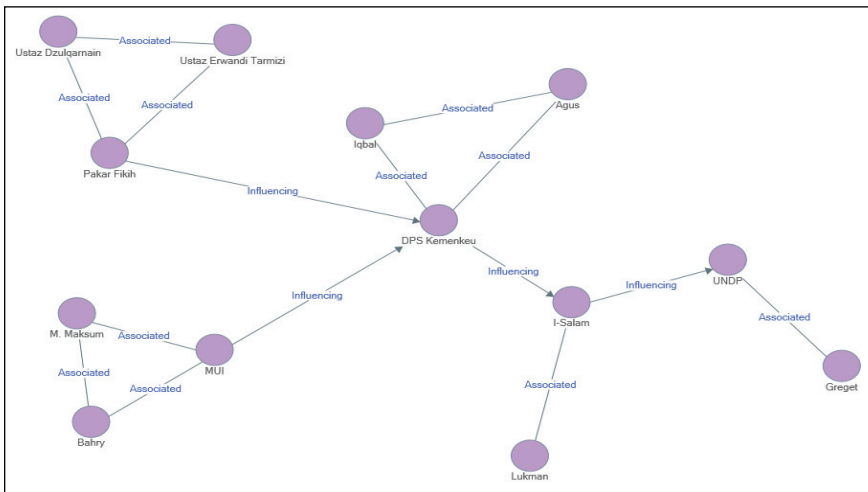


Figure 2: Sociogram of the Unit of Analysis

This visualization in Figure 2 aids in the development of the comprehensive framework pertaining to waqf-based blended finance. Within the domain of contemporary muamalah fiqh, esteemed scholars such as Sheikh Dzulqarnain and Sheikh Erwandi stood out. Bahri represented the Community Empowerment Committee of the Indonesian Ulema Council (KPEU-MUI), while Maksum acted as a delegate from the National Sharia

Committee of the Indonesian Ulema Council (DSN-MUI). Agus and Iqbal were associated with the Directorate of Sharia Financing at the Ministry of Finance of Indonesia (DPS-Kemenkeu), and Greget was the liaison for the United Nations Development Programme (UNDP). The crafting of inquiries for DPS-Kemenkeu was informed by insights from fiqh experts and the Indonesian Ulema Council (MUI), with contributions from Agus and Iqbal within DPS-Kemenkeu being notably complementary. The findings from discussions with DPS-Kemenkeu were then integrated with insights from consultations with the i-Salaam waqf institution.

The queries posed to the UNDP were influenced by the outcomes of our discussions with i-Salaam. The concept of blended financing involves the strategic use of multiple funding sources. Here, waqf is envisioned as a form of commercial finance, Islamic social funds as social finance, and APBN funds as public finance. The application of waqf funds and the determination of their beneficiaries were steered by the MUI's opinions. The governance of blended funding was defined according to interpretations provided by the i-Salaam waqf organization. Further refinement of the final model involved collaboration with the UNDP, leveraging their extensive expertise in implementing blended finance strategies within Indonesia.

The Divine Postulation: Cash Waqf or Waqf Through Cash

The notion of **cash waqf**, as explained by Sheikh Dzulqarnain and Sheikh Erwandi, posited that the assets within this form of Islamic philanthropy are not owned by the government or any individual entity; instead, they are considered possessions of Allah Azza wa Jalla. Sheikh Dzulqarnain affirms that cash waqf is endorsed by contemporary muamalah jurisprudence. The principal amount donated by the *waqif* (the waqf donor) must remain whole, without reduction by as much as a single rupiah. This enduring nature of the asset is what differentiates cash waqf from zakat, infaq, and sadaqah. Sheikh Dzulqarnain elaborated,

“Cash waqf is unique. It is legally permissible. The critical factor is that the donated sum of cash asset cannot be diminished. There must be a clear distinction between zakat, infaq, sadaqah, and cash waqf.”

Discussion transcript, October 23, 2022.

Echoing this sentiment, Sheikh Erwandi highlighted the principle of perpetuity in cash waqf. He noted that cash waqf funds must only be leveraged through qardh (loan) agreements. He argued that without such contracts, the funds would be exhausted in use. Any reduction in these funds that is not fully compensated for would violate the cash waqf agreement as prescribed by Islamic law. Consequently, the government, acting as the *nazir* (the waqf institution), is responsible for the cash waqf funds it deploys for infrastructure projects in Indonesia's new capital and must ensure full repayment within a mutually agreed period.

“The premise of cash waqf is that the funds must remain intact. If cash waqf is utilized, then the funds are expended in the form of a loan and cannot be decreased. The money must not be lost,”

Sheikh Erwandi asserted in the discussion transcript dated October 25, 2022.

Therefore, the fundamental principle of cash waqf is to maintain the exact monetary value of the cash contributed. This means that if the *nazir* acquires cash waqf funds amounting to USD 1 million to procure land in the national capital, the *nazir* is duty-bound to return the entire cash sum of USD 1 million. This repayment is crucial because the cash waqf contract intrinsically binds the physical value of the donated assets.

Sheikh Erwandi's interpretation on **waqf through cash** presents a clear example of the role of cash in waqf transactions. When a *waqif* (waqf donor) entrusts a sum of money to a *nazir* (waqf institution) for purchasing land, the *nazir* is duty-bound to use the funds to acquire the land at a location approved by the waqif. This transaction creates a waqf through cash, wherein the purchased land becomes an asset of the waqf, administered by the *nazir*.

“Let's say I have IDR 10 billion and I instruct you to buy land with that amount. That land then is considered a waqf from me. In essence, it is not the cash that's being endowed, but rather the cash is used to purchase land for the waqf,”

Sheikh Erwandi clarified during a discussion on October 25, 2022.

In harmony with cash waqf principles, the expanse of the land waqf must be preserved, with its benefits directed to the designated recipients (*mauquf alaih*). Sheikh Erwandi's insights further revealed that the *wakalah* (agency) contract is seamlessly integrated with the cash waqf contract. Under the *wakalah* contract, the *nazir* becomes the agent responsible for procuring land on behalf of the *waqif* (waqf donor), who acts as the principal, providing the financial resources for the purchase. This approach demonstrates that the waqf framework can be effectively combined with other Sharia-compliant contracts, such as *wakalah*, starting with an agency agreement and culminating in a land waqf. This combined contractual approach merges the concept of an asset waqf with that of agency.

Once the *nazir* successfully acquires land using the waqf donor's funds, the management of the waqf through cash, which has the same characteristics with the land waqf, must aim to provide substantial benefits to the *mauquf alaih* (waqf beneficiaries). Ideally, these benefits should stem from profit-generating activities on the land, ensuring an equitable distribution of proceeds among the involved parties. For non-profit uses, like a government building, the land agreement can be supplemented with an *ijarah* (lease) contract, reflecting the fiduciary role of the *nazir*.

Regarding infrastructure development in Indonesia's new capital, "Nusantara," when employing a waqf through cash scheme, the process is as follows: The *nazir* initially obtains funds from the waqf donors to purchase land within the future capital of Indonesia. The government can then proceed to construct infrastructure on the purchased land with funds from the state budget (APBN), in alignment with the agreement established with the *nazir*. Upon completion of the development, an *ijarah* or land-leasing contract between the government and the *nazir* is activated. Sheikh Dzulqarnain explains this waqf through cash strategy:

"Consider nazirs holding waqf through cash by purchasing land in the new national capital; the government can utilize this land for construction. Subsequently, the government makes rental payments to the nazir in installments over a specified period. This rental revenue is then proportionally distributed among the government, nazir, and other agreed-upon parties," as per the discussion with Sheikh Dzulqarnain on October 23, 2022.

Blended Finance in Action: Cash-Waqf, State Budget, and Social Funds

In our analysis, we delved into the concept of combining waqf funds with the State Budget and Islamic social funds. This exploration was grounded in a thorough review of informant statements from DPS-Kemenkeu. There are three legal instruments most pertinent to this discussion: “Joint Financing Waqf through Money,” “Integration of Islamic Social Funds with the state budget,” and the “Positive Legal Framework.” As per Government Regulation Number 17 of 2022, there is a viable pathway for creating collaborative funding structures that involve waqf funds, the State Budget (APBN), and Islamic social services. The type of integration referred to falls within the ambit of innovative finance for infrastructure development in the future Indonesian capital city (IKN), as authorized by the government. Before we can effectively integrate waqf, the state budget, and Islamic social funds, it is critical to lay down a comprehensive legal framework. This framework must clearly define the scope and application of each financing source to prevent overlap and ensure alignment with waqf’s core goal of asset conservation. The Government can strive to optimize the benefits of cash waqf assets, a notion supported by Agus of DPS-Kemenkeu. He emphasized the need for a clearly articulated legal framework governing the use of combined funds, one that ensures consistency and non-contradiction with other relevant regulations.

“A grand strategy should be formulated, centered around a positive legal stance that amalgamates APBN with Islamic social funds within the financial frameworks specified for the Indonesian capital city. The first step involves identifying how to disburse the APBN funds, followed by pinpointing the Islamic social funds.”

Interview transcript on November 1, 2022.

Moreover, the DPS-Kemenkeu is keenly exploring the potential benefits of the cash waqf initiative. Regarding waqf that encompasses monetary contributions, the government will work with the nazir to allocate the funds provided by the wakif, managed by the nazir, for land acquisition within the future capital city of Indonesia. The government should then proceed to construct profit-oriented public facilities, such as hospitals, on the

waqf land. To manage this process, a specialized entity known as a Special Purpose Vehicle (SPV) needs to be created, aiming to efficiently handle the state budget and waqf funds for the development of these facilities. The SPV's legal structure could manifest as a Public Service Agency or a subsidiary of a State-Owned Enterprise (BUMN).

Nevertheless, it is crucial to clarify the legal status of the public facilities planned for construction on waqf land. The specifics of the positive legal structure must be addressed before further discussions on waqf can proceed. The Indonesian Waqf Board's regulatory framework dictates the status of buildings erected on waqf land. As per these guidelines, upon the expiration of the land rental agreement—used as a vehicle for waqf through cash transaction—the buildings are designated as waqf assets. Further details on the rental agreements within the cash waqf framework will be discussed subsequently.

According to Mohsin (2013), the application of waqf, which includes both monetary and asset-based forms, must conform to three fundamental criteria within the waqf framework: *irrevocability*, *perpetuity*, and *inalienability*. These principles guarantee the perpetual nature, unchangeability, and non-ownership status of waqf assets, hence enabling the material realization of benefits for the waqf beneficiaries. Based on the insights gained from interviews conducted with representatives of the Indonesian Ulema Council, it was determined that the utilization of waqf assets can generally be classified into two distinct categories. The first category pertains to initiatives that are supported by cash waqf, specifically through the provision of benevolent loans known as *qardhul hasan*. The second category involves projects that are financed by waqf in the form of monetary resources, facilitated through lease agreements referred to as *ijarah*. In his work, Bahry of MUI provides a comprehensive analysis of the utilization of cash waqf via loan agreements, emphasizing the need for a harmonious integration of both economic and social aspects within the nature of waqf. He said that:

“The nature of waqf should balance between commercial and social elements. When a waqf donor contributes his money to a cash waqf, the primary responsibility for clarity in fund distribution lies with the nazir,” as per the transcript from October 21, 2022.

The utilization of the cash waqf-based blended finance model for the purpose of financing infrastructure development in Indonesia's new capital can be elucidated in the subsequent manner. Initially, a collaborative arrangement is established between the government and the waqf institution, with the facilitation of the Indonesian Waqf Board, to provide financial support for the development of government facilities at the new capital. The infrastructure in question takes the shape of public amenities that possess the capacity to generate financial gains, exemplified by public hospitals. Furthermore, a collaborative effort was undertaken by the government and the waqf institution to establish a loan or *qardhul hasan* agreement, akin to the CWLS plan. This agreement entailed the utilization of cash waqf funds controlled by the waqf institution for the purpose of acquiring property in the country's capital and thereafter developing infrastructure with a profit-oriented approach. The agreement entails that a percentage of the earnings generated from this infrastructure will be distributed proportionally to the waqf institution. The loan agreement includes a provision wherein the government will issue the CWLS without any returns, utilizing a private placement strategy in the waqf institution, for a specified duration. The waqf institution purchased the CWLS without availing the government-issued refunds. The funds collected by the CWLS are included into the cash waqf fund group and classified as commercial finance.

Furthermore, the government, under the administration of the waqf institution, may amass Islamic social funds by means of soliciting donations and alms from Muslim communities. Additionally, a crowdfunding mechanism can be employed to secure grants for non-Muslim groups. The monies of Islamic origin that are received are consolidated into a single account and classified as a social finance entity. Moreover, the Islamic social funds serve as collateral for the retrieval of cash waqf funds inside the commercial financing group. In addition, the government appropriates monies from the state budget for the purpose of constructing public infrastructure, in accordance with the initial agreement. The funds allocated through the state budget are classified as a kind of public financing. In addition, a collaborative effort between the government and the waqf institution resulted in the establishment of a specialized entity known as the Public Service Agency (BLU). This entity was tasked with the management of three distinct funds, namely the Islamic social, cash waqf, and state budget funds. All incoming funds are consolidated into a collective fund owned

by the BLU as the Special Purpose Vehicle (SPV). Subsequently, the SPV allocates the incoming money into three distinct categories: social financing, commercial financing, and public financing. The SPV will engage in the recruitment of seasoned investment managers who possess the necessary expertise to oversee the management of this cash waqf-based blended financing initiative.

In the proposed plan, the SPV intends to utilize cash waqf money for the acquisition of land in the new capital area. Additionally, Islamic social funds will be allocated to provide assurance for the cash waqf funds. Furthermore, the building of profitable public amenities would be financed using state budget funds, as per the government's directives. In addition, the SPV will engage in the process of selecting construction services consultants and general tender contractors for the purpose of constructing public facilities. The SPV will assume responsibility for the management of public facilities that have been effectively constructed, with the aim of generating financial returns. A portion of the revenues derived from these publicly owned facilities is allocated proportionally among the SPV, the government, and the waqf institution. The SPV has the potential to enhance the equitable allocation of benefits derived from cash waqf by directing them towards the designated recipients instead of utilizing them to create a cash waqf-based hospital. In accordance with the terms of the agreement, it is the responsibility of the government to fully repay the principal amount of the CWLS upon its maturity. This repayment is necessary to facilitate the recovery of the monies allocated for the cash waqf. The SPV is required to utilize existing Islamic social funds to engage in social initiatives aimed at mitigating poverty and enhancing the well-being of the local community in proximity to the SPV site. In accordance with the stipulations, the SPV is required to diligently compile a comprehensive report analyzing the impact of the blended financing scheme, with a specific focus on their alignment with the Sustainable Development Goals. The cash waqf-based blended finance model aligns with the adaptable nature of sharia finance for its use in the realm of public finance.

Discussion

Cash waqf represents a pivotal Islamic philanthropic instrument wherein monetary assets are endowed for the perpetual benefit of the

community, in accordance with the divine intent of Allah *Azza wa Jalla*, or dedicated to charitable enterprises (Kamal et al., 2019; Yaakob et al., 2022). Essentially, cash waqf embodies the endowment of financial resources by an individual, referred to as a waqif, to a waqf institution tasked with the asset's stewardship (Ghani et al., 2018). The proceeds derived from these assets are designed to perpetually serve the welfare of the waqif's beneficiaries, be it their immediate family or the broader society (Ascarya, 2022). Intrinsic to the concept is the principle that these assets are henceforth the property of Allah Jalla Sya'nuhu, immutable by sale, exchange, or inheritance (Amrullah et al., 2022). The administration of the cash waqf is entrusted to a nazir, while the mauquf alaih represents the beneficiaries entitled to the fruits of this endowment (Sari, 2023).

The doctrinal basis for waqf is often traced to the hadith literature, particularly one narrated by Ibnu Umar, which recounts the episode of Umar ibn Khattab, the second Caliph, and his endeavor to endow his land in Khaibar. In seeking prophetic counsel, Umar was advised by Prophet Muhammad, may peace be upon him, to preserve the land's ownership while distributing its yield to the indigent as an act of charity (Pratama et al., 2023; Yaakob et al., 2022). This seminal incident, as revealed by (Suliaman and Yaakob (2019), is frequently cited by Islamic jurists as the cornerstone for waqf practices. The Prophet's guidance on the charitable distribution of a land's benefits serves as a linchpin for contemporary waqf contracts, encapsulating the essential charitable ethos that undergirds the waqf framework (Berakon et al., 2022). This theological and historical anchoring provides a robust foundation for modern applications of waqf, particularly in the realm of infrastructure financing, where such endowments can be strategically leveraged to foster sustainable development and communal prosperity (Bulut & Korkut, 2019; Yaakob et al., 2022).

The implications of the cash waqf narrative for contemporary Islamic societies are profound, particularly in the field of infrastructure development (Sari, 2023; Ubaidillah et al., 2021). In modern settings, the principles of cash waqf have been adapted to create sophisticated financial models that aim to catalyze sustainable community development (Ascarya et al., 2022; Pratama et al., 2020, 2023). The convergence of tradition with innovation through cash waqf presents a unique approach to addressing the multifaceted challenges of modern economies. By harnessing the inherent social capital

of the Muslim community, cash waqf offers a model for financing that aligns with the ethical and social objectives of Islamic finance (Berakon et al., 2022; Tanjung & Windiarto, 2021). These endowments contribute to a variety of projects, from healthcare facilities to educational institutions, and, increasingly, to ambitious infrastructure projects that require substantial and sustained investment (Pratama et al., 2023). The role of cash waqf in this domain is not just as a source of funds but as a mechanism for reinforcing social cohesion, economic resilience, and financial inclusion (Mu'is & Hamida, 2020). By offering a channel for individuals to contribute to the collective prosperity in a manner that is both spiritually rewarding and economically beneficial, cash waqf stands as a testament to the dynamism and adaptability of Islamic philanthropic traditions in the modern era (Aldeen et al., 2022; Pratama et al., 2023; Sarker, 2019).

CONCLUSION

The cash waqf model's strategic architecture was designed to align with the cultural and economic context of Indonesia, aiming to integrate the spiritual aspects of Islamic giving with the practical requirements of infrastructure development. The alignment holds significant importance as it encompasses the two primary goals of Indonesia's new capital project: attaining exceptional infrastructure and fostering an economic atmosphere rooted on Islamic principles. By directing the financial contributions of cash waqf towards the advancement of Nusantara, this model was based on the principle of sustainable development, with the aim of guaranteeing that the advantages derived from these contributions are not temporary but rather deeply embedded in the overall advancement of the nation. The development of a specialized waqf institution to handle these assets is a fundamental aspect of our plan. The proposed organization would operate within the framework of Islamic jurisprudence, possessing the necessary knowledge and skills to effectively navigate the intricate dynamics of financial markets, all while ensuring the preservation and enduring nature of the waqf endowments. In addition, the model proposes stringent measures to ensure openness and accountability, recognizing that trust is a crucial element in generosity and serves as the foundation for effective waqf management.

The potential ramifications of the suggested cash waqf model for Indonesia are extensive and have the capacity to bring about significant changes. The proposed waqf management model aims to function as a catalyst for the mobilization of societal wealth and its allocation towards strategic development objectives. By incorporating the principles of waqf into the financial sector, this model establishes itself as a pioneering form of financing that is responsive to the evolving societal demands and contemporary governance requirements. The potential impact of implementing this approach in Indonesia's new capital, within a fruitful context, might serve as a guiding example for other countries aiming to align their development strategies with the principles of Islamic finance. In the end, this study provides further evidence to support the feasibility and importance of implementing a creative model that effectively combines Islamic heritage with contemporary development issues. This model is crucial in addressing the needs of Indonesia's capital infrastructure development and has the potential to lead to a future characterized by prosperity and equality.

REFERENCES

- Abdellah, I. M. (2016). *A Grounded Theory Study of Decision-Making within Informal Work Environments Declaration of Originality* [Doctor of Business Administration Thesis]. University of Liverpool.
- Adhasara, A., Qadri, R. A., & Aprilia, R. (2022). Disaster Risk Financing and Insurance: How Far Have We Known? *Bina Ekonomi*, 26(1), 76–96.
- Aldeen, K. N., Ratih, I. S., & Sari Pertiwi, R. (2022). Cash waqf from the millennials' perspective: a case of Indonesia. *ISRA International Journal of Islamic Finance*, 14(1), 20–37. <https://doi.org/10.1108/IJIF-10-2020-0223>
- Ambarwati, R. D., Qadri, R. A., & Hadi, M. (2021). Tjokro-[ism] Case Study: Reconciling the Tangled-Thread of Cash Management Practice in Treasury Accounting Field. *Jurnal Riset Akuntansi Terpadu*, 14(2), 150. <https://doi.org/10.35448/jrat.v14i2.12195>

- Ambrose, A. H. A. A., & Asuhaimi, F. A. (2021). Cash waqf risk management and perpetuity restriction conundrum. *ISRA International Journal of Islamic Finance*, 13(2), 162–176. <https://doi.org/10.1108/IJIF-12-2019-0187>
- Amrullah, K., Jamal, M., Khakim, U., Cahyo, E. N., & Zahro', K. (2022). The Concept of Waqf from Worldview Theory: The Study of Sharia-Philosophy. *ULUL ALBAB Jurnal Studi Islam*, 23(1), 22–41. <https://doi.org/10.18860/ua.v23i1.15694>
- Ascarya, A. (2022). The role of Islamic social finance during Covid-19 pandemic in Indonesia's economic recovery. *International Journal of Islamic and Middle Eastern Finance and Management*, 15(2), 386–405. <https://doi.org/10.1108/IMEFM-07-2020-0351>
- Ascarya, A., Husman, J. A., & Tanjung, H. (2022). Determining the characteristics of waqf-based Islamic financial institution and proposing appropriate models for Indonesia. *International Journal of Ethics and Systems*. <https://doi.org/10.1108/IJOES-01-2022-0001>
- Ascarya, A., & Masrifah, A. R. (2022). Strategies implementing cash waqf system for Baitul Maal wat Tamwil to improve its commercial and social activities. *International Journal of Islamic and Middle Eastern Finance and Management*, 1(1), 1–24. <https://doi.org/10.1108/IMEFM-10-2020-0504>
- Berakon, I., Aji, H. M., & Hafizi, M. R. (2022). Impact of digital Sharia banking systems on cash-waqf among Indonesian Muslim youth. *Journal of Islamic Marketing*, 13(7). <https://doi.org/10.1108/JIMA-11-2020-0337>
- Bonita, R., & Wadley, D. (2022). Disposal of government offices in Jakarta pending relocation of the Indonesian capital: an application of multi-criteria analysis. *Property Management*, 40(4), 591–628. <https://doi.org/10.1108/PM-10-2020-0068>
- Bulut, M., & Korkut, C. (2019). Ottoman Cash Waqfs: An Alternative Financial System. *Insight Turkey*, 21(2), 91–111. <https://doi.org/10.25253/99.2018EV.07>

- Burns, M., Bally, J., Burles, M., Holtslander, L., & Peacock, S. (2022). Constructivist Grounded Theory or Interpretive Phenomenology? Methodological Choices Within Specific Study Contexts. *International Journal of Qualitative Methods*, 21, 1609406922107777. <https://doi.org/10.1177/16094069221077758>
- Cahyono, E. F., & Hidayat, S. E. (2022). Cash Waqf and The Development: A Case Study of Cash Waqf Linked Sukuk in Indonesia. *El-Barka: Journal of Islamic Economics and Business*, 5(1), 150–182. <https://doi.org/10.21154/elbarka.v5i1.3713>
- Charmaz, K. (2014). *Constructing grounded theory* (Second, Vol. 2). Sage Publication.
- Corbin, J., & Strauss, A. (2014). *Basics of Qualitative Research* (Fourth). Sage Publication.
- Cullen, M. M., & Brennan, N. M. (2021). Grounded Theory: Description, Divergences and Application. *Accounting, Finance, & Governance Review*, 27, 8–20. <https://doi.org/10.52399/001c.22173>
- El-Tawy, N. A.-H. (2010). *A Grounded Theory Analysis of the Pre-Measurement Phase for the Accounting Recognition of Assets* [Doctor of Philosophy Thesis]. Brunel University.
- Farida, F. (2021). Indonesia's capital city relocation: A perspective of regional planning. *Jurnal Perspektif Pembiayaan Dan Pembangunan Daerah*, 9(3), 221–234. <https://doi.org/10.22437/ppd.v9i3.12013>
- Ghani, S. A., Yasina, R., & Jalal, B. (2018). The Concept of Waqf in Islam: An Analysis from the Perspective of Four Madzhabs in Islamic. *ZULFAQAR International Journal of Defence Management, Social Science and Humanities*, 1(1), 30–37. www.zulfaqar.upnm.edu.my
- Iqlima, I. I., Syahrizal, S., & Ilyas, I. (2018). Penukaran Harta Wakaf Menurut Hukum Islam dan Undang-Undang Nomor 41 Tahun 2004 Tentang Wakaf. *Syah Kuala Law Journal*, 1(1), 140–156. <https://doi.org/10.24815/sklj.v1i1.12271>

- Jung, H. (2020). Development finance, blended finance and insurance. *International Trade, Politics and Development*, 4(1), 47–60. <https://doi.org/10.1108/ITPD-12-2019-0011>
- Kamal, M., Hanafiyah, H., Nainunis, N., Safrizal, S., Munawir, M., & Bahri, S. (2019). Method of Instinbāth Law of Money Waqf Abu Hanifah Immediate Perspective. *Budapest International Research and Critics Institute (BIRCI-Journal) : Humanities and Social Sciences*, 2(1), 1–10. <https://doi.org/10.33258/birci.v2i1.198>
- Khan, I., Abdul Rahman, N. N. B., Zulkifli Bin Mohd Yusoff, M. Y. @, Mohd Nor, M. R., & Bin Noordin, K. (2018). A narrative on Islamic insurance in Bangladesh: problems and prospects. *International Journal of Ethics and Systems*, 34(2), 186–199. <https://doi.org/10.1108/IJOES-06-2017-0087>
- Khan, T., & Badjie, F. (2022). Islamic Blended Finance for Circular Economy Impactful SMEs to Achieve SDGs. *The Singapore Economic Review*, 67(01), 219–244. <https://doi.org/10.1142/S0217590820420060>
- Mubarog, M., & Solikin, A. (2019). Review on the Financing Scheme of Indonesia's Capital City Relocation Plan: Lessons Learned from Brazil, Malaysia, and Tanzania. *Proceedings of the Proceedings of the 1st International Conference on Finance Economics and Business, ICOFEB 2018, 12-13 November 2018, Lhokseumawe, Aceh, Indonesia*. <https://doi.org/10.4108/eai.12-11-2018.2288767>
- Mu'is, A., & Hamida, B. N. (2020). Application of Cash Waqf in Good Governance. *Qawānīn Journal of Economic Syariah Law*, 4(1), 121–137. <https://doi.org/10.30762/q.v4i1.2058>
- Nurfalah, I., & Rusydiana, A. S. (2021). The Regime Switching of Cycle Instability of Islamic Banking and The Economy: Evidence from Indonesia, Malaysia, and Pakistan. *Journal of Islamic Monetary Economics and Finance*, 7(2). <https://doi.org/10.21098/jimf.v7i2.1362>
- Pratama, R. H., Azizah, H. N., Kuswendah, N. F., & Putri, O. E. (2020). Potential of Sharia finance in financing a budget deficit by adopting

- an electronic money transaction scheme in Indonesia. In *Public Sector Accountants and Quantum Leap: How Far We Can Survive in Industrial Revolution 4.0?* <https://doi.org/10.1201/9780367822965-23>
- Pratama, R. H., Qadri, R. A., & Khabibi, A. (2023). The “Nusantara” Cash-Waqf Model: Designing Alternative Scheme for Infrastructure Financing. *Al-Iqtishad : Jurnal Ilmu Ekonomi Syariah*, 15(1), 159–186. <https://doi.org/https://doi.org/10.15408/aiq.v1i1.32032>
- Qadri, R. A. (2019a). Dinamika Institusional dalam Implementasi Standar Akuntansi Entitas Nirlaba pada Masjid. *Substansi*, 3(2), 167–188.
- Qadri, R. A. (2019b). Menakar model pembelian langsung rumah negara di Indonesia. *JURNAL PKN (Jurnal Pajak Dan Keuangan Negara)*, 1(1), 1–20.
- Sari, C. M. (2023). Resilience of Sukuk Innovation Through Cash Waqf Linked Sukuk as an Instrument for Indonesia’s Economic Recovery. *Management of Zakat and Waqf Journal (MAZAWA)*, 4(2), 149–167. <https://doi.org/10.15642/mzw.2023.4.2.149-167>
- Sarker, A. A. (2019). Role of Cash Waqf Deposit (CWD) as an Instrument for Socio-Economic Development: Bangladesh Perspective. In *Revitalization of Waqf for Socio-Economic Development, Volume I* (Vol. 1, pp. 15–30). Springer International Publishing. https://doi.org/10.1007/978-3-030-18445-2_2
- Shatar, W. N. A., Hanaysha, J. R., & Tahir, P. R. (2021). Determinants of cash waqf fund collection in Malaysian Islamic banking institutions: empirical insights from employees’ perspectives. *ISRA International Journal of Islamic Finance*, 13(2), 177–193. <https://doi.org/10.1108/IJIF-06-2020-0126>
- Shimamura, T., & Mizunoya, T. (2020). Sustainability Prediction Model for Capital City Relocation in Indonesia Based on Inclusive Wealth and System Dynamics. *Sustainability*, 12(10), 4336. <https://doi.org/10.3390/su12104336>

- Suliaman, I., & Yaakob, M. A. Z. (2019). Analysis on Textual Hadith of Waqf Infrastructure in al-Kutub al-Sittah and Its Applications from the Perspective of Maqasid al-Sunnah. *Al-Bayān – Journal of Qur'ān and Hadīth Studies*, 17(2), 221–245. <https://doi.org/10.1163/22321969-12340077>
- Tanjung, H., & Windiarso, A. (2021). Role of Cash Waqf Linked Sukuk In Economic Development and International Trade. *Signifikan: Jurnal Ilmu Ekonomi*, 10(2), 275–290. <https://doi.org/10.15408/sjie.v10i2.20493>
- Thaker, M. A. bin M. T. (2018). A qualitative inquiry into cash waqf model as a source of financing for micro enterprises. *ISRA International Journal of Islamic Finance*, 10(1), 19–35. <https://doi.org/10.1108/IJIF-07-2017-0013>
- Ubaidillah, U., Masyhuri, M., & Wahyuni, N. (2021). Cash Waqf Linked Sukuk (CWLS): An Alternative Instrument for Infrastructure Financing. *Indonesian Interdisciplinary Journal of Sharia Economics (IJSE)*, 4(1), 35–49. <https://doi.org/10.31538/ijse.v4i1.1473>
- Yaakob, M. A. Z., Saidin, N., Mohamed Yusuf, M. F., Khalid, M. M., Bhari, A., Abdullah, M. Y., Musa Fathullah Harun, H., & Suliaman, I. (2022). An Analysis of Waqf Hadiths in Sahih Al-Bukhari Per Fiqh Al-Bukhari Perspective. *International Journal of Academic Research in Business and Social Sciences*, 12(11). <https://doi.org/10.6007/ijarbss/v12-i11/15416>
- Yasni, R., & Erlanda, A. R. R. (2020). Challenges of Zakat Integration as Source of State Revenue. *International Journal of Islamic Economics and Finance (IJIEF)*, 3(3). <https://doi.org/10.18196/ijief.3238>
- Zabri, M. Z. M., & Mohammed, M. O. (2018). Examining the behavioral intention to participate in a Cash Waqf-Financial Cooperative-Musharakah Mutanaqisah home financing model. *Managerial Finance*, 44(6), 809–829. <https://doi.org/10.1108/MF-05-2017-0189>
- Zakaria, N. B. (2009). Dynamic and static corporate liquidity measurement: a case of Malaysian Small and Medium Enterprises. *International Journal of Management and Enterprise Development*, 6(4), 479-493. <https://doi.org/10.1504/IJMED.2009.024237>