



## POVERTY AND FOOD EXPENDITURE AMONG FARMING HOUSEHOLDS IN OBIO-AKPOR LOCAL GOVERNMENT AREA, RIVERS STATE, NIGERIA

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### Abstract

The prevalence of poverty continues to remain high in sub-Saharan Africa. It is common to see smallholder farmers focus on the production of food crops from which they can feed their families. The objectives of the study were to describe the socioeconomic characteristics of the farmers and analyse the determinants of poverty among the farmers. Data was collected with the aid of a questionnaire and personal interview. The questionnaire was made up of social and economic variables. The objectives were achieved with the use of descriptive statistics and a logistic regression model. The results showed that household size, education and having other steady source of income are significant determinants of a farmer's poverty/non-poor status. Consequently, it is recommended that farming households should engage in family planning and invest in education to be able to access salary earning opportunities as these will bring them out of the poverty trap.

**Keywords:** Food, socioeconomic, farmers, food security, households, Nigeria

### Introduction

Poverty is a global issue. However, majority of the world poor live in developing countries. About 15% of the population of developing countries live on less than \$1.90 a day (Cruz *et al.*, 2015). Poverty, especially with respect to developing countries is often dynamic and multidimensional in nature (Cobbinah *et al.*, 2015). Poverty is an attribute that denotes deprivation of that which is needed or required for a minimum level of comfort. It has been measured in many forms of indicators including income level (e.g. poverty line), food security (e.g. access to food) and in the form of welfare (e.g. infant mortality). Even spatial and gender differences have also been indicated in the multidimensional nature of poverty. Poverty studies have shown threats in the sustainable development of the economy, society and environment. For instance, it is common knowledge that poor/smallholder farmers are unable to secure adequate amount of resources needed for optimal production and as a result, suffer low productivity, low income, increased hunger and malnutrition.

Smallholder farmers typically focus on the production of food crops from which they feed their families and as such it is believed that growth in agricultural food crops particularly in the rural areas and among the farmers has more potential to reduce poverty and food insecurity than growth in export-oriented crops (Dorosh and

Thurlow, 2018) that are often cultivated by big commercial farmers. Agriculture is the mainstay of the Nigerian economy; employing about 70% of the country's total labor force (GRISP, 2013). Most of the rural population farm on a subsistence scale, using small plots and depending on seasonal rainfall. This scenario contributes largely to the low productivity and slow growth of agriculture which in turn determines the level of food production. The Nigerian economy has seen a rise in food imports and increasing threats of food insecurity in the country. Nigeria became a net importer of food after the discovery of crude oil as rising revenue from the country's petroleum sector led to gradual official neglect of the agricultural sector. The oil exploration and exploitation activities take place in the Niger Delta region of the country and Rivers State is one of the nine states making up this region. Although blessed with fertile land for agricultural activities, the many years of exploring and exploiting oil has greatly degraded the region's natural environment through the incessant occurrence of oil spillage, flooding and ocean surge. These outcomes (oil spills and coastal ocean surge) have led to the depletion of aquatic lives and degradation of farmlands that have in turn led to higher food prices, increasing poverty, constrained diet diversity, unemployment and restiveness in the Niger Delta. The state of food security in Nigeria is presently threatened with the growing menace of insecurity brought about by killer-herdsmen and bandits whose

nefarious activities are causing many farmers to live in fear of their lives and abandoning their farming activities. Obviously, if this growing trend is left unchecked, it would portend serious threat to Nigeria's food security.

Evidently, majority of the world's population are poor and unable to adequately access quality food for nutrition security. Food is a basic means of sustenance and when taken in the right quality and quantity, it allows for a healthy and productive life. Studies (Jacobson *et al.*, 2010; Maitra and Rao, 2015) have noted that household characteristics such as education, gender of the household head, and household composition determine the level of household food insecurity or food expenditure. Among the many determinants of hunger and inadequate access to food is the issue of poverty. Most smallholder farmers are poor and the causes of poverty among the farmers are more often than not attributed to low productivity and lack of access to credit (Dhahri and Omri, 2020). It is thought that when households operate poorly, the whole society is adversely affected. Therefore, society and government must take action for the support of households. It is instructive to note that poverty eradication and attainment of zero hunger are the first two goals of the United Nations Sustainable Development Goals. Hence, food consumption is a vital component of welfare measure. To this end, food consumption data is very relevant to addressing issues of poverty, food security, and nutrition outcomes whether at the household, state or national levels (Zezza *et al.*, 2017). It is on this note; the study examines the determinants of households' food expenditure pattern/level as a proxy for poverty status among farmers at the household level. Consequently, the study therefore, aims to contribute to poverty reduction and improved food security as envisioned by the Nigerian state. Specific objectives of the study include; characterising the socio-economic status of the farming households and examining the effects of households' socioeconomic characteristics on their poverty status. Essentially, the study attempts to extend the literature on smallholder farming households in Rivers State; contributing to the literature on poverty status and food expenditure of households. Understanding this dynamic among smallholder farm households can aid government, financial institutions and other relevant organisations in initiating programmes or mechanisms for helping poor farming households.

### ***Theoretical framework***

The poor are those lacking adequate food and shelter, education and health, deprivations that keep them from living the kind of life that everyone values. Hence, poverty reflects a state of persistence multiple deprivations in wellbeing. The existence and varying levels of poverty have been measured through diverse methods that bear influence on its outcome. In order words, determination of an extent of poverty is subjective to the analytical measure. For example, the use of income or consumption expenditure as indicators

of monetary poverty is very common in most countries (Backiny-Yetna *et al.*, 2017). Thus, a person is considered poor if their measured standard of living in terms of income and consumption falls below a chosen poverty line (PL). However, because income fluctuates, consumption (including food and non-food), has been the most used standard variable for measuring monetary poverty in many developing economies (Backiny-Yetna *et al.*, 2017). Dhahri and Omri (2020) noted that daily, one-in-ten persons still live in extreme poverty, and one in nine-persons still goes to bed on an empty stomach each night. The collection of food consumption data can be done through methods that include the use of dietary or by recall, use of a reference period and food items. Each of the aforementioned affects the perceived distribution and level of expenditure. Poverty, without doubt, increases the likelihood of households experiencing food insecurity. According to (Rosalina *et al.*, 2007), food insecurity and poor nutritional status are intrinsically linked to poverty. As it is, many of the world's poor depend on agriculture, hence the sector is a priority area to reduce poverty and ensure food security especially in developing countries (Dhahri and Omri, 2020).

Food insecurity remains a fundamental challenge in Nigeria. Given the anticipated increase in the world's population and stress on natural resources, the problem of hunger and food insecurity are likely to persist and even increase in some regions, unless urgent, determined and concerted action is taken. One outcome of food and nutrition insecurity is malnutrition which can manifest in individual household member as undernourishment, micronutrient deficiency and overweight or obesity. Food insecurity and high dependence on food importation makes Nigeria vulnerable to fluctuations in global prices. The underfunding of the agriculture sector in Nigeria is also central to the crisis of food production and food security in the country. Food consumption assessment in combination with other measurement methods (Leroy *et al.*, 2015) has been used in measuring access component of food security situation of farming households. Likewise, Fiedler (2013) noted that, household consumption and expenditures surveys (HCESs) despite their short comings are often used to address the food and nutrition information gap in many countries as they provide much information about food acquisition and consumption. Without doubt, heterogeneities exist in food consumption across households due to differences in food preferences, prices, household size, seasonality, availability and disposable income (Elzaki *et al.*, 2021). It is believed that the nature and patterns of the purchase and consumption of foods by an individual/household reflects wealth, income and lifestyle and cultural and social factors (Jacobson *et al.*, 2010). Empirically, variables such as family earnings, household size, age of the woman and years of education for the woman have been regressed as determinants of household food expenditure (Jacobson *et al.*, *ibid*). For instance, occupational status has been widely noted to have some effect on expenditure patterns (Salo *et al.*,

2021). Also, Antelo et al. (2017) in their study of economic crisis and the effect of unemployment on household food expenditure in Spain found that in time of economic boom, a state of unemployment led to reduced expenditure on meat, fish, milk and sugar, but in period of crises, there is general reduction of expenditure on all groups of food.

Although, demand for food is inelastic to rising income (going by Engel's Law), the relationship between income and food expenditure is well established; higher income enables consumers to experience more diversified variety of diet (Lusk, 2019). Food expenditure is the amount of money spent on food at any given time period (Hidrobo *et al.*, 2018). Household food expenditure level can serve as an indication of the household's ability to economically access and acquire food (a component of food security). It indicates a household's capacity to cope with price increases, and their ability to remain productive by investing in health services, education, tools and other productive assets for its members. Households spending a large chunk of their total expenditure on food are viewed as being vulnerable because the implication of such high share of expenditure taken up by food suggests that the household is forced to choose between meeting their food and non-food needs or reduce consumption of one or both below their needs. In the same vein, (Regmi and Meade, 2013) asserted that the relative well-being of a country can be measured by the share of income or private consumption expenditure (PCE) spent on food. About 2400kcal per capita per day is consumed in low income countries and mostly consisting of cereals, roots and tubers. More so, low-income consumers have been found to spend a large share of their income on food than other items (Regmi and Meade, 2013). A consumer's purchasing power is determined by available income which enables the purchasing of a greater variety of foods that leads to better nutrition and health outcomes (Matita *et al.*, 2021). Subsequently, Matita *et al.* (2021) observed a positive relationship between household dietary diversity and food purchases diversity made over past 7 days with significant pairwise correlation statistics. It was also observed that households that engage more with food markets were more likely to have more diversified diets. Increase in income reduces poverty and bring about greater demand for food, which in turn leads to reduced direct poverty and deprivation (Bhuyan *et al.*, 2020). Also, agricultural growth leads to greater availability of food and rise in the income of farmers and subsequently enhanced food security.

### Methodology

The study location was Obio-Akpor Local Government Area (LGA) in the metropolis area of Port Harcourt, Rivers State. The original indigenous occupants of the area are the Ikwerre people. A multistage purposive and random sampling technique was employed. In the first stage, there was a purposive selection of 10 communities out of 53 communities that make up the Obio-Akpor LGA of Rivers State. The second stage involved a random but proportionate sampling of 80 households from across the 10 communities using the

list of farmers obtained from farmer groups. For convenience of locating farmer groups and for lack of resources, 10 communities were chosen and then based on the available list of farmers, the proportional distribution of respondents were; Choba (12), Rumuchlorlu (7), Alakahia (6), Mgbuoba (5), Ogbogoro (10), Ozuoba (10), Rumuekeni (8), Rumuosi (7), Rukpokwu (10), Rumuokoro (5) all of which gave a total of 80 respondents. Data was collected with the aid of a questionnaire and personal interview. The questionnaire was made up of social and economic variables and a list of all major food groups and items making up human diet that is commonly consumed in the study area. The objectives of the study were achieved with the use of descriptive statistics and a logistic regression model that was used to analyse the determinants of households' poverty status. The poverty status (PS) was obtained by establishing a poverty line computed with food expenditure data (Agboola and Balcilar, 2012) thus;

Per capita monthly expenditure was obtained by dividing the total monthly expenditure by the household size:

$$\text{household size: } \frac{\text{Monthly Food Expenditure}}{\text{Household size}}$$

Then the mean per capital monthly expenditure was computed thus:

$$\text{Mean per capita expenditure: } \frac{\sum \text{PCME}}{N}$$

Where,  $\sum \text{PCME}$  is the summation of all households' per capita monthly expenditure and  $N$  is the number of household members. To dichotomize the farming households into poor and non-poor households, poverty line was computed and used to categorize the households into poor and non-poor, whereby zero is assigned to non-poor (those with per capita food expenditure above the poverty line) and 1 to poor households (those below the poverty line).

$$PL = (2/3) * \text{MPCHME}$$

Where, MPCHME is the mean per capita household monthly expenditure obtained by the summation of all household's per capita monthly food expenditure divided by the number of respondents in the study. The variables used in the study are defined as presented in Table 1. The logistic regression was modelled as in Sisha (2020) thus:

$$\text{Pr}(Y = 1|X = x) \\ \text{Logit}_{\text{poor,non-poor}}^{\text{poor,non-poor}} = b_0 + b_i X_{ij} + u_i \dots\dots (1)$$

$$\log \frac{p(x)}{1-p(x)} = \beta_0 + \beta X_{ij} + u_i \dots\dots (2)$$

$$P_{ij} = \text{Pr}(PS = 1|X_{ij}) = \frac{1}{1 + e^{-(\beta_0 + \beta X_{ij})}} \dots\dots (3)$$

Where,  $P_{ij}$  is the probability of  $i_{th}$  household of  $j_{th}$  category to be poor and PS is a dichotomous variable taking on the value of zero if non-poor and one if categorised as poor.

**Table 1: Definition of variables**

<b>Variables</b>	<b>Description</b>
Poverty status of the household	Dummy; 1 if poor, otherwise 0
Marital status	Dummy; Married =1, otherwise 0
Education	Primary =1, Secondary = 2, Tertiary = 3
Sex	Dummy; Male = 1, otherwise = 0
Household size	Number of people
Farmland ownership	Dummy; Yes = 1, otherwise 0
Farming experience	Measured in years
Farm size	Measured in hectares
Salaried secondary occupation	Dummy; Yes = 1, otherwise 0
Monthly food expenditure	Measured in Naira

It is expected that the variables such as ownership of farm land, farming experience, farm size and income-earning secondary occupation would have positive effects on household per capita food expenditure and invariably reduce the likelihood of being classified as poor. For instance, income levels have been used in literature as a measure of poverty. Also, it was noted that poor households generally spend large portions of their incomes on food and majority of them, including many small scale farmers, are net food buyers (Egbe, 2012). Therefore, their ability to have any source of steady income aside the income from farming would certainly affect the level of food expenditure positively. Furthermore, a variable such as household size would have a negative relationship on household per capita food expenditure and increase the likelihood of being categorised as poor.

### Results and Discussion

Results in Table 2 show the socio-economic characteristics of the respondents in the study area. Result shows that about 68.8% of the respondents were not married and which may be attributed to chance or that there were more women than men in the study area. Also, majority (71.1%) of the farming households in the study area had more than primary level education. This result is similar to the findings of Amao *et al.* (2013) in their poverty study among farming households and

noted that majority of the respondents were found to be literate. Morrison *et al.* (2007) noted that education is a major element of opportunities and empowerment that can have positive effects on households' food expenditure. More so, education has been implicated in household food insecurity (Maitra and Rao, 2015). Also, 66.3% of the respondents were female, which implied more female farmers in comparison to their male counterparts surveyed in the study area. Majority of the households (51.3%) had a household size of 6-10 members which may be considered as moderate to large, and an indication that the farmers had family responsibilities. Amao *et al.* (2013) noted that household size is an important determinant of poverty, the larger it is, the higher the likelihood of being poor. Majority (78.8%) of the farmers owned the land on which they farm and the farm lands were mostly less than one hectare (an average of 0.63ha). Majority of them (61.2%) had been farming for less than 15 years and also engaged in other occupation. As noted in James and Joshua (2014), farmer's years of experience is expected to positively influence food expenditure, because as the farmer gets more experienced and adopt improved/innovative farming techniques, productivity improves and in turn, farmer's income increases and farmer is able to purchase more food items that are not produced from own farm. Also, majority (75%) of the farmers did not have any salaried occupation aside the farming business.

**Table 2: Socioeconomic characteristics of households**

Variables	Mean	Frequency	Percentage
<b>Marital status</b>			
Unmarried		55	68.8
Married		25	31.2
<b>Education level</b>			
Primary		23	23.8
Secondary		30	37.5
Tertiary		27	33.8
<b>Sex</b>			
Female		53	66.20
Male		27	33.80
<b>Household size</b>			
	5.59		
1-5		38	47.5
6-10		41	51.3
> 10		1	1.2
<b>Farmland ownership</b>			
No		13	16.2
Yes		67	78.8
<b>Farm size</b>			
	0.63		
0.067 – 1.0		75	93.8
1.1 – 5.0		4	5.0
5.1 – 10.0		1	1.2
<b>Farming experience</b>			
	16.51		
1 – 15 years		49	61.2
16 -30 years		20	25.0
> 30 years		11	13.8
<b>Salary earning occupation</b>			
No		60	75.0
Yes		20	25.0
Monthly expenditure	39,900		

*Source: Field survey (2019)*

### Households' Expenditure and Poverty Status

The per capita expenditure for each household was obtained by computing the household monthly expenditure on food items and then divided by the household size (Table 3). Subsequently, the mean of the per capita household monthly expenditure was computed to be N8,153 which was further used to

compute the poverty line of N5,675, that categorized the households into poor (40%) and non-poor (60%). Therefore, the incidence of poverty in the study area was 0.40 as 40% of the respondents were below the poverty line. This result is in contrast to the results of the study by Amao *et al.* (2013) which found high level of poverty incidence among farming households in Osun State.

**Table 3: Estimated per capita food expenditure and poverty status among the respondents**

Description	Amount (₦)
Total households' monthly expenditure	3,190,000
Mean household monthly expenditure	39,875
Mean household size	5.59
Mean per capita household monthly expenditure (MPCHME)	8,512.71
PL = (2/3) *MPCHME	5,675. 14
Number of non-poor (PCHME > PL) = 48 (60%)	
Number of poor (PCHME < PL) = 32 (40%)	

*Source: Field Survey (2019). Decision rule: households with per capita food expenditure above the poverty line are assigned zero as non-poor otherwise 1 (poor) for below the poverty line*

### Determinants of households' poverty status

The results of the logit regression as presented in Table 4 showed the expected signs. The results indicate the probability of being poor given the variables contained in the model. Also, the absolute values of the variables can be used to rank their relative contributions to the household poverty status. It can be seen that having primary education takes the lead, followed by having a secondary school education and household size. The

likelihood of farmers with only primary school education to be poor is 3.43 times over the farmer with tertiary education. This is an indication of the importance of education. Studies have shown that the likelihood of experiencing food insecurity reduces with increasing level of education as people are able to have and make better choices of income earning opportunities (Agboola and Balcilar, 2012; Sisha, 2020). Also, as the household size increases, the

likelihood of being poor increases by 1.481. The result also agrees with Agboola and Balcilar (2012) who also found that a unit increase in household size increases likelihood of being poor. Furthermore, it was observed that farmers who had other forms of salaried jobs were 0.294 times less likely to be poor than those preoccupied

with only farming. The result supports Alwang *et al.* (2019) that income and asset ownership are positively associated with household consumption. The Likelihood ratio value indicates that the model and choice of variables are good.

**Table 4: Determinants of households' poverty status**

Variables	Coefficient	Significance	Odds ratio	Rank
Constant	-2.620	0.010***	0.073	
<i>Educational level</i>				
Primary	1.233	0.068*	3.431	1st
Secondary	1.045	0.112	2.844	3rd
Household size	0.393	0.009**	1.481	5th
Farmland ownership (1 = yes)	-0.666	0.283	0.514	4th
Salaried occupation	-1.224	0.068*	0.294	2nd
Farm size	-0.102	0.589	0.903	6th
Log likelihood Ratio Chi-Square			16.344 (0.012)	

\*\*\*Significant at  $P < 0.001$ ; \*\*Significant at  $P < 0.05$ ; \*Significant at  $P < 0.1$

### Conclusion

The study examined the determinants of poverty among farming households in Obio-Akpor Local Government Area, Rivers State, Nigeria. Results show that the incidence of poverty was 0.40 as only 40% of the households were classified as poor and the other 60% non-poor. The results revealed that household size, education and having a salaried source of income were significant determinants of a farming household being classified as poor or non-poor. It is therefore recommended policy-wise, that advisory services and support be provided to farming households to take up family planning and invest in education to be able to access salary earning opportunities that can help bring them out of the poverty trap. The results empirically support the need for policies that target the improvement of farming households' income in order to mitigate the severity of food insecurity.

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