

Multidimensional Poverty Among Rice Farming Workers' Households in Bengkulu City

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Keywords:

Logistic regression;
Multidimensional poverty;
Rice farming workers.

Submitted:

12-11-2024

Accepted:

15-03-2025

Published:

29-03-2025

ABSTRACT

Poverty among rice farming workers is a multidimensional issue that extends beyond income levels, encompassing education, health, and living standards. Traditional poverty assessments based solely on income fail to capture these broader deprivations. To provide a more comprehensive analysis, this study employs the Multidimensional Poverty Index (MPI), which considers multiple well-being indicators. The study aims to analyze the multidimensional poverty status of rice farming worker households in Bengkulu City and identify the key factors influencing their poverty status. A sample of 100 rice farming workers was selected using the Mo formula to ensure representativeness. The findings reveal that 19% of rice farming worker households fall within the multidimensional poverty category, while 81% are non-poor. Among the examined factors, work experience significantly influences poverty levels, with more excellent experience contributing to a lower likelihood of poverty. The use of MPI provides a more holistic understanding of poverty, highlighting the need for policies that address not only income disparities but also access to education, healthcare, and improved living conditions. Enhancing skill development and creating stable employment opportunities are crucial for alleviating multidimensional poverty among rice farming workers in Bengkulu City.

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1. Introduction

Poverty is a condition of inability to meet the costs of daily needs, where people's expenditure cannot meet basic needs in the form of food and non-food. Poverty measurement is based on comparing each person's spending to the poverty line (BPS, 2018). Poverty is a complex and multidimensional social issue, particularly in developing countries like Indonesia. Conventionally, poverty is often measured based on income levels or consumption (World Bank, 2022). However, this approach fails to capture various aspects that affect individual and household well-being, such as access to education, healthcare, and adequate living standards (Alkire & Foster, 2011). To solve the problem of multidimensional poverty, the solution to the problem must also be multidimensional. Therefore, the Multidimensional Poverty Index (MPI) has become a more comprehensive tool for understanding poverty across multiple life dimensions (OPHI, 2023).

The concept of multidimensional poverty includes the study of the various challenges faced by poor individuals in their daily lives, which include aspects such as poor health, substandard living conditions, limited education, lack of rights to act, unfavorable working conditions, exposure to violence, and living in a dangerous environment (Prakarsa, 2013).

Measuring multidimensional poverty involves considering a wide range of indicators that capture the complexity of this phenomenon, serving as a basis for designing effective policies to address poverty and vulnerability. Poverty is seen from economic incompetence, the inability to meet education and health standards, and the failure to meet living standards. Indonesia is not accessible from the problem of poverty, including Bengkulu Province, which is located on Sumatra Island.

Poverty remains a significant challenge in Indonesia, particularly in the agricultural sector, the primary livelihood source for rural communities (BPS, 2023). Bengkulu Province has a higher poverty rate compared to the national average, and agricultural workers, including rice farm laborers, are among the most vulnerable groups (BPS, 2022). One main contributing factor is the lack of productive resources, income instability, and limited access to education and healthcare (Mulyasari et al., 2021).

Bengkulu is a province of ten provinces on the island of Sumatra. Poverty in Bengkulu Province is still very high, where Bengkulu is ranked second in poverty percentage, with a value of 14.43 in 2021. Data released by the Central Statistics Agency (BPS, 2022) stated that poverty in Bengkulu Province is still very high and far above the national poverty rate, namely 9.66 percent (Figure 1).

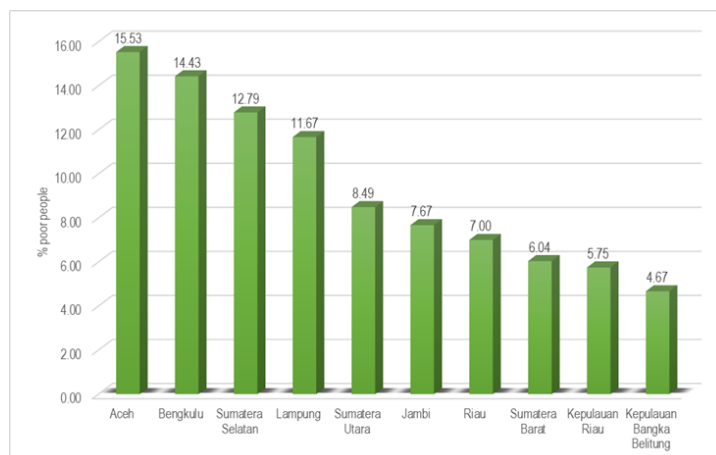


Figure 1. Percentage of poor people by province in Sumatra Island in 2021
Source: BPS Indonesia, 2022

Bengkulu City is a district/city in Bengkulu Province; in Bengkulu City itself, there has been a decline in the poverty rate from 2021-2022, where in 2021, the poverty rate in Bengkulu City was 66.94 thousand and decreased in 2022 by 7.51 thousand to 59.43 thousand (BPS Bengkulu Province, 2023). The poverty rate in Bengkulu City is still very high, and this poverty can be caused by increasing population growth; high population growth can cause an increase in demand for natural resources and food, high population growth can also affect the availability of jobs and increase competition in the labor market, resulting in low wages and poverty. The poverty rate in Bengkulu City is still very high. This poverty can be caused by increasing population growth, which can increase the demand for natural resources and food. Besides, high population growth can also affect the availability of jobs and increase competition in the labor market, resulting in low wages and poverty.

Population growth in Bengkulu City has also resulted in agricultural land shrinking, which has decreased rice fields because landowners are building houses or buying and selling them.

Narrow rice fields also result in poverty for rice farming workers. Workers such as rice farmers require large areas of rice fields, and large land areas will affect the income of rice farming workers in Bengkulu City.

The income of farm workers itself is a complex problem of poverty. The cause of poverty for farm workers is the uncertain income of farm workers, where it is known that working as a farm worker is a calling job. When agricultural workers do not receive a summons from the landowner on that day, the farm laborer does not get any income. Therefore, working as a summons worker causes the agricultural laborer's income to be uncertain, so they are said to be in the category of poor people.

Although numerous studies have examined poverty in the agricultural sector, most have focused on a monetary approach (Susilowati & Maulana, 2012; Angraini, 2023). However, research utilizing a multidimensional perspective to assess poverty among rice farm laborers remains limited. Additionally, the contributing factors to multidimensional poverty among rice farming households have not been fully explored within the local context, particularly in Bengkulu City. Given that Bengkulu Province is the second poorest province on Sumatra Island, rice farm laborer households in Bengkulu City are suspected to experience significant multidimensional poverty. Therefore, this study seeks to bridge this gap by employing MPI as the primary analytical method and identifying the determinants of multidimensional poverty among rice farming households in Bengkulu City.

This research is essential as it provides a more comprehensive insight into the factors contributing to multidimensional poverty in the agricultural sector. The findings of this study serve as a foundation for more effective policymaking to address poverty, not only by increasing income but also by improving access to education, healthcare, and decent living conditions. Furthermore, the results of this study are expected to serve as a reference for local governments and other stakeholders in designing evidence-based intervention strategies to reduce poverty among rice farm laborers. This study aims to (1) analyze the multidimensional poverty status of rice farm laborer households in Bengkulu City using the Multidimensional Poverty Index (MPI) and (2) identify the factors influencing multidimensional poverty, including work experience, land ownership, working days, education level, and household size.

2. Methodology

The location in this study was determined deliberately (Purposive) in Bengkulu City (Figure 2), considering that it has the highest number and percentage of poor people in Bengkulu Province, amounting to 66.94 thousand in 2021 and 59.43 thousand in 2022 (Figure 3). Some poor residents in Bengkulu City work in the agricultural sector as rice farm workers. These agricultural workers were considered inadequate because the wages earned by agrarian laborers is flexible so they cannot meet their basic household needs.

Respondents in this research were rice farm workers who either owned agricultural land or did not own agricultural land. Shareholders or sharecroppers who manage land belonging to other people are respondents in this research because, according to (Juanda & Alfiandi, 2019) farmers who manage land belonging to other people are also farm workers. In Bengkulu City, there is no definite data regarding the number of agricultural workers; therefore, researchers use the method of accidental sampling to represent the population. Accidental sampling is a sampling method where if it is considered that people who coincidentally meet the researcher are the right data source, then everyone who coincidentally meets the researcher can be used as a sample (Sugiyono, 2016). Determining the number of samples

in this study used a formula Mo because the population size is large and unknown. Based on the calculation results, the number of samples used in this research was 100 rice farming workers

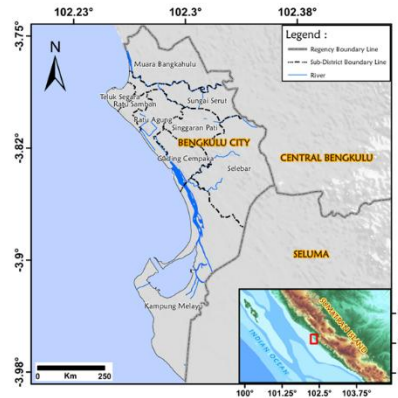


Figure 2. Research Area

This research applied MPI to analyze the poverty of rice farming worker households in a multidimensional manner. MPI was used to analyze the structure of poverty universally regarding education, health, and quality of life, which is not only seen in income results (Table 1). The logistic regression model was used to analyze the determinants of multidimensional poverty of rice farming worker households in Bengkulu City by involving various independent variables from previous research, namely land area (Susilowati & Maulana, 2012), number of working days (Mulyasari, et al., 2019), age (Angraini, 2023), family responsibilities (Mulyasari et al., 2021), side jobs (Prawito & Mulyasari, 2021), and farming experience (Arliman, 2013). In this research, the model must use the classic assumption test to determine whether the independent variable (X) has the opportunity to influence the dependent variable (Y) significantly. A multicollinearity test must be carried out before logistic regression analysis to determine whether the data on the variables used can be analyzed using logistic regression analysis (Muniroh & Suharsono, 2016).

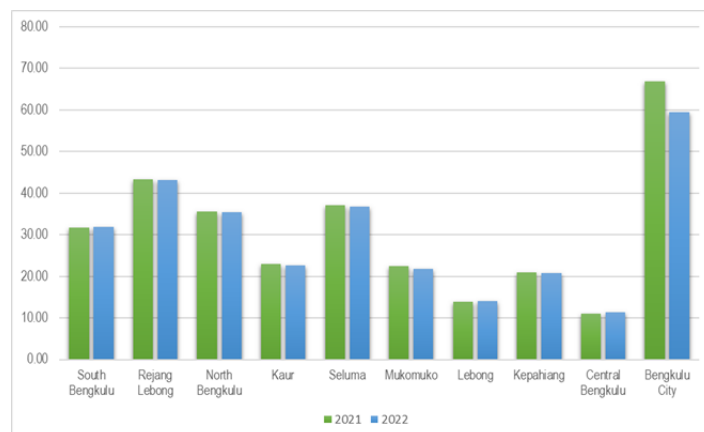


Figure 3. Number of Poor People (in thousands) in Bengkulu Province in 2021 and 2022
Source: Bengkulu Province Central Statistics Agency, 2023

Table 1. Indonesian MPI Dimension and Indicator Weights

Dimension	Indicators	Threshold
Health	Nutrient	Code 1: There are cases of malnutrition in the family, KepMenKes RI No: 1995/Menkes/SK/XII/2010
	Child mortality	Code 1: Some toddlers die in families within <5 years, OPHI in Prakarsa 2015.
Education	Years of education	Code 1: No family member has completed compulsory education for at least 12 years (Elementary School, High School, High School/EQUIVALENT), UU No. 20 Tahun 2003 about the National Education System in Indonesia.
	Child School Attendance	Code 1: Family members with student age category (6-21 years) do not actively participate in education / do not attend school, joint regulation No.7 of 2014.
Living Standards	Cooking fuel	Code 1: If the household uses cooking fuel in the form of kerosene, LPG 3 kg, briquettes, charcoal, and firewood,
	Access to Sanitation	Code 1: have inadequate sanitation access conditions, toilets connected to open sewers (do not have septic tanks) or have proper sanitary conditions but shared with other families, OPHI in Prakarsa 2015
	Access to Water	Code 1: have inappropriate access to clean water, namely unprotected wells/springs, rivers, and protected water sources with a distance of less than 10 m from the septic tank, OPHI in Prakarsa 2015.
	Access to Electricity	Code 1: The primary lighting source is not electricity or electricity with a minimum of 450watt power and sharing, OPHI & PERMENPERA No.22 of 2008 Minimum Service Standards in the Field of Public Housing in Provincial and Regency / City Areas.
	Housing	Code 1: The most expansive floor has an unworthy impression, namely the type of soil floor / low-quality wood/bamboo, OPHI in Prakarsa 2015.
	Asset	Code 1: do not have at least one information asset and at least one asset from the mobility asset group or supporting assets.

Source: SUSENAS data processing results, 2016

3. Results and Discussion

3.1. Characteristics of rice farming workers

This study observed characteristics in households of rice farming workers in Bengkulu City, including age, formal education, farming experience, household size, land area, and gender.

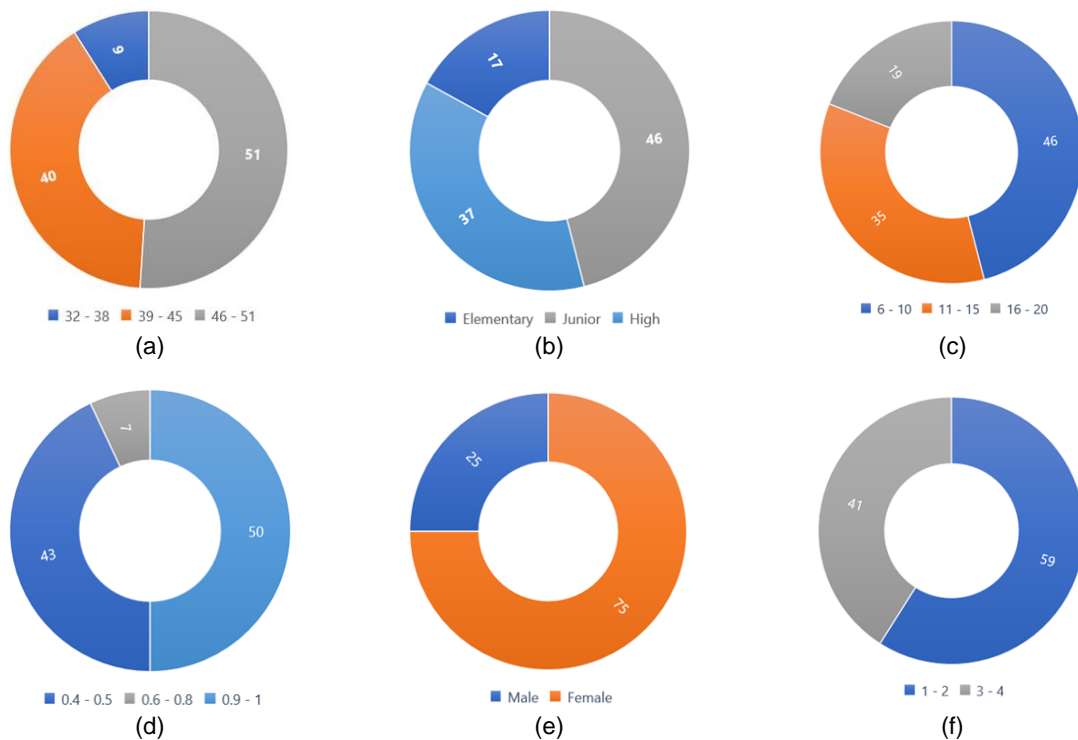


Figure 4. Percentage of respondents based on (a) age (years), (b) formal education, (c) farming experience (years), (d) land area (hectares), (e) gender, (f) household size (person)

3.2. Multidimensional Poverty of Rice Farming Workers' Households

A person is categorized as poor if their income or expenditure exceeds a predetermined value (BPS, 2018). However, poverty is multidimensional and not just about income or expenditure (Chakravarty, 2009). Therefore, multidimensional poverty measurement is needed to complement monetary poverty measurement. The findings of this study reveal that 19% of rice farming worker households in Bengkulu City experience multidimensional poverty, while 81% are categorized as non-poor based on the Multidimensional Poverty Index (MPI). These results highlight that a significant portion of the population still suffers from various forms of deprivation, particularly in health, education, and living standards. Compared with previous studies, these findings provide both confirmations and new insights regarding multidimensional poverty among agricultural laborers.

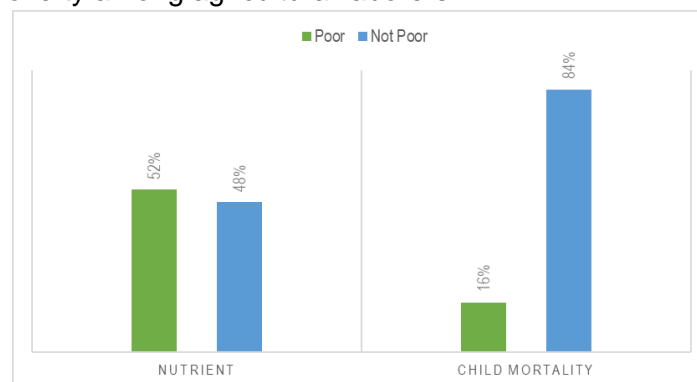


Figure 5. Percentage of poor and non-poor households in the Health Dimension

Multidimensional poverty uses criteria calculations in the health dimension, where the health dimension has two indicators, namely the indicator of family members experiencing malnutrition and child mortality (Figure 5). In terms of health, the study found that 52% of rice farming worker households experienced malnutrition, while 16% reported child mortality, categorizing them as multidimensionally poor. These results align with the findings of (Mulyasari et al., 2021), who found that nutritional deficiencies and high child mortality rates were key indicators of multidimensional poverty among fishermen households in Central Java. Similarly, Alkire et al. (2015) emphasized that inadequate health conditions contribute to poverty worldwide, particularly in rural communities with limited healthcare services. The results also reflect previous studies conducted in South Asia and Sub-Saharan Africa, where undernutrition and child mortality significantly influenced MPI scores (Sen, 2019).

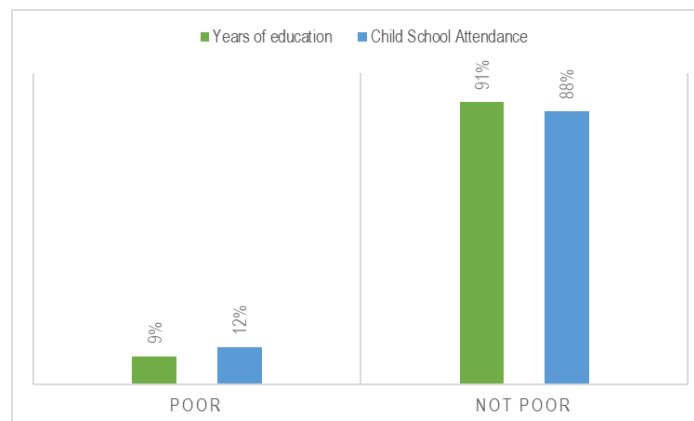


Figure 6. Percentage of poor and non-poor households in the Education Dimension

The education dimension has two indicators, and the first is the number of years of schooling of family members and attendance at education if there are children who are not in school (Figure 6). Regarding education, the study found that 9% of rice farming workers' households had family members who had studied for less than six years, and 12% had children who were not in school. This finding is consistent with (Susilowati & Maulana, 2012), who reported that low education levels among farming households significantly determined their vulnerability to poverty. The lack of formal education reduces opportunities for better employment, skills development, and social mobility, further perpetuating poverty cycles (Chakravarty, 2009). Moreover, previous studies in rural Bangladesh and India also found that low education levels among agricultural workers correlated strongly with multidimensional poverty indices (Chowdhury & Mukhopadhyaya, 2014).

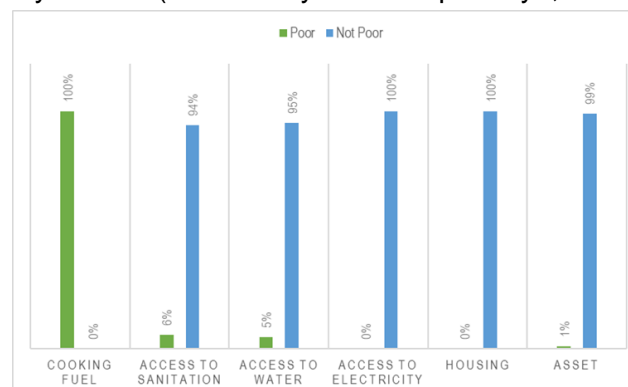


Figure 7. Percentage of poor and non-poor households in the Living Standard Dimension

Next, the standard of living dimension significantly contributes because it has six indicators for cooking fuel, sanitation, clean water, electricity, floors, and assets owned by rice farming worker households (Figure 7). The living standard dimension showed that 100% of households categorized as poor used 3kg LPG gas or firewood for cooking. This pattern aligns with previous findings in rural Indonesia and other developing countries (Jamal, 2014). The reliance on subsidized energy sources and traditional fuels is often associated with lower-income groups who lack access to modern energy infrastructure (World Bank, 2022). Furthermore, studies by Prakarsa (2017) and (Sadan Madji et al., 2019) found that poor households in Indonesia often sell household essentials, such as LPG gas, to meet their immediate financial needs, mirroring the situation observed in this study. These findings contribute to the existing literature by reinforcing that multidimensional poverty assessments provide a more comprehensive picture of deprivation than income-based measures alone. While previous studies have identified income instability as a key poverty determinant (BPS, 2022), this research highlights that access to essential services, such as healthcare, education, and sanitation, is equally critical.

3.3. Determinants of Multidimensional Poverty in Households of Rice Farming Workers

In this research, a multicollinearity test must be carried out before logistic regression analysis to determine whether the data on the variables used can be analyzed using logistic regression analysis (Muniroh & Suharsono, 2016). The multicollinearity test aims to ascertain whether the independent variables used in the study are correlated with each other. A regression model is considered good if it is free from multicollinearity interference. Testing whether or not there is multicollinearity in a regression model can be analyzed by looking at the tolerance and VIF (Variance Inflation Factor) values in the results. If the tolerance value results are > 0.10 and $VIF < 10$, it can be concluded that there is no multicollinearity problem in the research model. On the other hand, if the results obtained are tolerance values < 0.10 and $VIF > 10$, it can be concluded that there is multicollinearity interference in the research model (Ghozali, 2016).

Table 2. Multicollinearity Result

Variable	Collinearity statistics	
	Tolerance	VIF
Land area (x_1)	0.927	1.078
Farming days (x_2)	0.929	1.076
Age (x_3)	0.987	1.013
Household size (x_4)	0.861	1.161
Side jobs (x_5)	0.844	1.185
Farming experience (x_6)	0.993	1.007

Source: Primary data, 2024

In this research, logit analysis was carried out on six dependent variables: households of rice farming workers in Bengkulu City, which were included in the poor and non-poor categories. The independent variable used is land area (X_1), number of working days (X_2), age (X_3), family dependents (X_4), alternative employment (X_5), and work experience (X_6). The results of the F test (Table 3) show that the variables of land area, number of working days, age, family responsibilities, alternative work, and work experience significantly affect the poverty criteria variable for rice farming labor households in the city of Bengkulu.

Table 3. Estimation Results

Variable	Coefficient	Wald	Sig.	Exp(B)
Land area (x_1)	-0.273	0.055	0.814	0.761
Farming days (x_2)	-0.078	0.121	0.728	0.925
Age (x_3)	0.064	0.908	0.341	1.066
Household size (x_4)	0.422	1.071	0.301	1.525
Side jobs (x_5)	0.433	0.382	0.536	1.542
Farming experience (x_6)	-0.236	6.405	0.011*	0.790
Constant	-2.251	0.438	0.508	0.105
R ²				0.113
F-count				1.969
F-table				1.838
t-table				1.661

Description: *Significant at 5% ($\alpha = 0.05$) (Primary data is processed, 2024)

Farming experience significantly influences the poverty level of rice farming workers in Bengkulu City, as indicated by the Wald t-test value of $6.405 > 1.661$ (t-table), confirming a statistically significant effect. The coefficient value of -0.236 suggests that every 1% increase in farming experience reduces the likelihood of poverty among rice farming households. This negative relationship implies that more experienced farm workers are more likely to escape multidimensional poverty due to improved skills, increased productivity, and better employment opportunities. With increased farming experience, workers develop better agricultural skills, enabling them to manage land more effectively, increase crop yields, and reduce losses (Susilowati & Maulana, 2012). Experienced farmers are more adept at implementing best practices, such as using appropriate fertilizers, pest control methods, and efficient irrigation systems, which lead to higher agricultural output and more excellent financial stability (Sadan Madji et al., 2019). Farmworkers with more extended experience are also more likely to receive job offers from landowners, as they are perceived as more reliable and skilled, ensuring job continuity and reducing income uncertainty. Unlike new or inexperienced workers who struggle to secure work consistently, experienced farmers build stronger networks with landowners and agribusiness firms, increasing their access to higher-paying agricultural jobs (Mulyasari et al., 2021). Furthermore, experienced farmers diversify their income by engaging in side businesses, livestock farming, or processing agricultural products, reducing their dependence on fluctuating wages from farm labor (Chakravarty, 2009). By developing multiple revenue streams, experienced workers lower their vulnerability to economic shocks and improve their living standards, thereby escaping multidimensional poverty. Additionally, research has shown that experienced farmers are more likely to adopt new agricultural technologies and practices than their less-experienced counterparts (Alkire et al., 2015).

The ability to implement modern farming techniques, mechanization, and market-oriented strategies significantly increases profitability and household well-being. This aligns with findings from (Chowdhury & Mukhopadhyaya, 2014), who observed that farming experience was a key determinant of agricultural innovation adoption in Bangladesh, leading to improved productivity and poverty reduction. This study's findings are consistent with previous research highlighting work experience's importance in reducing poverty. Susilowati & Maulana (2012) found that smallholder farmers with more experience had higher farm

productivity and better income stability than less-experienced farmers. However, some studies argue that experience alone cannot eliminate poverty. Jamal (2014) noted that while experience enhances productivity, it must be complemented by access to capital, modern agricultural technology, and stable market conditions. Without these supporting factors, experienced farmers may still struggle with low income levels and persistent vulnerability to poverty. Farming experience is crucial in reducing multidimensional poverty among rice farming workers by improving productivity, employment opportunities, income diversification, and innovation adaptability. Compared to less-experienced workers, those with more excellent experience tend to have better job stability, higher agricultural output, and diversified income sources, allowing them to escape poverty more effectively. This aligns with findings from (Susilowati & Maulana, 2012), (Sadan Madji et al., 2019), and (Mulyasari et al., 2021), reinforcing the notion that work experience is a key driver of economic resilience. Future research should explore how government interventions, such as training programs and agricultural technology support, can further enhance the benefits of farming experience in poverty reduction.

4. Conclusion

The findings of this study highlight that 19% of rice farming worker households in Bengkulu City experience multidimensional poverty, while 81% are categorized as non-poor based on the Multidimensional Poverty Index (MPI). The results emphasize that poverty among rice farming households extends beyond income levels, incorporating health, education, and living standards. The most critical factor influencing multidimensional poverty was work experience, with more experienced workers showing a lower likelihood of poverty. Additionally, education and access to essential services were key determinants of poverty status, reinforcing the importance of non-monetary factors in shaping household well-being.

Given these findings, several policy implications should be considered. First, enhancing education and skills development is crucial, as low education levels significantly contribute to poverty. Expanding access to formal and vocational education and training in modern agricultural techniques and financial literacy can help farm laborers diversify their income and reduce dependency on unstable wages. Second, improving healthcare access and nutrition programs is necessary, considering the high rates of malnutrition (52%) and child mortality (16%) among poor households. Strengthening healthcare infrastructure, subsidizing nutrition programs, and providing mobile healthcare services can directly improve the well-being of rice farming worker households. Third, strengthening employment opportunities and income stability should be prioritized by promoting on-the-job training, apprenticeships, and agriculture-based enterprises that provide stable employment beyond seasonal farm work. Fourth, enhancing infrastructure and access to basic services is essential, as many poor households rely on inadequate sanitation, poor-quality housing, and traditional cooking fuels. Expanding access to clean water, electricity, and affordable housing, as well as promoting subsidized LPG gas and renewable energy sources, can improve their standard of living. Lastly, land reform and agricultural support should be reinforced, as farm laborers often face uncertainty due to limited land ownership and restricted access to productive resources. Government initiatives that provide land access, subsidies for modern farming equipment, and financial assistance can help small-scale farmers increase productivity and break the cycle of poverty. By addressing these multidimensional aspects of poverty, policymakers can develop integrated strategies beyond income-focused interventions and create sustainable

improvements in the well-being of rice farming worker households in Bengkulu City. Future research should explore the longitudinal impacts of these policies and assess the effectiveness of existing poverty reduction programs in rural agricultural communities.

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