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The Role of Agricultural Waqf Bank in Strengthening Food Security for Vulnerable Communities: A Mixed-Methods Study

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ABSTRACT

Purpose: *This study examines the role of the Agricultural Waqf Bank in enhancing food security for vulnerable communities in poverty-prone regions, with a secondary focus on the relationship between household income and food vulnerability.*

Design/methodology: *A mixed-methods approach was employed, combining a household survey of 212 vulnerable farming households in South Sumatra, Indonesia, with a qualitative conceptual analysis to develop the Agricultural Waqf Bank model. Logistic regression was applied to estimate the probability of food vulnerability based on household income, while the qualitative analysis explored the model's design as a sustainable financing mechanism.*

Findings: *Higher household income significantly lowers the likelihood of food vulnerability by enhancing purchasing power and access to food. However, income alone remains insufficient to address structural barriers such as unstable employment, low agricultural productivity, and limited market access. These findings highlight the potential of the Agricultural Waqf Bank model as a sustainable mechanism that integrates productive waqf assets with microfinance, capacity-building, and collective farming strategies to reduce food insecurity among vulnerable communities.*

Practical Implication: *The proposed model provides policymakers and Islamic social finance institutions with a strategic policy design to reduce food insecurity among vulnerable communities by integrating microfinance, technical support, and community empowerment through waqf-based mechanisms.*

Originality/Value: *This study offers a novel and integrated contribution by linking Islamic social finance with food security and community-based poverty reduction, thereby advancing theoretical discourse and informing practical policy design.*

Keywords: Food Security, Food Insecurity, Household Income, Vulnerable Communities, Agricultural Waqf Bank, Islamic Social Finance, Poverty Reduction.

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A. INTRODUCTION

Food security remains one of the most pressing global challenges of our time. According to the 2023 Global Food Security Index, approximately 828 million people worldwide suffer from chronic hunger, with the problem particularly acute in developing nations where 23% of the population experiences moderate or severe food insecurity (The Economist Group, 2023). In Indonesia, despite being an agricultural country, food insecurity persists, with 22.3 million people (8.3% of the population) classified as undernourished (Badan Pusat Statistik Indonesia, 2024). Previous studies have also highlighted that food insecurity is a global issue affecting almost every country, with particularly severe implications in developing regions (Echendu, 2022; Kaini, 2020; Osabohien et al., 2023; Shevchuk et al., 2023).

Food insecurity is shaped by multiple interrelated factors, including unequal food distribution leading to disparities in access (Hicks et al., 2022; Ren et al., 2023; Wood et al., 2023), inadequate infrastructure (Aloysius et al., 2023), and socio-political instability (Muraleedharan & Andrew Bryer, 2020). Other contributing factors include geopolitical tensions and wars disrupting global supply chains (Abdullaieva, 2022; Chepeliev et al., 2023; Kemmerling et al., 2022; Nguyen et al., 2023), global economic crises (Ahmed, 2014), and global pandemics such as Covid-19 (Karagöz & Kandemir, 2023; Mardones et al., 2020; Munonye et al., 2022; Roubík et al., 2023). Furthermore, increasingly unpredictable climate change (Hadley et al., 2023; Lee et al., 2024; Mirzabaev et al., 2023) and persistent poverty (Mahadevan & Hoang, 2016) exacerbate vulnerabilities. Food crises thus remain at the forefront of global attention, given their direct implications for human survival and the urgency of timely responses.

In developing countries, studies on food insecurity are particularly crucial, as they are closely linked to children's nutritional growth and long-term development outcomes. Previous research has associated food crises with poor infrastructure (Abdul Mumin & Abdulai, 2022; Aloysius et al., 2023; Laar et al., 2020), economic hardships (Brankov et al., 2021; Erokhin & Gao, 2020; García-Díez et al., 2021; Mukhlis et al., 2022), and persistent governance issues such as corruption (Helal et al., 2016; Ogunniyi et al., 2020; Papic-Brankov & Milovanovic, 2015). However, studies focusing on household-level conditions as determinants of food insecurity remain relatively limited, especially in rural communities of developing countries.

Within the framework of Islamic social finance, waqf has been increasingly recognized as a potential instrument to address food insecurity (Suhasti et al., 2024). Haneef et al. (2015) highlight the role of productive waqf in strengthening agricultural development, while Hasan et al. (2019) demonstrate the effectiveness of the *Tabung Masjid* model in Malaysia in reducing food insecurity. This is consistent with Dahlan et al. (2025), who highlight the social role of Micro Waqf Banks in breaking the vicious circle of poverty among rural street vendors, underscoring the broader function of waqf-based institutions in alleviating structural poverty. Nevertheless, empirical studies that integrate household-level analysis with a structured Agricultural Waqf Bank model are still scarce, particularly in underdeveloped regions such as South Sumatra. This study seeks to fill this gap by exploring the Agricultural Waqf Bank as an alternative food security mechanism within the framework of Islamic social finance, focusing on its potential impact on vulnerable households in high-poverty areas.

South Sumatra has been identified as one of Indonesia's poorest provinces (BPS, 2024), where chronic food crises persist (Darma & Darma, 2020; Soekirman, 2001). The region faces challenges ranging from limited food availability and sharp interregional price disparities to significant annual price increases (Nuryartono et al., 2021). Reflecting the national context, Indonesia's overall food security status remains low. In the 2023 Global Food Security Index, the country ranked 63rd out of 113 nations, falling behind non-agrarian countries such as Singapore (28th), Qatar (30th), Oman (35th), Bahrain (38th), and Saudi Arabia (45th), while only slightly surpassing neighboring countries like Thailand (64th), the Philippines (67th), and Myanmar (72th).

Against this backdrop, this study has two primary objectives: (1) to analyze the relationship between household income and food security among vulnerable farming households in rural South Sumatra, and (2) to develop an Agricultural Waqf Bank model as a sustainable financing solution tailored to these groups. Respondents were selected from small-

scale farmers with limited assets and a history of food insecurity, who were also sharia-compliant in accessing productive waqf financing. The study employs a mixed-method design: a quantitative approach using a logit model to estimate the effect of income on food vulnerability, complemented by a qualitative case study to simulate a waqf-based financing scheme for farmers facing structural challenges such as dependence on subsistence farming and limited access to formal finance.

The Agricultural Waqf Bank is conceived not merely as a financing institution but as a holistic platform integrating productive waqf-based sharia financing, agricultural technical assistance, and institutional strengthening through collective farmer groups. The quantitative component is based on econometric methods (logit model), while the qualitative component is constructed through a descriptive approach. The novelty of this study lies in bridging empirical econometric analysis with a waqf-based institutional design, a combination that has rarely been explored in food security literature.

Survey results from 212 respondents in South Sumatra reveal that higher income significantly reduces the probability of food vulnerability. However, conventional strategies, such as government food aid, remain short-term and unsustainable. These findings reinforce the urgency of community-based financial innovations, which in the Indonesian context can be operationalized through the Agricultural Waqf Bank. This institution offers a productive waqf-based model addressing the structural roots of poverty and food vulnerability through working capital financing, agricultural training, and local value-chain development.

Consistent with the work of García-Díez et al. (2021) and Ogunniyi et al. (2020), this approach highlights the potential of integrating inclusive finance with agriculture to boost productivity. Furthermore, it aligns with *maqasid sharia*, particularly *hifdz an-nafs* (protection of life) and *hifdz al-mal* (protection of wealth), by promoting fair and sustainable food distribution. The uniqueness of this study lies in its integrated model, which combines three pillars: (1) enhancing food security through local production, (2) improving household financial resilience through sharia microfinance, and (3) empowering vulnerable groups via the Agricultural Waqf Bank.

Ultimately, this study provides critical insights into food security dynamics in developing contexts, particularly the nexus between household income and vulnerability. By combining quantitative analysis with qualitative perspectives grounded in Islamic economics and *maqasid sharia*, the study contributes not only to academic discourse but also to policy development. It offers a holistic and sustainable poverty alleviation model through the Agricultural Waqf Bank, with significant implications for highly vulnerable regions such as South Sumatra.

B. LITERATURE REVIEW

Food security has received considerable scholarly attention worldwide, particularly over the past two decades. Abdulkadyrova et al. (2016) and Pawlak & Kołodziejczak (2020) emphasize that food security is a multidimensional concept encompassing availability, accessibility, stability, and utilization. Almost all nations, both developed and developing, continue to encounter challenges related to food insecurity. This problem is further exacerbated by widening disparities in food access, which disproportionately disadvantage vulnerable groups (Chicmana-Zapata et al., 2023; Ren et al., 2023). These studies indicate that the root

causes of food security problems extend beyond production capacity to include distributional and economic access issues.

Infrastructure inadequacy is frequently identified as a major determinant of food insecurity, particularly in developing countries. Aloysius et al. (2023) and Laar et al. (2020) demonstrate that limited agricultural and logistical infrastructure constrains the efficient delivery of food products to consumers at affordable prices. Such conditions exacerbate inequalities in food access, particularly among poor households in remote areas. This finding resonates with Abdul Mumin & Abdulai (2022), who argue that infrastructure development constitutes an essential prerequisite for enhancing food security in developing contexts.

Beyond infrastructure, food insecurity is also shaped by economic and political instability. Asyl et al. (2022) and Bamir et al. (2021) reveal that economic crises directly contribute to food price inflation, worsening the living conditions of vulnerable populations. Furthermore, geopolitical tensions and inter-state conflicts aggravate global food insecurity (Behnassi & El Haiba, 2022; Kryshtanovych et al., 2023). Within developing countries, these crises deepen poverty gaps and undermine household capacity to meet basic nutritional needs.

Recent global crises, such as the COVID-19 pandemic, have further exposed the fragility of global food systems. Regina Garai Abdullah et al. (2021) and Byker Shanks et al. (2022) observe that the pandemic disrupted international food supply chains, leading to significant price increases and shortages in many countries, including Indonesia. Louie et al. (2022) and Syafiq et al. (2022) similarly report that vulnerable groups, particularly poor households, experienced the most severe consequences. These findings demonstrate that global health crises directly translate into heightened food insecurity at the community level.

Climate change constitutes another critical challenge to food security. El Bilali et al. (2020) and Gunaratne et al. (2021) highlight how shifting weather patterns, natural disasters, and environmental degradation reduce agricultural productivity. Smallholder farmers in developing nations, who often lack adaptive technologies, face the harshest impacts. Hu (2023) and Zafar et al. (2023) further contend that climate change has already evolved from a long-term risk into an immediate crisis, significantly aggravating contemporary food security challenges.

At a more fundamental level, widespread poverty is a key driver of food insecurity in developing nations. Birhanu et al. (2023) and Hyman et al. (2005) argue that poverty directly restricts access to quality food. Limited purchasing power translates into malnutrition and undernutrition, perpetuating cycles of deprivation. Sharma (2019) adds that structural poverty reinforces the multidimensional character of food insecurity, necessitating cross-sectoral approaches beyond mere production-focused solutions.

In the Indonesian context, food security remains a pressing concern. Abdillah et al. (2023) and Arif (2023) observe that Indonesia continues to struggle with food price stability, which often fails to align with income growth among the poor. Nuryartono et al. (2021) further highlight that regional price disparities exacerbate food insecurity, particularly in Eastern Indonesia. These findings highlight that improving household income and maintaining price stability are crucial for addressing food security challenges in Indonesia.

Recent data from the Global Food Security Index (2023) place Indonesia at 63rd out of 113 countries, underscoring persistent vulnerabilities. Despite its agrarian identity, Indonesia lags behind non-agrarian countries such as Singapore. This paradox highlights the importance

of multisectoral integration, particularly the involvement of the financial sector, in strengthening national food security.

Scholarly debates have increasingly underscored the role of financial-agricultural sector integration in mitigating food insecurity (Asnaini et al., 2023). García-Díez et al. (2021) and Ogunniyi et al. (2020) show that financial inclusion positively influences agricultural productivity and household income by expanding access to capital, training, and market networks. Nevertheless, most of these studies primarily examine conventional financial schemes, leaving limited exploration of Islamic finance alternatives.

Within Islamic finance, the concept of productive waqf has emerged as a promising instrument to support food security. Haneef et al. (2015), Hasan et al. (2019), Saiti et al. (2021), and Umar et al. (2022) emphasize the potential of productive waqf to empower the poor, particularly in agriculture. Abiba & Suprayitno (2024) further emphasize that optimizing productive waqf, particularly in livestock empowerment, contributes significantly to achieving the Sustainable Development Goals (SDGs), reinforcing the role of waqf in sustainable development frameworks. However, systematic efforts to integrate productive waqf with food security strategies remain scarce, signaling the need for more comprehensive and context-specific models, especially in Indonesia.

This study seeks to address this gap by proposing the Agricultural Waqf Bank model. The institution is envisioned not merely as a financing mechanism but also as a platform to enhance farmers' capacities through training and institutional strengthening. Grounded in maqasid sharia principles, particularly the protection of life (*hifz al-nafs*) and wealth (*hifz al-mal*), this model presents an innovative Islamic value-based solution to chronic food insecurity. By combining econometric analysis (logit model) of household income with a qualitative framework rooted in maqasid sharia, this research contributes both methodologically and substantively to food security scholarship in the Indonesian context.

C. METHOD

This study adopts a mixed-method approach, combining quantitative and qualitative analyses. The quantitative component relies on statistical techniques applied to survey data collected from 212 respondents in South Sumatra Province, Indonesia, in 2025. South Sumatra was selected as the study site because, according to Badan Pusat Statistik Indonesia (2024), it is among the poorest provinces in the country, thereby representing a suitable case for examining food security in vulnerable contexts. The respondents, identified as poor and vulnerable farming households, were selected using the Slovin formula with a 5% margin of error. A simple random sampling technique was employed to ensure that every household had an equal probability of selection, irrespective of individual characteristics. This choice was motivated by three considerations: (1) the relative homogeneity of food vulnerability across the study area, based on preliminary Badan Pusat Statistik Indonesia (2024), (2) cost and time efficiency in fieldwork implementation, and (3) the simplicity of statistical estimation under this method.

The qualitative component complements the quantitative analysis by proposing a development model of the Agricultural Waqf Bank. The model is designed to serve as a sustainable agricultural financing mechanism aimed at enhancing food security among vulnerable groups, particularly rural farmers with limited access to conventional credit and financial services.

The primary objective of the quantitative analysis is to identify the determinants that drive households into the food-vulnerable category. To achieve this, a logit model is employed, with two binary dependent variables capturing food vulnerability: (1) whether the household lacked money to meet food needs, and (2) whether the household experienced difficulties obtaining food. These dependent variables are derived from responses to two survey questions: *"In the past month, has your household experienced not having money to afford household food needs?"* and *"In the past month, has your household experienced difficulty obtaining food?"*

The key independent variable in the logit estimation is household income, measured in millions of Indonesian Rupiah. Income is widely recognized as a major determinant of household food vulnerability (Abid & Shafiai, 2018; He & Zhou, 2022; Noerhidajati et al., 2021). To control for additional influences, the model incorporates several covariates: household characteristics (receipt of government food assistance, family size, and healthy food consumption) and head-of-household characteristics (gender, age, education level, and employment in either the formal or informal sector). The selection of these control variables is grounded in three considerations: (1) insights from previous literature, which underscore the importance of household and demographic factors in determining food vulnerability (Abid & Shafiai, 2018; He & Zhou, 2022), (2) limitations in the availability of reliable field-level data on local food prices and infrastructure, and (3) the need to mitigate potential multicollinearity with household income, which already serves as a proxy for agricultural productivity.

The logit model was chosen for its robustness in analyzing the determinants of food vulnerability in poor farming households, as widely demonstrated in international literature (Long & Freese, 2006). Specifically, the logit framework offers four advantages: (1) it accommodates binary dependent variables such as food vulnerability status, (2) it produces odds ratios that facilitate straightforward interpretation for policy applications, (3) it remains valid even when income data are not normally distributed, and (4) it has been extensively applied in food security research within developing country contexts.

Table 1 presents an overview of the variables employed in this study, categorized into four groups: household income, vulnerable household characteristics, household characteristics, and head-of-household characteristics.

Table 1. Variable Descriptions

Variable Name	Variable Description
Household Income Characteristics	
Income	Household monthly income (in million Rupiah)
Vulnerable Household Characteristics	
Lack of money for food needs	Household lacks money to afford food (1 = Yes, 0 = No)
Difficulty obtaining food	Household experiences difficulty obtaining food (1 = Yes, 0 = No)
Household Characteristics	
Receiving food assistance	Household receives government food aid (1 = Yes, 0 = No)
Number of family members	Total number of household members (people)
Consuming healthy food	Household consumes balanced, nutritious meals (1 = Yes, 0 = No)
Head-of-Household Characteristics	
Male	Gender of head of household is male (1 = Yes, 0 = No)
Age	Age of head of household (years)

Education level	Years of education completed by head of household
Working in the formal sector	Head of household works in the formal sector (1 = Yes, 0 = No)

Source: processed by the authors, 2025.

The logit model was employed because the logistic distribution is more tolerant of outliers in household income data—which are often skewed in vulnerable populations—and provides a more intuitive interpretation of odds ratios for policy analysis. Although theoretically comparable to the probit model, the logit specification was preferred in this study. The first estimation was conducted using the following logit regression equation:

$$Logit\ P_1 = ln\frac{P_1}{1-P_1} = \alpha + \beta income_i + \gamma household_i + \delta hh_i + \varepsilon_{1i}$$

$$P_1 = \frac{exp(\alpha + \beta income_i + \gamma household_i + \delta hoh + \varepsilon_{1i})}{1 + exp(\alpha + \beta income_i + \gamma household_i + \delta hoh_i + \varepsilon_{1i})}$$

This first equation specifies the probability of a household being categorized as vulnerable in terms of lacking sufficient money to afford food. In this context, P_1 denotes the probability that a household responds "yes" to the question: *"In the past month, has your household experienced not having money to afford food?"*, while $1 - P_1$ denotes the probability of responding "no." The variable *income* measures household income and serves as the primary explanatory variable in this study. *Household* represents a vector of household characteristics, whereas *hh* denotes a vector of head-of-household characteristics. The parameter α is the constant term, while β, γ, δ, denote the coefficients to be estimated. Finally, ε_{1i} represents the unobserved error term in the first model.

Following the same specification, the second indicator of household vulnerability—households experiencing difficulty in obtaining food—is modeled using the following logit regression equation:

$$Logit\ P_2 = ln\frac{P_2}{1-P_2} = \alpha + \beta income_i + \gamma household_i + \delta hh_i + \varepsilon_{2i}$$

$$P_2 = \frac{exp(\alpha + \beta income_i + \gamma household_i + \delta hoh + \varepsilon_{2i})}{1 + exp(\alpha + \beta income_i + \gamma household_i + \delta hoh_i + \varepsilon_{2i})}$$

Here, P_2 denotes the probability of the household answering "yes" to the question, *"In the past month, has your household experienced difficulty obtaining food?"* while $1 - P_2$ represents the probability of answering "no." The term ε_{2i} captures the unobserved error in the second model.

To complement the quantitative analysis, this study also integrates a qualitative approach by developing an operational framework for the Agricultural Waqf Bank grounded in sharia principles. Data were collected through surveys with poor farming households, ensuring that the proposed model is not only statistically validated in reducing food vulnerability (via logit analysis) but also contextually relevant, practically feasible, and consistent with local values and the maqasid sharia, particularly the objectives of *hifdz an-nafs* (protection of life) and *hifdz al-mal* (protection of wealth).

D. RESULT AND DISCUSSION

Descriptive Statistics

Table 2 presents the descriptive statistics of the variables employed in this study. A total of 212 households were surveyed, with an average monthly income of IDR 3.2 million, ranging from a minimum of IDR 0.3 million to a maximum of IDR 24 million. Household vulnerability was assessed using two criteria: (1) households lacking sufficient money to afford food, and (2) households experiencing difficulty in obtaining food. The survey results indicate that 37.3% of households were categorized as vulnerable under the first criterion, while 34% met the second criterion. The complete descriptive statistics for all variables are summarized in Table 2.

Table 2. Descriptive Statistics

Variable	Obs	Average	Std. Dev.	Min	Max
Vulnerable Household Characteristics					
Lack of money to afford food needs	212	0.373	0.485	0	1
Difficulty obtaining food	212	0.340	0.475	0	1
Household Income Characteristics					
Income (million IDR)	212	3.062	3.225	0.3	24
Household Characteristics					
Receiving food assistance	212	0.198	0.4	0	1
Number of family members	212	3.693	1.17	1	7
Consuming healthy food	212	0.632	0.483	0	1
Head-of-Household Characteristics					
Male	212	0.854	0.354	0	1
Age	212	44.401	12.131	23	72
Education level (years)	212	8.264	4.452	0	16
Working in the formal sector	212	0.057	0.232	0	1

Source: processed by the authors, 2025.

Logit Estimation Results

Table 3 presents the results of the logit estimations with the output variables represented by two criteria defining vulnerable households. Model 1 in Table 3 shows the logit estimation results using the output variable indicating households experiencing a condition of not having money to afford food needs (1 = Yes, 0 = No), while Model 2 presents the estimation results for households experiencing difficulty obtaining food (1 = Yes, 0 = No).

Table 3. Logit Estimation Results

	Model 1	Model 2
Household Income Characteristics		
Income	-0.037***	-0.020
	(0.016)	(0.014)
Household Characteristics		
Receiving food assistance	0.034	-0.026
	(0.072)	(0.068)
Number of family members	-0.041	-0.055**
	(0.026)	(0.026)

Consuming healthy food	-0.293***	-0.317***
	(0.049)	(0.044)
Head-of-Household Characteristics		
Male	0.059	-0.016
	(0.081)	(0.075)
Age	-0.001	-0.002
	(0.003)	(0.002)
Education level	-0.018**	-0.021***
	(0.007)	(0.007)
Working in the formal sector	0.021	0.056
	(0.133)	(0.127)
Number of observations	212	212
R^2 Negelkerke	0.248	0.279
LR Test of PRA (Chi2)	69.470***	76.020***

* p<0.1, ** p<0.05, *** p<0.01

Source: processed by the authors, 2025.

The estimation results for Model 1 indicate that higher household income is associated with a lower probability of being categorized as vulnerable, specifically in terms of lacking money to afford food. The analysis shows that an increase in income of IDR 1 million reduces the probability of a household falling into the vulnerable category by 3.7%. This finding is statistically significant at the 1% confidence level. These results are consistent with prior studies by Abid & Shafiai (2018) and He & Zhou (2022), which demonstrate that income has a negative relationship with household vulnerability when measured through financial indicators. The findings of this study further suggest that households with relatively low income face a substantially higher likelihood of being classified as vulnerable. In addition, Model 1 highlights that households consuming healthy food and those with heads of household possessing higher levels of education exhibit a significantly lower probability of being categorized as vulnerable.

Model 2, as presented in Table 3, defines household vulnerability using the indicator of difficulty in obtaining food. In contrast to the results of Model 1, the estimation results of Model 2 reveal that income does not exert a statistically significant effect on the probability of a household being categorized as vulnerable when measured by this indicator. This outcome reflects the fact that income does not significantly influence food access in vulnerable farming households, as rural farmers are relatively self-sufficient and able to consume produce from their own agricultural activities. Consequently, their food security is less dependent on household income levels. These findings are consistent with Ansah et al. (2019) and Dagunga et al. (2023), who argue that households primarily reliant on agriculture as their main livelihood tend to achieve better food security, thereby diminishing the decisive role of income in determining vulnerability. This interpretation is supported by the survey data, which show that 95% of respondents relied on farming as their primary occupation.

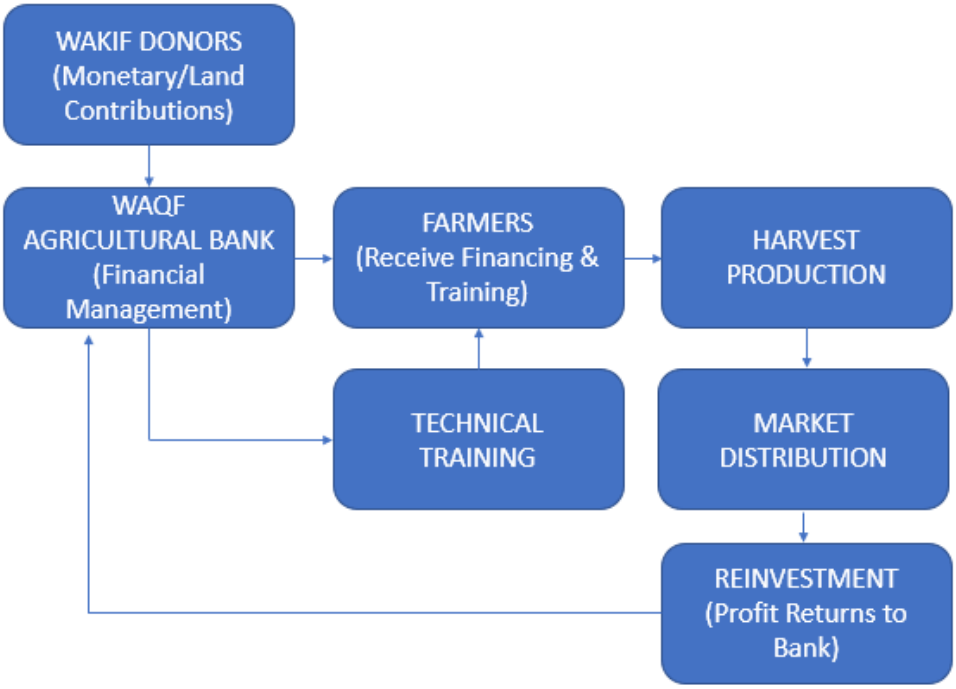
Farming households, by virtue of their direct access to agricultural production, are more capable of meeting their own food needs, thus ensuring greater food security (Ansah et al., 2019; Temesgen & Aweke, 2023). Furthermore, the estimation results of Model 2 indicate that the number of family members, the consumption of healthy food, and the education level of the head of household significantly reduce the probability of households being classified as vulnerable. The finding that larger households face fewer difficulties in accessing food may be

explained by more efficient labor allocation, diversification of food sources, and preferential access to government assistance.

Discussion

The findings of this study reveal that household income exerts a significant effect on food security, particularly by strengthening financial capacity to meet food needs. This is consistent with the results of previous studies (Abid & Shafiai, 2018; He & Zhou, 2022), which demonstrate that higher income reduces the likelihood of households being classified as vulnerable. However, the results also indicate that income does not significantly affect households' difficulty in accessing food when agriculture constitutes their primary source of livelihood. This corroborates the argument of Ansah et al. (2019), who highlight that farming households tend to achieve better food security because they are able to consume their own agricultural produce. These findings suggest that food security is shaped not only by income but also by the structural characteristics of livelihoods. Accordingly, policy responses should adopt differentiated strategies: urban households require interventions to improve purchasing power and access to food markets, while rural farming households benefit more from policies that strengthen agricultural productivity and resilience.

Figure 1. Agricultural Waqf Bank Financing Model



Source: Modified by the authors, 2025.

The Agricultural Waqf Bank model proposed in this study represents an innovative solution to address the structural causes of food insecurity in developing countries such as Indonesia (Wahyuni et al., 2023). The model offers sharia-compliant financing based on productive waqf while simultaneously providing technical assistance and strengthening farmer institutions. This approach is consistent with the objectives of maqasid sharia, particularly *hifdz an-nafs* (protection of life) and *hifdz al-mal* (protection of wealth), which emphasize distributive justice and sustainability (Haneef et al., 2015; Hasan et al., 2019). Consequently, the model is not merely charitable in nature but designed to empower communities holistically.

Structurally, the Agricultural Waqf Bank incorporates three key components: (1) a sharia financing scheme employing *mudharabah* and *musyarakah* contracts for agricultural

infrastructure projects, (2) a sustainable financial cycle where profits are reinvested as revolving capital, and (3) a supervisory mechanism led by the Sharia Supervisory Board and farmer organizations to ensure accountability and transparency in fund management.

The integration of the financial and agricultural sectors through this model resonates with findings from Ogunniyi et al. (2020) and García-Díez et al. (2021), which highlight the positive role of financial inclusion in enhancing agricultural productivity and household income. However, the distinctiveness of this model lies in its sharia foundation, particularly the use of productive waqf as a financing instrument. Productive waqf, when effectively managed, has the potential to generate long-term communal benefits (Saiti et al., 2021; Umar et al., 2022), thus offering an alternative to conventional government food aid programs that are often temporary in scope.

In addition, the study finds that healthy food consumption and higher education levels of household heads significantly reduce food vulnerability, reinforcing the argument that food security extends beyond availability to issues of access and utilization (Abdulkadyrova et al., 2016). The Agricultural Waqf Bank can contribute directly to these dimensions by financing community-based food production initiatives, thereby improving the local supply of nutritious food. This aligns with broader literature emphasizing the multidimensional nature of food security (Pawlak & Kołodziejczak, 2020).

The limitations of conventional government-led food assistance—often temporary and mistargeted—further underscore the relevance of this model. In contrast, the Agricultural Waqf Bank emphasizes sustainable empowerment through sharia microfinance and localized production capacity. Such an approach is consistent with Dagunga et al. (2023), who argue for agroecology and community-based resilience as foundations for long-term food security. By reducing reliance on food imports and empowering household economies, the model offers structural and sustainable solutions.

In the Indonesian context, where food security remains relatively weak (ranked 63 of 113 countries in the Global Food Security Index 2023), the Agricultural Waqf Bank could serve as a significant policy innovation. South Sumatra Province, which has one of the highest poverty rates in Indonesia, illustrates how structural poverty and unequal food access are closely intertwined (Badan Pusat Statistik Indonesia, 2024). A phased implementation starting in high-vulnerability regions could maximize the model's impact before scaling nationally.

The success of the Agricultural Waqf Bank, however, hinges on enabling policies and multi-stakeholder collaboration. The government should establish supportive regulatory frameworks for productive waqf management, while Islamic financial institutions and civil society organizations can provide technical expertise. Policy innovations may include (a) tax incentives for corporate *nazhir*, (b) integration of waqf data with sharia fintech platforms, and (c) the establishment of a Waqf Financing Guarantee Institution. Experiences from Malaysia, particularly the *Tabung Masjid* initiative (Hasan et al., 2019), demonstrate how linking waqf with economic empowerment programs can yield substantial socioeconomic benefits.

Moreover, the model holds potential to mitigate the adverse effects of climate change on food security. Climate change remains a pressing challenge for agricultural productivity, especially in developing countries (Mirzabaev et al., 2023). Through the provision of technical assistance, the Agricultural Waqf Bank could promote climate-adaptive practices such as sustainable farming techniques and crop diversification, consistent with Adesete et al. (2023), who emphasize the role of adaptive innovations in addressing environmental risks.

Theoretically, this study contributes by integrating quantitative analysis (logit regression models) with a qualitative framework grounded in maqasid sharia. This methodological combination provides a holistic understanding of food security, bridging economic measurement with normative Islamic principles. It also opens new avenues for future research on the integration of Islamic finance and sustainable development, particularly within the context of developing economies.

Finally, while the Agricultural Waqf Bank model is contextualized in Indonesia, it has broader applicability to other developing countries facing similar structural challenges. With contextual adjustments, the model could serve as a blueprint for inclusive and sustainable food security policies. As Zurayk (2020) argues, the global food crisis requires community-based and sustainable responses rather than short-term interventions. In this regard, the Agricultural Waqf Bank stands as a strategic instrument capable of advancing both national and global food security objectives.

E. CONCLUSION

This study confirms that household income is a crucial determinant in reducing the probability of food vulnerability among disadvantaged groups in developing regions, particularly in one of the poorest provinces of Indonesia. The quantitative analysis demonstrates that higher income significantly lowers the likelihood of experiencing financial constraints in meeting food needs. However, income alone does not adequately address challenges in accessing food, especially among farming households. These findings highlight the limitations of conventional aid programs, which often prioritize short-term relief without tackling underlying structural issues.

The proposed Agricultural Waqf Bank model emerges as an innovative and sustainable solution, offering a sharia-compliant financial mechanism rooted in Islamic social finance that integrates productive waqf assets to support vulnerable farmers. The model combines microfinance, technical capacity building, and institutional empowerment, thereby bridging the gap between income enhancement and community-based food security. Its key strength lies in its alignment with the principles of *maqasid sharia* (Isnaini, 2023), ensuring distributive justice and long-term economic resilience. Nevertheless, practical implementation may encounter challenges related to regulatory frameworks and institutional coordination.

While offering valuable insights, this study is subject to several limitations. First, the geographical scope is restricted to South Sumatra, which limits the generalizability of the findings to other regions in Indonesia. Second, the relatively short observation period (one year) does not capture long-term impacts. Third, the reliance on secondary data for waqf financing simulations may affect the robustness of the results. Future research should prioritize piloting the Agricultural Waqf Bank model across diverse regions to validate its effectiveness in different contexts, exploring synergies with governmental and non-governmental initiatives, and refining strategies for broader adoption. By offering an integrated approach that combines financial, social, and religious dimensions, this study contributes a comprehensive policy framework for strengthening food security and alleviating poverty among vulnerable communities in developing countries.

F. BIBLIOGRAPHY

Abdillah, A., Widianingsih, I., Buchari, R. A., & Nurasa, H. (2023). Implications of urban farming on urban resilience in Indonesia: Systematic literature review and research identification. *Cogent Food & Agriculture*, *9*(1). https://doi.org/10.1080/23311932.2023.2216484

Abdul Mumin, Y., & Abdulai, A. (2022). Informing Food Security and Nutrition Strategies in Sub-Saharan African Countries: An Overview and Empirical Analysis. *Applied Economic Perspectives and Policy*, *44*(1), 364–393. https://doi.org/10.1002/aepp.13126

Abdulkadyrova, M. A., Dikinov, A. H., Tajmashanov, H., Shidaev, L. A., & Shidaeva, E. A. (2016). Global food security problems in the modern world economy. *International Journal of Environmental and Science Education*, *11*(12), 5320–5330.

Abdullaieva, A. (2022). The Impact of the Russian-Ukrainian War on EU Food Security. *Economic Affairs*, *67*(4s). https://doi.org/10.46852/0424-2513.4s.2022.19

Abiba, R. W., & Suprayitno, E. (2024). Optimalisiasi Wakaf Produktif dalam Mendukung Upaya Pencapaian SDGs Melalui Pemberdayaan Peternakan. *Al-Intaj : Jurnal Ekonomi Dan Perbankan Syariah*, *9*(1), 109. https://doi.org/10.29300/aij.v9i1.2705

Abid, A., & Shafiai, M. H. M. (2018). Determinants of household financial vulnerability in Malaysia and its effect on low-income groups. *Journal of Emerging Economies and Islamic Research*, *6*(1), 32. https://doi.org/10.24191/jeeir.v6i1.8772

Adesete, A. A., Olanubi, O. E., & Dauda, R. O. (2023). Climate change and food security in selected Sub-Saharan African Countries. *Environment, Development and Sustainability*, *25*(12), 14623–14641. https://doi.org/10.1007/s10668-022-02681-0

Ahmed, S. S. (2014). The Impact of Food and Global Economic Crises (2008) on Food Security in Egypt. *African and Asian Studies*, *13*(1–2), 205–236. https://doi.org/10.1163/15692108-12341292

Aloysius, N., Ananda, J., Mitsis, A., & Pearson, D. (2023). Why people are bad at leftover food management? A systematic literature review and a framework to analyze household leftover food waste generation behavior. *Appetite*, *186*, 106577. https://doi.org/10.1016/j.appet.2023.106577

Ansah, I. G. K., Gardebroek, C., & Ihle, R. (2019). Resilience and household food security: a review of concepts, methodological approaches and empirical evidence. *Food Security*, *11*(6), 1187–1203. https://doi.org/10.1007/s12571-019-00968-1

Arif, S. (2023). Aligning policies, maintaining power: State-society conflicts and state responses to food crises in Indonesia and Nigeria. *Politics & Policy*, *51*(5), 849–867. https://doi.org/10.1111/polp.12552

Asnaini, Fatimah, Isnaini, D., & Fryanti, Y. E. (2023). Exploring the Potential of Islamic Financial Instruments in Addressing Economic Challenges: the Role of Financial Inclusion and Institutional Quality. *International Journal of Economics and Finance Studies*, *15*(1), 204–224. https://doi.org/10.34109/ijefs.202315110

Asyl, M. B., Koltsov, P. M., Muhametkhanuly, N., & Dauyen, D. B. (2022). From Xiaokang Society to Common Prosperity: China's Poverty Eradication Policies Reviewed. *Oriental Studies*, *15*(4), 636–648. https://doi.org/10.22162/2619-0990-2022-62-4-636-648

Badan Pusat Statistik Indonesia. (2024). *Persentase Penduduk Miskin (P0) Menurut Provinsi dan Daerah (Persen)*. https://www.bps.go.id/id/statistics-table/2/MTkyIzI=/persentase-penduduk-miskin--p0--menurut-provinsi-dan-daerah.html

Bamir, M., Poursheikhali, A., & Masoud, A. (2021). Threatening and intensifying the future of food insecurity in Iran with the outbreak of covid-19. *Ranian Journal of Health Education and Health Promotion*, *9*(3), 231–234. https://doi.org/10.52547/ijhehp.9.3.231

Behnassi, M., & El Haiba, M. (2022). Implications of the Russia–Ukraine war for global food security. *Nature Human Behaviour*, *6*(6), 754–755. https://doi.org/10.1038/s41562-022-01391-x

Birhanu, M. Y., Osei-Amponsah, R., Yeboah Obese, F., & Dessie, T. (2023). Smallholder

poultry production in the context of increasing global food prices: roles in poverty reduction and food security. *Animal Frontiers*, *13*(1), 17–25. https://doi.org/10.1093/af/vfac069

Brankov, T., Matkovski, B., Jeremić, M., & Đurić, I. (2021). Food Self-Sufficiency of the SEE Countries; Is the Region Prepared for a Future Crisis? *Sustainability*, *13*(16), 8747. https://doi.org/10.3390/su13168747

Byker Shanks, C., Houghtaling, B., Shanks, J., Grocke-Dewey, M., Webber, E., Andress, L., Hardison-Moody, A., Patton-Lopez, M., & Haynes-Maslow, L. (2022). Disparities in dietary practices during the COVID-19 pandemic by food security status. *Preventive Medicine Reports*, *28*, 101830. https://doi.org/10.1016/j.pmedr.2022.101830

Chepeliev, M., Maliszewska, M., & Pereira, M. F. S. e. (2023). The War in Ukraine, Food Security and the Role for Europe. *EuroChoices*, *22*(1), 4–13. https://doi.org/10.1111/1746-692X.12389

Chicmana-Zapata, V., Arotoma-Rojas, I., Anza-Ramírez, C., Ford, J., Galappaththi, E. K., Pickering, K., Sacks, E., Togarepi, C., Perera, C. D., van Bavel, B., Hyams, K., Akugre, F. A., Nkalubo, J., Dharmasiri, I., Nakwafila, O., Mensah, A., Miranda, J. J., & Zavaleta-Cortijo, C. (2023). Justice implications of health and food security policies for Indigenous peoples facing COVID-19: a qualitative study and policy analysis in Peru. *Health Policy and Planning*, *38*(Supplement_2), ii36–ii50. https://doi.org/10.1093/heapol/czad051

Dagunga, G., Ayamga, M., Laube, W., Ansah, I. G. K., Kornher, L., & Kotu, B. H. (2023). Agroecology and resilience of smallholder food security: a systematic review. *Frontiers in Sustainable Food Systems*, *7*. https://doi.org/10.3389/fsufs.2023.1267630

Dahlan, R., Trihastuti, A. E., Pangestu, R. A., Sitasari, I., Syaiin, E. H., & Fauzi, M. (2025). Analysis of Vicious Circle of Poverty, the Social Role of Micro Waqf Bank, and Permissiveness of Street Vendors in Rural Indonesia. *Al-Intaj : Jurnal Ekonomi Dan Perbankan Syariah*, *11*(1), 204. https://doi.org/10.29300/aij.v11i1.5728

Darma, S., & Darma, D. C. (2020). Food Security Management for Indonesia: The Strategy during the Covid-19 Pandemic. *Management Dynamics in the Knowledge Economy*, *8*(4), 371–381. https://doi.org/10.2478/mdke-2020-0024

Echendu, A. J. (2022). Flooding, Food Security and the Sustainable Development Goals in Nigeria: An Assemblage and Systems Thinking Approach. *Social Sciences*, *11*(2), 59. https://doi.org/10.3390/socsci11020059

El Bilali, H., Henri Nestor Bassole, I., Dsmbo, L., & Berjan, S. (2020). Climate change and food security. *The Journal "Agriculture and Forestry," 66*(3). https://doi.org/10.17707/AgricultForest.66.3.16

Erokhin, V., & Gao, T. (2020). Impacts of COVID-19 on Trade and Economic Aspects of Food Security: Evidence from 45 Developing Countries. *International Journal of Environmental Research and Public Health*, *17*(16), 5775. https://doi.org/10.3390/ijerph17165775

García-Díez, J., Gonçalves, C., Grispoldi, L., Cenci-Goga, B., & Saraiva, C. (2021). Determining Food Stability to Achieve Food Security. *Sustainability*, *13*(13), 7222. https://doi.org/10.3390/su13137222

Gunaratne, M. S., Radin Firdaus, R. B., & Rathnasooriya, S. I. (2021). Climate change and food security in Sri Lanka: towards food sovereignty. *Humanities and Social Sciences Communications*, *8*(1), 229. https://doi.org/10.1057/s41599-021-00917-4

Hadley, K., Talbott, J., Reddy, S., & Wheat, S. (2023). Impacts of climate change on food security and resulting perinatal health impacts. *Seminars in Perinatology*, *47*(8), 151842. https://doi.org/10.1016/j.semperi.2023.151842

Haneef, M. A., Pramanik, A. H., Mohammed, M. O., Bin Amin, M. F., & Muhammad, A. D. (2015). Integration of waqf-Islamic microfinance model for poverty reduction. *International Journal of Islamic and Middle Eastern Finance and Management*, *8*(2), 246–270. https://doi.org/10.1108/IMEFM-03-2014-0029

Hasan, R., Hassan, M. K., & Rashid, M. (2019). Cash Waqf Investment and Poverty Alleviation: Case of Tabung Masjids in Malaysia. *Journal of Islamic Monetary Economics and Finance*, *4*(2), 333–346. https://doi.org/10.21098/jimf.v4i2.1006

He, L., & Zhou, S. (2022). Household Financial Vulnerability to Income and Medical Expenditure Shocks: Measurement and Determinants. *International Journal of Environmental Research and Public Health*, *19*(8), 4480. https://doi.org/10.3390/ijerph19084480

Helal, G., Ahmadigheidari, D., Kosoy, N., & Melgar-Quiñonez, H. (2016). Exploring the Relationship between Corruption and Food Security Status on a Global Scale. *The FASEB Journal*, *30*(S1). https://doi.org/10.1096/fasebj.30.1_supplement.1149.9

Hicks, C. C., Gephart, J. A., Koehn, J. Z., Nakayama, S., Payne, H. J., Allison, E. H., Belhbib, D., Cao, L., Cohen, P. J., Fanzo, J., Fluet-Chouinard, E., Gelcich, S., Golden, C. D., Gorospe, K. D., Isaacs, M., Kuempel, C. D., Lee, K. N., MacNeil, M. A., Maire, E., … Naylor, R. L. (2022). Rights and representation support justice across aquatic food systems. *Nature Food*, *3*(10), 851–861. https://doi.org/10.1038/s43016-022-00618-4

Hu, Y. (2023). Impacts of Climate Change on Food Security in Africa. *Lecture Notes in Education Psychology and Public Media*, *14*(1), 33–38. https://doi.org/10.54254/2753-7048/14/20230929

Hyman, G., Larrea, C., & Farrow, A. (2005). Methods, results and policy implications of poverty and food security mapping assessments. *Food Policy*, *30*(5–6), 453–460. https://doi.org/10.1016/j.foodpol.2005.10.003

Isnaini, D. (2023). Review of Maqasid Syariah on Reto Tuoas A Waqf Memberin Bengkulu, Indonesia. *IQTISHODUNA: Jurnal Ekonomi Islam*, *12*(1), 87–100.

Kaini, M. (2020). Role of Agriculture in ensuring Food Security. *International Journal of Humanities and Applied Social Science*, 1–5. https://doi.org/10.33642/ijhass.v5n1p1

Karagöz, A., & Kandemir, O. (2023). The Impacts of Pandemic on Food Security and Food Inflation. *Turkish Journal of Agriculture - Food Science and Technology*, *11*(8), 1285–1297. https://doi.org/10.24925/turjaf.v11i8.1285-1297.5717

Kemmerling, B., Schetter, C., & Wirkus, L. (2022). The logics of war and food (in)security. *Global Food Security*, *33*, 100634. https://doi.org/10.1016/j.gfs.2022.100634

Kryshtanovych, M., Cherkaska, V., Kushnir, Y., Buletsa, N., & Herzanych, V. (2023). The impact of the war on food security in Ukraine in the current conditions of socio-economic development. *Cuestiones Políticas*, *41*(79), 93–102. https://doi.org/10.46398/cuestpol.4179.06

Laar, A., Barnes, A., Aryeetey, R., Tandoh, A., Bash, K., Mensah, K., Zotor, F., Vandevijvere, S., & Holdsworth, M. (2020). Implementation of healthy food environment policies to prevent nutrition-related non-communicable diseases in Ghana: National experts' assessment of government action. *Food Policy*, *93*, 101907. https://doi.org/10.1016/j.foodpol.2020.101907

Lee, C.-C., Zeng, M., & Luo, K. (2024). How does climate change affect food security? Evidence from China. *Environmental Impact Assessment Review*, *104*, 107324. https://doi.org/10.1016/j.eiar.2023.107324

Long, J. S., & Freese, J. (2006). *Regression models for categorical dependent variables using Stata (Vol. 7)*. Stata Press.

Louie, S., Shi, Y., & Allman-Farinelli, M. (2022). The effects of the COVID-19 pandemic on food security in Australia: A scoping review. *Nutrition & Dietetics*, *79*(1), 28–47. https://doi.org/10.1111/1747-0080.12720

Mahadevan, R., & Hoang, V. (2016). Is There a Link Between Poverty and Food Security? *Social Indicators Research*, *128*(1), 179–199. https://doi.org/10.1007/s11205-015-1025-3

Mardones, F. O., Rich, K. M., Boden, L. A., Moreno-Switt, A. I., Caipo, M. L., Zimin-Veselkoff, N., Alateeqi, A. M., & Baltenweck, I. (2020). The COVID-19 Pandemic and Global Food Security. *Frontiers in Veterinary Science*, *7*.

https://doi.org/10.3389/fvets.2020.578508

Mirzabaev, A., Bezner Kerr, R., Hasegawa, T., Pradhan, P., Wreford, A., Cristina Tirado von der Pahlen, M., & Gurney-Smith, H. (2023). Severe climate change risks to food security and nutrition. *Climate Risk Management*, *39*, 100473. https://doi.org/10.1016/j.crm.2022.100473

Mukhlis, I., Rizaludin, M. S., & Hidayah, I. (2022). Understanding Socio-Economic and Environmental Impacts of Agroforestry on Rural Communities. *Forests*, *13*(4), 556. https://doi.org/10.3390/f13040556

Munonye, J., Osuji, E., Olaolu, M., Okoisu, A., Obi, J., Eze, G., Ibrahim-Olesin, S., Njoku, L., Amadi, M., Izuogu, C., & Azuamairo, G. (2022). Perceived Effects of COVID-19 Pandemic on Food Security in Southeast Nigeria. *Frontiers in Sustainable Food Systems*, *6*. https://doi.org/10.3389/fsufs.2022.936157

Muraleedharan, V., & Andrew Bryer, T. (2020). Refugee Crisis and the Role of NGO Lobbying. *Public Policy And Administration*, *19*(1), 22–34. https://doi.org/10.5755/j01.ppaa.19.1.25148

Nguyen, T. T., Timilsina, R. R., Sonobe, T., & Rahut, D. B. (2023). Interstate war and food security: Implications from Russia's invasion of Ukraine. *Frontiers in Sustainable Food Systems*, *7*. https://doi.org/10.3389/fsufs.2023.1080696

Noerhidajati, S., Purwoko, A. B., Werdaningtyas, H., Kamil, A. I., & Dartanto, T. (2021). Household financial vulnerability in Indonesia: Measurement and determinants. *Economic Modelling*, *96*, 433–444. https://doi.org/10.1016/j.econmod.2020.03.028

Nuryartono, N., Rifai, M. A., Anggraenie, T., & Setiawan, B. I. (2021). Determining factors of regional food resilience in Java-Indonesia. *Journal of Social and Economic Development*, *23*(S3), 491–504. https://doi.org/10.1007/s40847-021-00156-y

Ogunniyi, A. I., Mavrotas, G., Olagunju, K. O., Fadare, O., & Adedoyin, R. (2020). Governance quality, remittances and their implications for food and nutrition security in Sub-Saharan Africa. *World Development*, *127*, 104752. https://doi.org/10.1016/j.worlddev.2019.104752

Osabohien, R., Karakara, A. A., Ashraf, J., & Al-Faryan, M. A. S. (2023). Green Environment-Social Protection Interaction and Food Security in Africa. *Environmental Management*, *71*(4), 835–846. https://doi.org/10.1007/s00267-022-01737-1

Papic-Brankov, T., & Milovanovic, M. (2015). Measuring food security in the Republic of Serbia. *Ekonomika Poljoprivrede*, *62*(3), 801–812. https://doi.org/10.5937/ekoPolj1503801P

Pawlak, K., & Kołodziejczak, M. (2020). The Role of Agriculture in Ensuring Food Security in Developing Countries: Considerations in the Context of the Problem of Sustainable Food Production. *Sustainability*, *12*(13), 5488. https://doi.org/10.3390/su12135488

Regina Garai Abdullah, Neilson Ilan Mersat, & Swee-Kiong Wong. (2021). Implications of Covid-19 Pandemic on Household Food Security: Experience from Sarawak, Malaysia. *International Journal of Business and Society*, *22*(1), 1–13. https://doi.org/10.33736/ijbs.3159.2021

Ren, Q., Panikkar, B., Mares, T., Berlin, L., & Golder, C. (2023). Food justice in Vermont's environmentally vulnerable communities. *Agriculture and Human Values*, *40*(4), 1465–1479. https://doi.org/10.1007/s10460-023-10431-9

Roubík, H., Lošťák, M., Ketuama, C. T., Soukupová, J., Procházka, P., Hruška, A., Hakl, J., Pacek, L., Karlík, P., Menšíková, L. K., Jurasová, V., Ogbu, C. A., & Hejcman, M. (2023). COVID-19 crisis interlinkage with past pandemics and their effects on food security. *Globalization and Health*, *19*(1), 52. https://doi.org/10.1186/s12992-023-00952-7

Saiti, B., Dembele, A., & Bulut, M. (2021). The global cash waqf : a tool against poverty in Muslim countries. *Qualitative Research in Financial Markets*, *13*(3), 277–294. https://doi.org/10.1108/QRFM-05-2020-0085

Sharma, K. (2019). Hunger In Jharkhand: Dimensions Of Poverty And Food Security In Palamu

District. *South Asia Research*, *39*(1), 43–60. https://doi.org/10.1177/0262728018816407

Shevchuk, O., Ilyash, O., Kozlovskyi, S., Roshchyna, N., Hrynkevych, S., Butenko, V., & Mazhara, G. (2023). The Impact of the War in Ukraine on the Food Security of Low-Income Countries. *Problemy Ekorozwoju*, *18*(2), 26–41. https://doi.org/10.35784/preko.3927

Soekirman. (2001). Food and nutrition security and the economic crisis in Indonesia. *Asia Pacific Journal of Clinical Nutrition*, *10*(s1). https://doi.org/10.1046/j.1440-6047.2001.0100s1S57.x

Suhasti, W., Handayani, L. F., & Winarno, Y. P. (2024). Pengaruh Persepsi, Religiusitas, dan Pendapatan Masyarakat Muslim Kabupaten Sleman Terhadap Minat Berwakaf Uang. *Al-Intaj : Jurnal Ekonomi Dan Perbankan Syariah*, *8*(1), 114. https://doi.org/10.29300/aij.v8i1.2908

Syafiq, A., Fikawati, S., & Gemily, S. C. (2022). Household food security during the COVID-19 pandemic in urban and semi-urban areas in Indonesia. *Journal of Health, Population and Nutrition*, *41*(1), 4. https://doi.org/10.1186/s41043-022-00285-y

Temesgen, H., & Aweke, C. S. (2023). A scoping review on the impacts of smallholder agriculture production on food and nutrition security: Evidence from Ethiopia context. *Agriculture & Food Security*, *12*(1), 39. https://doi.org/10.1186/s40066-023-00449-x

The Economist Group. (2023). *Global Food Security Index 2023*. https://impact.economist.com/sustainability/project/food-security-index/

Umar, U. H., Baita, A. J., Haron, M. H. Bin, & Kabiru, S. H. (2022). The potential of Islamic social finance to alleviate poverty in the era of COVID-19: the moderating effect of ethical orientation. *International Journal of Islamic and Middle Eastern Finance and Management*, *15*(2), 255–270. https://doi.org/10.1108/IMEFM-07-2020-0371

Wahyuni, E. S., Isnaini, D., Oktarina, A., & Setiawan, A. (2023). Model of Halal Center of the State Islamic University of Fatmawati Sukarno Bengkulu Based on Research and Development. *Migration Letters*, *20*(6), 493–510. https://doi.org/10.59670/ml.v20i6.3500

Wood, B., McCoy, D., Baker, P., Williams, O., & Sacks, G. (2023). The double burden of maldistribution: a descriptive analysis of corporate wealth and income distribution in four unhealthy commodity industries. *Critical Public Health*, *33*(2), 135–147. https://doi.org/10.1080/09581596.2021.2019681

Zafar, H., Gul, A., Hasan, G., & Shahab Uddin, S. (2023). The Impact Of Climate Change On Food Security In Balochistan. *Journal of Positive School Psychology*, *2023*(4), 1698–1709.

Zurayk, R. (2020). Pandemic and Food Security: A View from the Global South. *Journal of Agriculture, Food Systems, and Community Development*, 1–5. https://doi.org/10.5304/jafscd.2020.093.014

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