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Poverty Analysis among Rice Farming Households in Mubi North and South Local Government Areas of Adamawa State, Nigeria

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Abstract

The study analyzed poverty among rice farming households in Mubi North and South Local Government areas. Primary data was the main source of data collected with the use of schedule. Purposive and simple random sampling techniques were employed for the selection of 191 respondents from the farmers' cooperative societies in the study area. Descriptive and inferential statistics (Foster-Greer-Thorbecke (FGT) index and Binary Logit Regression) were used as analytical tools. The mean per adult equivalent to household expenditure (MAEHE) for all households in the study area was N29, 847.12. This gives a two-third of N19, 898.08 per adult per month which was relative poverty line for the rice farmers in the study area. The relative poverty line which is two-third of MAEHE equals to N 663.27 per day respectively. The analysis of the study indicates that 13.61 percent of the sampled respondents were poor and falls below the poverty line of N 19, 898.08. This shows that the poverty level among rice farmers was low with the estimated poverty gap of 9.3 percent and poverty severity of 4.3% in the study areas. The Binary Logit Regression results reveals that age, level of education, processing experience, membership of cooperative society, access to credit and income were the factors that determine poverty status among rice farming households in the study area. The study recommended that provision of basic infrastructure in the rural areas in particular is a necessary requirement for poverty alleviation. Also, access to credit facilities by farmers could be enhanced through cooperative societies in the rural areas.

Keywords: Poverty status, Rice, Farming households
JEL Classification:

Contribution to/Originality Knowledge

1.0 Introduction

The most dependable driver of growth and development in Africa has been shown to be agriculture, which is also a crucial component of industrialization. A wide range of agricultural products, including rice, cassava, maize, and so on, can be grown in Nigeria due to its extremely diverse agro-ecological environment (Oriola & Raji, 2013). It is an important area of the Nigerian economy that makes a substantial contribution to food security, human development, and the fight against poverty. Despite this, the majority of Nigeria's agricultural output is produced by small-scale, resource-poor farmers who meet the majority of the nation's food needs (National Bureau of Statistics (NBS), 2014).

In Nigeria, where native rice cultivation and consumption have a long history, rice is one of the agricultural commodities whose value is rising (Johnson *et al.*, 2016). In Nigeria, the value

of the rice is rising as a result of increased urbanisation, rising salaries, and changing consumer tastes. Small-scale farmers, whose productivity is constrained, grow the majority of it. By 2050, consumption is expected to increase to 36 million metric tonnes, or 5.1% annually (Nwanze *et al.,* 2006; Fasoyiro & Taiwo, 2012; Johnson & Masias, 2017). Like most emerging nations, Nigeria has experienced a significant shortage of food supplies due to population growth, rapid urbanization, and shifting consumer preferences. As a result, Nigeria imports 8.2% of the world's rice, making it one of the major importers globally. The demand for food materials, particularly rice, has outpaced supply.

Poverty is a condition in which a person lacks financial resources (or other means of support) to meet their basic human requirements such as food, shelter, and clothes on a consistent basis. Poverty, according to Ogunniyi *et al.* (2017), is a situation in which individuals lack the ability to attain an appropriate level of well-being and a socially acceptable standard of life. Global poverty is estimated to affect about 8.6 percent of the world's population today. People in extreme poverty live on less than $1.90 (₦701.1) per day. Poverty is one of the worst problems that the world faces today. The poorest in the world are always hungry, have less access to education; they do not have light at night regularly, and suffer many health challenges (Ogunniyi, *et al.,* 2017). Poverty is a pressing issue in developing countries, particularly in Africa. Nigeria has faced a high incidence of poverty over the previous two decades as a result of the poor economy system (macroeconomic performance), particularly as occasioned by the consequences of insecurity and, COVID 19, as well as inadequate land resource utilization. One major flaw in Nigeria's policy and approach for reducing poverty is the lack of quantitative studies on the subject (Balarabe & Yusuf 2019; Hussaini *et al.,* 2020)

Despite Nigeria's huge agricultural resource base, which has enormous growth potential, poverty has spread throughout the country and is increasing. The majority of Nigerians are poor, and a significant number of them, particularly in rural regions, live in extreme poverty. Agriculture provides both nourishment and income to the country's underprivileged rural women and men. Small-scale farmers who cultivate small parcels of land and rely on rainfall rather than irrigation systems produce around 70% of Nigeria's food (Olalekan, 2020). The Nigerian government has tried numerous policies and programs aimed at restoring agricultural pride but to no avail (Adama, *et al.,* 2016). According to the National Bureau of Statistics (NBS) in The World Bank (2020) report, 'forty percent of the total population, that is almost 83 million people, live below the country's poverty line of 137,430 naira ($381.75) per year.

Considering the significance of the agricultural industry and the fact that agriculture employs a bigger proportion of Nigerian households, most Nigerian farmers remain impoverished. Food and nutrition insecurity, as well as its socioeconomic and political implications, is one of the harmful repercussions of rural poverty. Rural poverty is widespread in Nigeria, and while emphasis has been focused on the issue, it appears to be worsening rather than improving. Despite rural farmers' engagement in agriculture, several impediments work against their aspirations to produce more food and live a better life. Small-scale farmers, who make up the majority of the farming community, are particularly vulnerable to rural poverty and neglect. Many rural farmers sell their agricultural produce at a loss regardless of the cost of production

in order to fulfil some immediate household needs, resulting in everlasting poverty. According to the literature, there are few or no empirical research on the examination of poverty status among farmers particularly rice farmer's households in in Mubi North and South Local Government Areas. This study intends to be carried out against this backdrop.

2.0 Literature Review

2.1 Concept of Poverty

Poverty is a multifaceted social reality with numerous definitions rather than a notion that can be used to define it. Over the previous few decades, numerous attempts have been made to define poverty. Nevertheless, it does not seem as though there is currently a single, broadly recognised definition of poverty. The inability to afford enough food and other essentials was a common definition of poverty (Osondu, *et al.,* 2015). Individual or community is considered to be in poverty if they do not have the means to maintain a minimal level of living. When one's employment-based income is insufficient to meet one's fundamental necessities, they are considered to be in poverty. Families and individuals living in poverty may not have access to clean water, wholesome food, adequate shelter, or healthcare. Every country might have a different cutoff that determines how many of its people are living in poverty (U.S. Census Bureau, 2020). The concept of poverty varies greatly across countries, and as a result, policies implemented to address poverty in the EU also differ from those in other countries. Relative income poverty lines are used to evaluate poverty in proportion to each member country's income distribution (Dvorak, 2016). Three notions of poverty—subsistence, basic necessities, and relative deprivation have developed in the literature, according to Osondu *et al.* (2015).

Poverty Status of Rice Farmers

The estimated poverty status of rice farmers in Guma Local Government Area of Benue State shows that 60% of rice farmers is below the poverty line. The most poverty-susceptible group of respondents is the rice farmers aged between 41-50 years of age exhibiting 63% poverty incidence. Idiong and Michael (2019) indicated that the poverty line of farmers in selected rice growing communities in Cross River State was N5, 589.25/month and that majority (64.32%) of the farmers were below this line and therefore classified as poor. However of this percentage 40.85 were extremely poor and Ugbaja and Ugwumba (2015) reported most small-scale farmers are poor. The poverty lines were ₦4053.91 and ₦3611.56 per month in the rainy and dry seasons respectively. Based on the analysis of Akinlade, *et al.* (2015) 33.3% of respondents live below the poverty line (poor) in the rainy season while in the dry season, it increased to 40.7%. This shows that during the dry season, the farmers tend to be poorer. This may be due to the fact that agricultural production in the study area is rain-fed. This concurs with the findings of Adeyonu, *et al.* (2012) who reported that poverty indices were higher during the dry season than rainy season among rural farming households in Oyo state. Hussaini, *et al.* (2020) showed that the poverty gap and severity of poverty were 0.211 and 0.07 respectively in Kebbi State, Nigeria.

According to Adekoya (2014), the prevalence of poverty among the farm households in Ogun State was (0.7810) representing 78.1% of the farm households with consumption expenditure

level below the poverty line the poverty depth was 0.558 representing 55.8% whose average consumption expenditure was below the poverty line. This gap represents the percentage of expenditure required to bring poor households below the poverty line up to the poverty line. According to Agunbiade and Oke (2019), the poverty incidence was 28.9%, which means that 28.9% of the total respondents are poor, indicating that poverty is fairly common in the research region. The poverty depth was 5.3% which means that in addition to poverty being pervasive, it is considerably deeper too. This suggests that these poor households need to raise their monthly expenditure on food and non-food consumption by ₦165.88 to escape poverty. The poverty severity index among household respondents was 1.5%. According to the poverty severity measure, around 1.5% of respondents were severely poor. This suggests that about one out of every 70 farmers in the sample is severely impoverished.

According to Yahaya *et al.* (2023), the distributions of respondents by poverty status for poverty incidence (Po), poverty depth (P1), and poverty severity (P2) were, respectively, 0.42, 0.23, and 0.16. The average monthly household spending per member was N16, 277.98 (Nigerian Naira). Approximately 27.5% of farming households are categorized as non-poor since they are classified as being above the poverty line, whilst 72.5% of agricultural households are considered to be poor. According to Ogunyinka *et al.* (2019), of the poor, 30.7% are core poor and 41.8% are moderately poor.

Determinants of Poverty Status among Farming Households

According to Ogunyinka *et al.* (2019) findings, gender, marital status, household size, and educational achievement were important variables. With the exception of educational level, all of these factors had a beneficial impact on household poverty. The authors propose that mitigating the number of dependent household members and guaranteeing the prompt availability and accessibility of essential amenities such as health care facilities and water supply to rural families are potential methods to mitigate the risk of poverty in the research area. According to Azeez *et al.* (2015), family size and the type of farming activity increased poverty, whereas age, educational attainment, and the family head's income from sources outside the farm decreased the prevalence of poverty. Yahaya *et al.* (2023) found that while age, marital status, and household size had a negative influence on poverty status among farming households and were statistically significant at various levels, sex, formal education, primary occupation, access to credit, total income, and annual remittances had a positive influence. According to Morris *et al.* (2021), 17% of rural farmers in Michika, Adamawa State, Nigeria, are severely impoverished. According to Ume and Ochiaka (2016), education makes one more objective while assessing innovation, which will enhance his farm's output and increase his revenue. More specifically, access to education is limited by poverty, yet education itself lessens poverty.

3.0 Materials and Methods

3.1 Study area

The study was conducted in Mubi North and Mubi South Local Government Areas (LGA), which lies between latitude 9^0 50N and 10^0 50'N and longitude 10^0 10'E and 13^0 50'E

(Adamawa State Ministry of Land and Survey, 2023). Farming is the major occupation of the people in the area. The major crops grown are rice, cowpea, maize, sorghum, millet, groundnut, sweet potatoes and sugar cane. The major tribes found in Mubi are: Fali, Gude, and Marghi. Among these people, women often married early and husbands were usually responsible to meet all household needs, while women only contributed to household welfare in the areas they chose to and to the extent they wanted.

Sources and Method of Data Collection

Primary data was the main sources of data for the study. Data were collected with the aid of schedule administered to rice farmers with the help of trained field enumerator for the period of three (3) months (October to December 2022).

Sampling Procedure and Sample Size

Sample was collected in stages. In the first stage, Mubi North and Mubi South LGA were purposively selected because of their relative importance in rice production. Second stage was purposive selection of two wards from each selected local governments. Stage three involved purposive selection of three community form the selected wards because of high concentration of rice production. The last stage involved the use of random selection of 191 rice farmers and this was done with the aid of cooperatives societies' leaders of rice farmers from the villages to get the sample size as shown in Table 1.

Table1: Distribution and Selection of Rice Farmers based on Population & Sample Size

Selected LGA	Selected wards	Number of farmers registered	Communities	10% proportionate to the size of registered farmers
Mubi North	Muchalla	650	Gova	35
			Mishkiya	30
	Lokuwa	315	Lokuwa	22
			Barama	10
	Vimtim	320	Kasuwan dare	16
			Blue house	15
Mubi South	Gude	285	Wuro-patuji	15
			Tudun-wada	14
	Nassarawo	237	Kasuwan borkono	11
				13
			Garkeje	
	Lamurde	195	Gaya	12
			Lamurde	8
2	**6**	**2002**	**18**	**191**

Source: International Rescue Committee (2019)

Analytical Techniques

Inferential statistics involved the use of Foster-Greer-Thorbecke (FGT) index and Binary Logit Regression Model. The Foster-Greer-Thorbecke (FGT) index was used to determine the poverty level among rice farming households.

The FGT poverty index developed by Foster *et al.* (1984) was adopted. Thus,

$$P\alpha = \frac{1}{n}\sum_{i=1}^{\alpha}\left(\frac{z-y_1}{z}\right)^{\alpha} \quad (1)$$

Where:

$P\alpha$ = FGT poverty index for the i^{th} households,

n = Total number of households

y_i = Expenditure of i^{th} household,

Z = Poverty line and

α = Aversion to degree of concern (a co-efficient reflecting different degrees of importance accorded to the depth of poverty and it ranges from 0 to 2.

When the aversion to poverty (α) is equal to zero, there is no concern, and the equation gives the incidence of poverty head count ratio (the proportion of the rice farming households that was below the poverty line). It is the incidence of poverty in the population when represented in percentages. The headcount ratio has been condemned for focusing solely on the number of impoverished people and being oblivious to poverty severity and change below the poverty line. That is, it treats all poor people equally, despite the fact that not all poor people are equally impoverished. That is, Poverty headcount index (α = 0) and equation (2) reflects the ratio:

$$\text{Poverty depth } P_0 = \frac{1}{n}\sum_{i=1}^{\alpha}\left(\frac{z-y_1}{z}\right)^{0} = \frac{\alpha}{n} \quad (2)$$

When α is equal to 1, it shows uniform concern and equation (1) can be re-specified as equation (3):

$$\text{Poverty Gap } P_1 = \frac{1}{n}\sum_{i=1}^{\alpha}\left(\frac{z-y_1}{z}\right)^{1} \quad (3)$$

According to Hall and Patrinos (2005), this measure of poverty depth (the proportion of spending deficiency from the poverty line) is also known as the poverty gap or expenditure gap of the average difference between income and the poverty line. Although superior to the headcount ratio, P_1 still implies uniform concern about the depth of poverty, in that it weighs the various expenditure gaps of the poor equally. The poverty gap index P_1 will be used to measure the depth of poverty of the rice farmers' in the study area.

When α is equal to 2 distinction is made between the poor and the poorest, that is, the severity of poverty (Foster, *et al.*, 1984). The equation (1) becomes equation (4):

$$\text{Poverty severity } P_2 = \frac{1}{n}\sum_{i=1}^{\alpha}\left(\frac{z-y_1}{z}\right)^{2} \quad (4)$$

The equation expresses the concern about poverty incidence and distribution, as well as its relative relevance. In the study area, it distinguishes between the poor and the poorest rice farmer households. That is, the severity of poverty and the distribution of poverty among the states rice farming households. The two-thirds of mean household expenditure per adult equivalent was utilized as the poverty line in this study. In developing nations, household expenditure is regarded a sufficient measure of household wellbeing since it better represents households' consuming capacity (Bogale *et al.,* 2005). As a result, a household is termed poor if its expenditures are insufficient to cover all of its members' basic demands for food and other necessities.

Binary Logit Model was used in this study to examine the determinants of poverty status among rice farming households. The likelihood approaches zero at a slower pace as the explanatory variable's value decreases, and the probability approaches 1 at a slower rate as the explanatory variable's value increases (Gujarati, 1988; Baola, 2012). Rice farmers' chances of falling into poverty was hypothesized to be a function of socioeconomic factors. In the situation of binary choice, the underlying dependent variables y* is econometrically described by the multivariate Logit Regression relation.

$$P_i = y^* = F(Z_i) = F(\gamma + \Sigma\, \lambda 1 \times 1) = \frac{1}{1+e^{-z}\,1} \qquad (5)$$

Where:

P_i = Probability that a rice farmer will fall below the poverty line.

y* = Binary or dichotomous variable which implies 1 for category of rice farmers above the poverty threshold and 0 for rice farmers below the threshold.

Z_i = Function of a vector of n-explanatory variables and

e = Base of natural logarithms which is approximately equal to 2.718 and

Xi = The i^{th} explanatory variables and are parameters to be estimated.

The Logit Model, according to Hosmer and Lemeshow (1989), can be written in terms of odds and log of odds, which makes the coefficients easier to understand. The odds ratio denotes the ratio of the probability (Pi) that a rice farmer will fall into poverty and the probability (1- Pi) that the rice farmer will not fall into poverty.

Z_1 is the function of a vector of n explanatory variables and expressed as:

$Z_1 =$  (6)

Where:

β_0 = Intercept and

= Vector of unknown slope coefficients, the relationship between Pi and Xi which is non-linear.

Finally, the Logit Model is obtained by taking the logarithm of equation as follows:

$$\ln \quad = Y = \alpha_0 + \beta_1 X_1 + \mu_i \qquad (7)$$

Where:

Y = Poverty status (0 = poor, 1 = not poor);

X_1 = Net income from value addition (₦);

α_0 = Constant term;

β_1 = Coefficient and

μ_i = Error term.

4.0 Results and Discussion

Socio-economic Characteristics of the Respondents

The distribution of the respondents by their sex revealed that 82.2 percent, representing 157 respondents, are male and 17.8% (34 respondents) are female. This implies that more mene were engaged in rice production than women in the study area. This may be attributed to the fact that women are more involved in processing than production. And the distribution reflects the embedded customs and values of the society that men are "the breadwinners." Hence, if more men would be encouraged to go into the rice value addition their income will increase by an appreciable amount. This finding opposes that of Ibitoye, *et al.* (2014) who revealed that female constitute majority of the respondents, having 84.4% in the Bassa Local Government Area of Kogi State, Nigeria. Ibitoye, *et al.* (2014) noted also that there was relatively an equal number of male and female rice dealers in value addition on rice production and processing in Adani Uzowani Local government Area of Enugu state.

Table 2 shows that 8.4% of the respondents were less than 20 years of age, 40.8% were between 21-30 years of age, 42.9% were between 31-40 years, and only 7.9% were between 41-40years of age. This indicates that majority of rice farmers in the study area were middle age who are active and energetic which may lead to increase in productivity in rice production and processing. All thing being equal, rice farmers in the study area should be able to imbibe new ideas and innovations to enhance productivity in the industry as reported by Enwelu, *et al.* (2018), which revealed that the respondents were in their active age of production and more skillful in rice production and processing. The analysis of the study revealed that 13.6% of the total respondents were single, 70.2% were married, 6.2% were divorce and 10.0% were widow/widower. This implies that most of the respondents were married and there is a tendency that investment in rice production and processing is more stable as marriage guarantees stability in their activities which may lead to increase in their processing performance from learning by

constant practice. This study is in line with the study of John, *et al.* (2014) who affirms that most (93.1%) of the respondents were married.

The distribution of the respondents by household size in Table 2 indicated that 16.2% had household size less than or equal to 5 members, 46.6% had between 6-10 members, 25.1% had household size of 11-15 members, 15% had between 16-20 members, and only 4.2% had greater than 20 members. This shows that household size in the study area is relatively large. Hence, rice farmers had access to family labour for production and processing. This finding concords with that of Nwalieji, *et al.* (2014) revealing that the household size was large which can be a source of cheap farm labor. The results of the distribution of the educational level of the respondents in the study area shows that 8.9 % of the respondents had no any form of education, 11.0% had non-formal education 27.2% had primary education, 40.3% had secondary education and 12.6% attained tertiary education. This result implies that majority (52.9%) of the respondents in the area were a bit literate who can read and write. This finding disagreed with the finding of Balarabe, *et al.* (2019) who indicated that majority (59.67 %) of the rice farmers had non-formal education but agreed with that of Samarpitha, *et al.* (2016) who reported that most of the sampled farmers have some formal education.

The distribution of the respondents based on their rice farm holdings is shown in Table 2. The results revealed that 17.8% had farm size of less than or equals 1 hectare, 39.8% had between 1.1- 2.0 hectares, and 42.4% had between 2.1- 3.0 hectares. This implies that the rice farmers who invested in rice value addition are predominantly small-scale farmers. This could be attributed to predominant land tenure system or due to the increasing population as suggested by Enwelu, *et al.* (2018) that most of the cassava farmers in the study area are subsistence farmers. The study indicated that 69.6% of the respondents were farmers, 18.9% of them were traders and only 11.5% were civil servant. This shows that majority of them engaged in farming as full time business. This study is in line with that of Balarabe, *et al.* (2019) who indicated that all rice farmers interviewed were into farming as a means of livelihood. The results of the distribution of respondents based on years of farming experience in Table 2 affirms that 14.7% of the rice farmers had less than or equals to 5 years of farming experience, 18.9% had 6-10 years of farming experience, 11.0% had between 11-15 years of farming experience, 36.1% had between 16-20 years of farming experience, and 19.3% had above 20 years of farming experience. This result showed that farmers had a reasonable farming experience, which will improve their ability to produce and enable them to make wise decisions about the combination of inputs and the allocation of resources. As farmers become proficient in production techniques, this will increase productivity and income and help them avoid mistakes in the past as it agrees with the study of Abah (2015) who show that majority (66.99 %) of the respondents had over 10 years of experience in rice farming and marketing.

The study revealed that 15.2% of the rice processors had less than or equals to 5 years of processing experience, 21.5% had 6-10 years of processing experience, 23.0% had between 11-15 years of processing experience, 23.6% had between 16-20 years of processing experience, and 16.7% had above 20 years of processing experience. This result shows that the respondents had good years of experience which could enhance their production and processing

productivity and income. This implies that rice processing seems to be a profitable enterprise in the study area, since there is a traditional believes that nobody will spend several years in an unprofitable venture. This analysis of the study agrees with the finding of Ibitoye (2014) who showed that majority (62.2%) of the respondents had spent between 6-15 year in rice production and processing.

Most of the respondents (85.9%) obtained their initial capital outlay from their personal saving, only 14.1% of them was borrowed from markers. This shows that majority of the respondents obtained their initial capital from their personal saving and this led to their inability to operate large-scale business in the study area as revealed by Mary, *et al.* (2018) who indicated that most of the respondents (88.7%) obtained their initial capital outlay from their personal saving, and that of Obayelu, *et al.* (2013) who also revealed that majority (64.9%) of the farmers source their capital from family members. The analysis of the study indicated that 16.7% had contact extension agent once in year, 27.8% two times in a year, 23.5% had 3 times contacts with extension agent in a year and 31.9% 4 times, contacts in a year. This shows that farmers who are members of the agricultural cooperative societies in in the study area have good numbers times contact with the extension agent due to the engagement of extension agents by the NGOs in the region. This study disagrees with the findings of Enwelu, *et al.* (2018) who confirms that majority (65.33%) of the rice farmers had no contact in whatever form with agricultural extension agents in Kebbe Local Government area in Sokoto State.

Table 2: **Socio- Economic Characteristic of the Respondents**

Attribute	Frequency	Percentage
Age		
≤ 20	16	8.4
21 – 30	78	40.8
31 – 40	82	42.9
41 – 50	15	7.9
Total	**191**	**100**
Gender		
Male	34	17.8
Female	157	82.2
Total	**191**	**100**
Marital status		
Married	26	13.6
Single	134	70.2
Divorce	19	6.2
Widow/widower	19	10.0
Total	**191**	**100**
Household size		
1 – 5	31	16.2
6 – 10	89	46.6
11 – 15	48	25.1
16 – 20	15	7.9
> 20	8	4.2
Total	**191**	**100**
Educational level		

No education	17	8.9
Non formal	21	11.0
Primary	52	27.2
Secondary	77	40.3
Tertiary	24	12.6
Total	**191**	**100**
Farm size		
≤ 1	34	17.8
1.1-2.0	76	39.8
2.1-3.0	81	42.8
Total	**191**	**100**
Major occupation		
Farming	133	69.6
Trading	36	18.9
Civil servant	22	11.5
Total	**191**	**100**
Farming Experience		
≤ 5	28	14.7
6 – 10	36	18.9
11 – 15	21	11.0
16 – 20	69	36.1
> 20	37	19.3
Total	**191**	**100**
Processing experience		
≤ 5	29	15.2
6-10	41	21.5
11-15	44	23.0
16-20	45	23.6

>20	32	16.7
Total	**191**	**100**
Source of capital		
Personal savings	164	85.9
Borrowed	27	14.1
Total	**191**	**100**
Extension contacts per year		
1 time		
2 times	31	16.7
3 times	53	27.8
3 times	45	23.5
4 times	61	31.9
Total	**191**	**100**

Source: Field Survey, 2021.

Poverty Status among Rice Farming Households

The results of the analysis of expenditure pattern of rice farmers is presented in Table 3. The mean per adult equivalent to household expenditure (MAEHE) for all households in the study area was ₦ 29, 847.12. This gives a two-third of ₦ 19, 898.08 per adult per month which was relative poverty line for the rice farmers in the study area. The MAEHE of the rice farm households considers both food and other necessities using per-capita expenditure approach. The relative poverty line which is two-third of MAEHE equals to ₦ 663.27 per day respectively. The analysis of the study indicates that 13.6 percent of the sampled respondents were poor and falls below the poverty line of ₦ 19, 898.08. This shows that the poverty level among rice farmers was low in the study area. This study disagreed that of Adekoya (2014) who found the prevalence of poverty among the farm households in Ogun State to be 78.1 percent, and poverty depth was 55.8 percent and that of Hussaini *et al.* (2020) who reported that poverty status among the rice farmers in Kebbi State, Nigeria was high, as 58.3 percent were poor.

The poverty gap was estimated to be 9.33 percent (see Table 3). This signifies that respondents must increase their expenditure by 9.33 percent to escape poverty. Finally, the poverty severity

was 4.29 percent. About 4.29 percent of rice farmers in the study area were suffering from severe poverty (poorest among the poor farm households) who require the attention of policy makers in providing relief in the area of health care services, clean water and income generation activities. This finding is in line with findings of Hussaini *et al.* (2020) who showed that the poverty gap and severity of poverty were 21.1% and 7.0% respectively in Kebbi State, Nigeria and Agunbiade and Oke (2019) who reported that the poverty incidence in Osun State was 28.9%, indicating that poverty is fairly common in the research region, while the poverty depth was 5.3% which means that in addition to poverty being pervasive.

Table 3: Poverty Status among Rice Farmers

Poverty level	Poverty index	Percentage (%)
MAEHE	₦ 29, 847.12.	
Poverty line (2/3 of MAEHE)	₦ 19, 898.08	
Poverty headcount (P_0)	1.000	
Poverty gap (P_1)	0.932	9.33
Poverty severity (P_2)	0.428	4.29
Poverty incidence	26	13.61

Source: Authors' computation. MAEHE = mean per adult equivalent to household expenditure

Determinants of Poverty Status among Rice Farming Households

The pseudo R^2 value which measures the proportion of the variation in the dependent variable (Y) that is explained by the independent variables included in the model was 0.8274 (or 83%) and was significant at least at 5% level of significance. This implies that the variables included in the model were important in explaining the variations that occurred in the poverty status of the respondents. The analysis revealed that six out of the nine variables significantly influenced poverty status. These variables were age, level of education, processing experience, membership of cooperative society, access to credit and income. The study revealed that the marginal effect of age was negative and significant at 1% level. As the respondents grow older the probability of the household to be poor decreases by 1.8 percentage points. This may be due to the fact that many households at old age receive remittances and support from children living outside the household in addition to the income they get from their farming and processing activities. The marginal effect of educational level of the respondents was negative and significant at 5% level of significance. Therefore, improvement in educational level of the respondents would lead to in decrease in poverty status of the respondents by 10.1 percentage point.

The marginal effect of processing experience was negative and significant at 1%, meaning that an increase in processing experience will result to increase in the level of income generation of

rice farmers which will consequently reduce poverty among rice farmers. The marginal effect of membership of cooperative society was found to be negative and significant at 5%, meaning that membership of cooperative society will decrease the tendency of the household to be more prone to poverty by 2.6 percentage point. This is because members of cooperative society tend to have more access to credit and other incentives than non-members. The marginal effect of access to credit was negative and significant at 1% level. This indicates that the higher the access to credit by the respondents the lower the probability of the household to be poor by 25.9 percentage points. Lastly, the marginal effect of income was also negative and significant at 1% level. This signifies that increase in income of a household will reduces the likelihood of the respondents to be poor by 33.5 percentage points, all things being equal. This is in line with the study of Baola *et al.* (2012) who reported that probability of falling into poverty increases as age decreases and poverty is more prevalent among the young farmers than the old ones. Cyprian (2014) found that the likelihood of a rice farmer being poor is reduced with increase in the number of years of formal education and income in Guma Local Government area of Benue state.

Table 4: Determinants of Poverty Status among Rice Farming Households

Variables	dx/dy	Std. error	Z-values	P-values
Constant	12.82861	2.164964	5.93	0.000
Age	-0.0178025	0.00464	-3.84	0.000***
Marital status	-0.0373052	0.03194	-1.17	0.243
Level of education	-0.1005141	0.036	-2.79	0.005**
Household size	0.0038956	0.00843	0.46	0.644
Processing experience	-0.7155557	0.15621	-4.58	0.000**
Membership of cooperative society	-0.0259703	0.01069	-2.43	0.015**
Access to extension contact	0.1079547	0.06548	1.65	0.109
Access to credit	-0.258677	0.09402	-2.75	0.006**
Income	-0.3346061	0.07074	-4.73	0.000**

Source: Field survey, 2023 *** and ** = significant level at 1 and 5% respectively

5.0 Conclusion and Recommendations

The study concluded that poverty level among rice farming households was low (13.6%) with the estimated poverty gap of 9.3% and the poverty severity of 4.3%. The determinants of poverty status among rice farming households were Age, level of education, processing experience, membership of cooperative society, access to credit and income in the study area.

It is recommended that, government and other relevant parties increase their educational funding for farmers and encourage them to diversify in order to increase their revenue. Also, access to credit facilities by farmers could be enhanced through cooperative societies in the rural areas. All these will improve the income of farming households and consequently their standard of living and thus reduce poverty.

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