



**DETERMINANTS OF FOOD SECURITY STATUS OF SMALLHOLDER FARMERS
IN POST SUBSIDY ECONOMY IN WUKARI LOCAL GOVERNMENT AREA OF
TARABA STATE, NIGERIA**

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ABSTRACT

The study analysed the determinants of food security status among smallholder farmers in the post-subsidy economy of Wukari Local Government Area, Taraba State, Nigeria. A multistage sampling technique was employed to collect primary data from 114 household heads using structured questionnaires. Data were analysed using descriptive statistics, food security index, Likert scale, and binary logit model. Results showed that 84% of respondents were male with a mean age of 43 years and an average household size of six. About 98.2% had formal education and an average farming experience of eight years, while 78.9% were married and 68.4% engaged primarily in crop farming. Furthermore, 80.7% lacked access to credit, 61.4% did not belong to any farmers' association, and only 43% were food secure. Factors such as age and gender were significant at 1%, while marital status and cooperative membership were significant at 10%. Major constraints identified included allowing children to eat first, rationing, and borrowing money. The study concluded that smallholder farmers in the area remain largely food insecure and recommended that government food security policies consider household socio-economic characteristics to reduce food insecurity effectively.

Keywords: Determinants, Food, Post-subsidy, Security and Wukari.

INTRODUCTION

Food is the most basic human necessity, and adequate intake of quality food is essential for a healthy and productive life (Okwoche and Asogwa, 2012). In Nigeria, agriculture was once the backbone of the economy, providing employment, food sufficiency, and export earnings before the discovery of crude oil (Kehinde *et al.*, 2012). Although still a major contributor to the Gross Domestic Product (GDP) and rural employment, the sector faces numerous challenges affecting food security (Central Bank of Nigeria, 2016). Currently, Nigeria experiences severe food insecurity, with about 67.1% of the population living below the poverty line (National Bureau of Statistics, 2016). Poverty and hunger remain prevalent in rural areas and among female-headed households, with stunting and malnutrition widespread among children (United Nations, 2016). Food insecurity refers to a condition in which households lack access to sufficient, safe, and nutritious food (FAO, 2021), while malnutrition involves imbalances in nutrient intake and utilization (WHO, 2020) in Nigeria.

Globally, smallholder farmers provide over 70% of food consumed in Sub-Saharan Africa and play a crucial role in ensuring food security (Graeub *et al.*, 2016). However, their productivity is constrained by limited access to inputs, land, and credit, as well as environmental factors such as drought and flooding (IFAD, 2018). In Nigeria, food insecurity has worsened in the post-subsidy economy due to rising production costs, market volatility, and climate change. Despite several studies on national food security indicators, little attention has been given to household-level determinants (Carletto *et al.*, 2013; Dawit and Zeray, 2017).

At the global level, nearly 690 million people are undernourished, and Africa accounts for over half of this figure (FAO *et al.*, 2021). Progress toward achieving the Sustainable Development Goals (SDGs) on poverty and hunger eradication remains slow, particularly in developing countries (Babu *et al.*, 2022).

Given this context, this study aims to analyse the determinants of food security status of smallholder farmers in post subsidy economy in Wukari local government area of Taraba State, Nigeria while the specific objectives were to describe the socio-economic characteristics of smallholder farmers, estimate their food security index, identify the determinants of food security status in the post-subsidy economy, and examine coping strategies adopted by households in Wukari Local Government Area of Taraba State, Nigeria.

MATERIALS AND METHOD

The Study Area

Wukari is the headquarters of Wukari Local Government Area (LGA) in southern Taraba State, Nigeria. It lies between latitudes 7°51'N–7°85'N and longitudes 9°46'E–9°78'E, about 200 km from Jalingo, the state capital (Oyatayo *et al.*, 2015). The LGA covers approximately 4,308 km² with a population of 241,506 (NPC, 2006), projected to 333,163 in 2019 (Bulus *et al.*, 2023). It is bounded by Plateau State to the north, Benue State to the southwest, and Karim Lamido, Bali, and Takum LGAs to the northeast. Annual rainfall ranges between 1,000–1,500 mm from April to October. The area lies within the tree savannah zone, dominated by the Jukun ethnic group engaged mainly in farming, livestock rearing, and trading.

Sampling Techniques and Sample Size

A Multistage sampling procedure was used in Wukari local government area. In the first stage, Wukari Local Government Area was purposively selected because of predominance of smallholder farmers in the area. In the second stage, five (5) wards out of the ten (10) wards in Wukari local government area was randomly selected. In the last stage, out of the ten (10) villages selected, one hundred and fourteen (114) respondents were randomly selected proportionate to size in the study area.

Table 1: Sample size of the study area

LGA	Wards	Villages	Sample
Wukari	Hospital ward	Jibu	12
		Dhakka	8
		Anyam	10
	Bantaje	Beyero	6
		Shatima	10
	Puje	Gidan moto	17
		Abako	9
	Rafinkada	Gadarko	15
		Jandekyula	14
	Chunku	Aka-Akah	13
Total			114

Source: Field survey (2025)

Method of Data Collection

Data for this research were from a primary source with the aid of structured questionnaire that was administered to the respondents. The information that was collected from the respondents include: age, sex, level of education, number of incomes generating activities, household size, farm size, membership of association.

Method of Data Analysis

Descriptive statistics was used to describe the socio-economics characteristics of the respondents, food security index was used to estimate the food security index of the respondents, binary logit regression model was used to identify factors influencing food security status of the respondents and Likert scale was used to identify the coping strategies adopted by household in Wukari Local Government Area.

Food Security Index

Household's expenditure on food which has found wider application in several empirical studies (Iheke and Arikaibe, 2012) was used to achieve objective ii. The food security index was estimated as two-third of mean per capita monthly expenditure of all respondents. Households were then classified into their food security status as food secure and food insecure households based on the food security line. The formula is given as.

$$FSi = \frac{\text{per capita food expenditure for the } i\text{th household}}{\frac{2}{3} \text{mean per capita food expenditure of all households.}} \quad \dots (1)$$

Where;

FSi= food security index;

FSi $\geq$ 1 food secure ith household.;

FSi < 1 food insecure ith household.

Binary logistic regression model

Following Adeniyi and Ojo (2013), a binary logistic regression model was used to identify factor affecting food security status of the respondents in the study area. The food security status of households which is bivariate, taking the value of 1 for food secure households and 0 for food insecure households was used as the dependent variable. Socio-economic variable as well as food security indicator variables was used in the binary logistic regression analysis and specified explicitly in the model as:

$$FSi = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + e \quad \dots (2)$$

Where:

FSi = Food security index (ratio): 1 = food secure and 0 = food insecure

$\beta_0 - \beta_8$ = Constant;

X_1 = Age of the household head (years);

X_2 = Gender of the household head (Male=1; Female=0);

X_3 = Marital status of the household head (Married=1; Otherwise=0);

X_4 = Household size (Number);

X_5 = Educational status of the household head (Number in years);

X_6 = Access to credit (Yes =1, No =0);

X_7 = Membership of cooperatives (Yes=1; No= 0);

X_8 = Farming experience (Years);

e=Error term.

RESULTS AND DISCUSSION

Socioeconomic Characteristics of Small holder farmers.

The results in Table 2 show that 73.7% of respondents were male and 26.3% female, indicating that farming is male dominated due to its physical demands. Most farmers (43.9%) were aged 41–50 years, with a mean age of 42.3, implying that respondents were within productive and active age groups (Fakayode *et al.*, 2015). About 78.9% were married, suggesting access to family labour for farming (Onubuogu *et al.*, 2013). Household size analysis showed that 52.6% had 6–10 members, with an average of six, consistent with Adebayo (2012), who noted that household size influences food availability and labour contribution.

The study revealed that 0.9% of respondents had primary education, 70.4% secondary, and 27.8% tertiary, indicating high literacy that could enhance food security through better adoption of improved practices (Tashikalma *et al.*, 2015). About 61.4% were not members of

any cooperative, while 38.6% belonged to one, supporting Oyewole (2012) that cooperatives enhance farmers' access to resources and benefits. Access to credit was limited, with 80.7% lacking it, likely due to high interest rates and collateral requirements. Among those with credit, 72.2% borrowed ₦100,000 or less, averaging ₦504,550 (Ololade and Olagunju, 2013). The mean farming experience was eight years, with most (84.2%) having less than ten years' experience. Furthermore, 68.4% engaged in crop farming, 17.5% in livestock, and 14% in mixed farming, reflecting the dominance of small-scale agrarian livelihoods typical of rural Nigeria (Oni and Fashogbon, 2013).

Table 2: Socio-economics Characteristics of the respondents

Variables (n =114)	Frequency	Percentage	Mean
Sex			
Male	30	26.3	
Female	84	73.7	
Age (Years)			
21-40	51	44.7	
41-60	58	50.9	43.3
61-80	5	4.4	
Marital Status			
Single	20	17.5	
Married	90	78.9	
Widow/widower	4	3.5	
Household Size			
1-5	48	42.1	
6-10	60	52.6	
11-15	4	3.5	5.73
16-20	2	1.8	
Educational Level			
Primary Education	1	0.9	
Secondary Education	81	70.4	
Tertiary Education	32	27.8	
Cooperative Membership			
Yes	44	38.6	
No	70	61.4	
Amount Borrowed			
100000-500000	16	72.7	
600000-1000000	6	27.3	504,550
Farming Experience			
1-10	96	84.2	
11-20	15	13.2	
21-30	2	1.8	7.63
31-40	1	0.9	
Major occupation			
Crop farming	78	68.4	
Livestock farming	20	17.5	
Crop and Livestock	16	14.0	

Source: Field survey (2025)

Food Security Status of the respondents

The food security index (FSI) was computed as the ratio of per capita food expenditure of each household to two-thirds of the mean per capita food expenditure. Households with $FSI \geq 1$ were considered food secure. The mean monthly per capita food expenditure was ₦26,021.44, and the food security line was ₦17,347.63. Results showed that 43.0% of households were food secure, while 57.0% were food insecure, differing from Keku (2017), who found 66.0% food-secure households in Kaduna State.

Table 3: Food Security Status of the respondents.

Food Security Index	Frequency	Percentage
Food insecure	65	57.0
Food secure	49	43.0
Total	114	100.0
Total household size is 114		
Mean per capita household food expenditure (MPCHHFE) is ₦26,021.44		
Food security line (2/3 of MPCHHFE) is ₦17,347.63		

Source: Field Survey (2025)

Factor influencing food security status of the respondents

The factors influencing food security among rural households were analysed using a binary logit regression model. The Pseudo R-square value of 0.6532 indicates that 65.3% of the variation in household food security was explained by the explanatory variables. The log-likelihood ratio test was significant at 1%, confirming the model's reliability. Results in Table 4 showed that four of the eight explanatory variables significantly influenced food security status. Age (X_1) had a positive and significant effect at 1%, with an odds ratio of 2.49, implying that as farmers grow older, their likelihood of being food secure increases due to experience and productivity. This finding contradicts Oyebanjo *et al.* (2013); Ahmed and Abah (2014), and Otunaiya and Ibidunni (2014), who found that older farmers tend to be less food secure. Gender (X_2) was also significant at 1% and positively influenced food security. Male-headed households were more likely to be food secure, consistent with Adebayo (2012); Ahmed and Abah (2014) and Sulaimon *et al.* (2015), who found that male farmers often have better access to resources and decision-making power.

Marital status (X_3) was significant at 10% but negatively related to food security, implying that married household heads were less likely to be food secure. This aligns with Adepoju and Adejere (2013) and Hailu and Regassa (2007), who observed that single, divorced, or widowed individuals tend to be more food secure.

Cooperative membership (X_7) had a positive and significant effect at 10%. Participation in cooperatives improves access to inputs, credit, training, and markets, which enhances productivity and food security. This agrees with Ahmed and Abah (2014), who reported that cooperative involvement increases household resilience and food access.

Table 4: Factor influencing food security status of the respondents

Variables	Odds Ratio	Std. error	Z	P> z
Age of household head (X_1)	2.48962	0.6860251	3.31	0.001***
Gender of the respondents (X_2)	64.90638	85.86202	3.15	0.002***
Marital status of the respondents (X_3)	0.1476011	0.1509701	-1.87	0.061*
Household size (X_4)	1.557976	0.5150786	1.34	0.180
Educational status of the respondents (X_5)	1.54452	0.7417924	0.91	0.365
Access to credit (X_6)	0.5195145	0.6961075	-0.49	0.625
Membership of cooperative (X_7)	7.596747	8.818236	1.75	0.081*
Farming experience (X_8)	1.089522	0.9633462	0.10	0.923
Constant	0.0000616	0.000164	-3.64	0.000
LR chi2(8)	95.68			
Prob>chi2	0.0000			
Pseudo R ²	0.6532			
Number of observations	114			

Source: Field Survey (2025) *** = 1%, ** = 5% and * = 10%

Coping Strategies faced by the small holder farmers

Households adopted various coping strategies to manage food shortages. Allowing children to eat first (mean 2.34) ranked highest, followed by rationing money (2.21), borrowing

money, and skipping meals (2.19). Reducing food portions (2.18), consuming seed reserves (2.15), and engaging in off-farm work (2.12) were also common. Other strategies included buying cheaper food (2.10), eating wild fruits (2.06), and purchasing food on credit (2.04), reflecting dietary adjustments during food scarcity (Adebayo, 2012). Less common measures were selling livestock, harvesting immature crops, relying on relatives, or withdrawing children from school, showing varying severity of food insecurity responses among smallholder farmers.

Table 5: Constraints faced by small holder farmers

Coping Strategies	Always Freq (%)	Occasional ly Freq (%)	Never Freq (%)	Mean	Remark
Borrowing Money	42(36.8)	52 (45.6)	20 (17.5)	2.20	3 rd
Rationing Money	41(36.0)	56 (49.1)	17 (14.9)	2.21	2 nd
Skipping Meals	48(42.1)	40 (35.1)	26 (22.8)	2.20	3 rd
Consumption of Unconventional Food	2(1.8)	36(31.6)	76(66.7)	1.35	14 th
Reduction in Quantity of food Served Children	48(42.1)	38(33.3)	28(24.6)	2.18	4 th
Off farm Employment	53(46.5)	22(19.3)	39(34.2)	2.12	6 th
Reliance on help from relatives	4(3.5)	42(36.8)	68(59.6)	1.44	13 th
Purchasing food on credit	44(38.6)	31(27.2)	39(34.2)	2.04	9 th
Skipping Meals for whole day	4(3.5)	12(10.5)	98(86.0)	1.18	12 th
Buying of less expensive food	39(34.2)	48(42.1)	27(23.7)	2.11	7 th
Selling durable Assets	6(5.3)	23(20.2)	85(74.6)	1.31	15 th
Eating Wild Fruits	54(47.4)	13(11.4)	47(41.2)	2.06	8 th
Allowing Children to Eat First	62(54.4)	29(25.4)	23(20.2)	2.34	1 st
Picking of leftover Food at Social Function	2(1.8)	10(8.8)	102(89.5)	1.12	17 th
Consuming Seed Reserve	48(42.1)	35(30.7)	31(27.2)	2.15	5 th
Harvesting Immature Food Crops	50(43.9)	9(7.9)	55(48.2)	1.96	10 th
Selling Livestock to buy Food	21(18.4)	63(55.3)	30(26.3)	1.92	11 th
Migrating to search job	4(3.5)	25(21.9)	85(74.6)	1.29	16 th
Withdrawal of children from school	0(0.0)	2(1.8)	112(98.2)	1.02	18 th

Source: Field Survey (2025)

CONCLUSION AND RECOMMENDATIONS

It was concluded that food security is a fundamental objective of development policy and a measure of its success. Yet, achieving food security is still a problem in most households in the study area. The analysis and findings in this study have shown that food insecurity is a problem measured and opined by the respondents. However, respondents adopted several strategies to cope with food insecurity, but they are caused by many factors. Notably among causes of food insecurity is poverty. Hence, it is expected that the synergistic effect of these factors will lead to the implementation of future meaningful food security strategies in the study area. Based on the findings from this research, the following recommendations were drawn:

- Married farmers should be encouraged by providing them with training and access to affordable credit to enhance farmer's capacity to achieve food security.
- Policy makers should therefore accept the potentials of aged smallholder farmers by developing appropriate policy in support of it. This should include provision of credit facilities to aged farmers to change the production techniques of aged smallholder farmers.
- Farmers should also be encouraged to form producers' cooperative which will help them in acquiring farm inputs and marketing of their products.
- The launching of enlightenment programs on nutrition education especially on the different food groups and dietary diversification practices among both gender of the households. This will help households re-orient their daily diets towards the consumption of a more diversified diet.

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