FUDMA Journal of Sciences (FJS)
ISSN online: 2616-1370
ISSN print: 2645 - 2944
Vol. 10 No. 4, February, 2026, pp 217 – 220
DOI: https://doi.org/10.33003/fjs-2026-1004-4707

ANALYSIS OF FOOD SECURITY AND POVERTY STATUS AMONG FARMERS IN KATAGUM LOCAL GOVERNMENT AREA OF BAUCHI STATE, NIGERIA

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ABSTRACT

This study focused on food security and poverty status of farmers in Katagum LGA. A multi-stage random sampling technique was employed to select 120 household heads across different communities in Katagum LGA. Primary data were collected using a structured questionnaire. Analytical tools employed included descriptive statistics, food security index, FGT Fostor- Greer – Thobecke. The result revealed that: Socio-Economic Characteristics: A majority (70.8%) of the respondents were male, and 37.5% were between the ages of 31–40, indicating a relatively youthful farming population, About 75% of the respondents had formal education, which is essential for technology adoption and improved farming practices, Most farms were small-scale, with 50% of farmers cultivating 1–3 hectares, 41.7% of respondents had more than 10 years of farming experience, but only 29.2% had access to credit, which limits their productivity. Food Security Status: 58.3% of the sampled households were food insecure, while only 41.7% were food secure, the poverty status indicates that 60% of household fall below the food security line, shows that the average food short fall is 28% of the minimum food requirements. Based on these findings, the study concludes that food insecurity and poverty remain widespread among rural farming households, despite their reliance on agriculture. It recommends that government and development agencies should strengthen access to affordable credit, provide input subsidies, expand extension services, improve storage and processing facilities, and invest in rural infrastructure. Such interventions will enhance household food security, reduce poverty levels, and promote sustainable agricultural development in the study area.

Keywords: Analysis, Food security, Poverty Status

INTRODUCTION

Farmers who live in rural environments are poor and not able to meet their basic daily needs for sufficient food in developing countries (Akukwe, 2020). Consequently, Nigeria has been listed among the 55 Low Income Food Deficit (LIFD) countries due to the high prevalence of undernourished people living within agricultural households This is particularly more in the northern Sudan Savannah and Sahel zones which have the highest prevalence of under nutrition (FAO, 2026). The FAO Food Price Index (FFPI) falls for the fifth consecutive month in January 2026 driven by under nutrition. indices have been measured globally using various indicators such as: per capita expenditure on food, food insecurity access scale, food consumption score, per capita food consumption, a consensus on the core parameters that are needed to adequately measure household food security situations at both the micro and macro levels around the world (Akukwe, 2020). Food security and insecurity are two opposing terms used to describe how much access or lack of access to sufficient and nutritious food are available to a population. Food security involves food access, availability, use and sustainability (FAO, 2026); hence, people can be said to be food secured when they are able to get adequate, safe and nutritious diets all year round. Although, majority of the food in-secured are domiciled in developing countries, food security has become an issue of top priority for both developing and developed countries (Mohammed et al., 2021). This is because household food insecurity is responsible for a huge proportion of malnutrition and deaths in developing worlds (Drammeh et al., 2019); hence the emphasis on food security in the sustainable development goals (SDGs). Moreover, evidence has shown that food insecurity is closely related to socio-economic characteristics such as: poverty, low income, employment status, age, household size, level of education among others (Drammeh et al., 2019; Mohammed et al., 2021; Fikire and Zegeye, 2022). The issue of food security has been on the fore developmental sciences for many decades. Food security exists when all people at all times have physical and economic access to sufficient, safe and nutritious food that meet their dietary needs and food preferences for an active and healthy life (FAO.2006). There exist four major elements in accessing food security namely: availability, accessibility, utilization, quality and safety (Henneberry and Carrasco, 2014). While availability connotes the physical presence of a large quantity of food, utilization means sufficiency in both quantities of food and sustainability, implies access at all times and not losing such access (Omonona and Agoi, 2007).

Food is the basic need and necessity of life that must be satisfied before any other developmental issue. Inadequate nutrition is considered as measure of poverty in many societies or synonymous to poverty (Datt et. al., 2000). Farming households are the most affected in terms of food insecurity and poverty in Africa especially the smallholder farming households though the rest of the population depends on their production. In most parts of the world and especially in the developing countries, concerns regarding food security and its related issues are vital for poverty reduction. Attainment of food security is a core problem confronting farming households, especially women and rural populations due to low productivity in staple crop production, seasonal variability in food supply as well as price fluctuations. These problems facing farming households come about as a result of over-reliance on rain-fed agriculture, none or inappropriate usage of chemical inputs as well as inadequate improved varieties of crops and animal species. Food security of

farming households is of serious concern if Nigeria wants to consolidate her macroeconomic gains because; farmers who are vulnerable to food and nutritional insecurity have limited capacity to respond to agricultural programmes.

Food production decisions are made mainly by small scale farmers who represent about 95% of the total food crop farming units in the country and produce about 90 percent (90%) of the total food output. The alarming rise of food insecurity in Nigeria necessitates prompt action. As much as 21.4% of Nigerian families were experiencing acute food scarcity in 2020 (Osabohien et al., 2020a). Similarly, Erokhin and Gao (2020) reported that 50% of the Nigerian population are living below poverty line of 1.9 USD which Katagum LGA of Bauchi State is not an exception. The Global Food Security Index (GFSI) rating shows that Nigeria ranked 94th out of 113 nations in 2019 with a 48.4/100 score, which puts the country below Ethiopia, Niger, and Cameroon (Ayinde et al., 2020). The country therefore needs to check her population growth if food security is to be improved. It is against this backdrop, that this research is undertaken, because it becomes extremely important to analyze the households' food security and poverty status among food crop farmers in Katagum Local Government Area of Bauchi State, Nigeria.

MATERIALS AND METHODS

Study Area

Katagum is a town, a local government area and a traditional emirate in Bauchi State of north eastern Nigeria. The town is located at coordinates 12.29^0N of Latitude and 10.35^0E of longitude on the northern bank of the Jama'are River, which is a tributary of the Hadejia. Most of the inhabitants are peoples from the Fulani, Kanuri, Karai-karai and Hausa tribes. it has an area of 1,436 km^2 (554 sq mi) and a projected population of approximately 550, 000 based on derivation from 2006 census with 3.7% annual growth rate; its administrative centre is Azare with a population of more than 50% of the whole Katagum population. The major agricultural product cultivated include peanuts (groundnuts), sorghum, millet, rice (especially in the riverine *fadamas*, or "floodplains"), cowpeas, cotton, indigo, and gum arabic. Livestock include Sheep and Cattle.

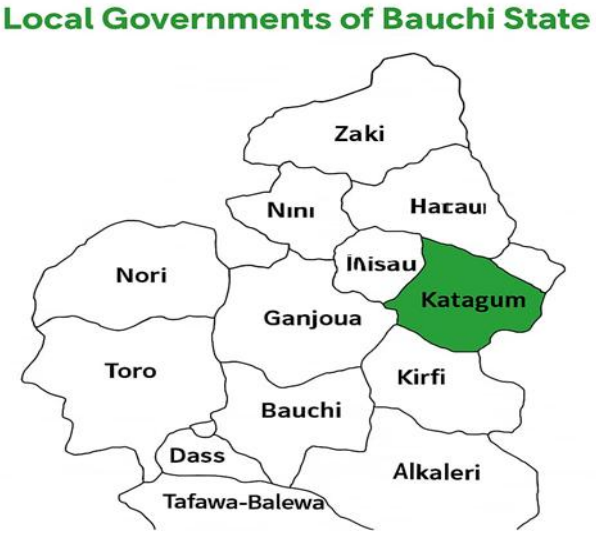

Figure 1: Map of Bauchi State Showing Katagum Local Government Area

Sampling Techniques/Sampling Size

Sampling techniques: A multistage sampling techniques was used for this study. First stage involves the selection of all the three (3) district in the local government area. In the second stage, two (2) council wards were randomly selected from each district given a total of six (6) wards. In Stage three, one village was selected from each of council ward giving a total of six (6) villages. In the final stage, 20 farmers were randomly selected by balloting method from each village making a total of one hundred and twenty (120) farmers.

Slovin's formula was used for calculating sample size based on the assumption of 5 percent expected margin of error, 95 percent confidence interval and applying the finite population correction factor. Expressed as

$$S = \frac{N}{1+N(e)^2} \quad (1)$$

Where
N= sample frame
e = level of significance desired
1= constant
S= sample size

A simple random sampling was employed in selecting respondents from each of the villages.

Sources and Methods of Data Collection

Primary was used to collect information from the respondents, this involved the use of structured questionnaire, the questionnaire comprised of both open-ended and close-ended questions.

Methods of Data Analysis

Descriptive statistics and the food security index was used to determine the food security status of the respondent, Foster-Greer-Thorbecke FGT model was used to achieve to determine the poverty status level of the respondent.

Model Specification

Food Security Index

Several tools can be used to estimate the food security of households, The food security index is given as:

$$Fi = \frac{\text{Household's daily per capita availability(A)}}{\text{Household's daily per capita requirement(R)}} \quad (2)$$

The study used the Food Security Index (FSI) and simple statistical techniques. The instrument has been used in Nigeria (Ahungwa et al., 2013); in Ghana (Kuwornu et al., 2013) and in Pakistan (Bashir et al., 2012). It was demonstrated that data on the caloric content of commonly consumed foods were collected using parameters that convert edible portions into calories. The food security indices were constructed and the caloric acceptability was calculated by dividing the calorie supply for the household by the family size adjusted for adult equivalent (Runge-Metzger, 1993). The SPSS Statistical software; version 21 was used to calculate the frequency, mean, standard deviation and other food security metrics (Ahungwa et al., 2013).

Where F*i* denotes the status of ith household food security (F ≥1 food secure and F<1 food insecure).

Fi = per capita monthly food expenditure for the i household divided by 2/3 mean per capita monthly expenditure of all household.

Where: Fi = Food security index.

When:

Fi ≥1, it implies that the ith household is food secure

Fi ≤1, it implies that the i household is food insecure

Therefore, a foodsecure household is one whose per capita monthly food expenditure is atleast two-thirdsof the mean per capita monthly food expenditure of all the households. On the other hand, a food in-secure household is one whose per capita monthly food expenditure is less than two-thirds of the mean monthly per capita food expenditure of all household.

Foster- Greer -Thorbeck (FGT) Poverty Model

This is used to determine the poverty status of the respondent (Foster-Greer-Thorbeck, 1984).

The model is specified as;

$$P\sigma = \frac{1}{N}\sum_{i=1}^{Hi}\left[\frac{Z - Yi}{Z}\right]\alpha$$

Where:

P = poverty index of household

N = total number of respondents

Z = poverty line (2/3 of the mean per capita Household expenditure of the respondents)

Hi = number of respondents below the poverty line (less than Z)

Yi = Expenditure of the respondents

a = poverty index parameters, which takes the value of 0, 1 and 2, representing incidence of poverty and poverty gap and severity of poverty respectively.

RESULTS AND DISCUSSION

Socioeconomic Characteristics of Farmers in the Study Area

Table 1 indicates the mean age (42 years) of farmers which shows that farmers are in their active productive years, which is in line with the findings of Ayantoye et al. (2011). Household size (7 members) is relatively high, implying higher consumption burden and risk of food insecurity (Omonona & Agoi, 2007). Farming experience (17 years) indicates good agricultural knowledge, but inadequate resources may limit productivity. High CV in farm size (53.8%) reflects inequality in landholding, which affects output distribution. Average monthly income (₦38,500) is below Nigeria's living wage threshold, supporting Fakiyesi (2001) who linked poverty to food insecurity.

Table 1: Socioeconomic Characteristics of Farmers

Variable	Mean	SD	CV (%)	Minimum	Maximum
Age (years)	41.8	9.6	22.9	23	70
Household size (persons)	7.4	3.1	41.9	2	15
Farming experience (years)	17.2	8.7	50.6	3	40
Farm size (hectares)	2.6	1.4	53.8	0.5	6.0
Monthly income (₦)	38,500	14,200	36.9	12,000	75,000

Food Security Status of Farmers

Table 2 indicates the Food Security Index (FSI) which was computed using household expenditure on food. Households with FSI ≥ 1 were classified as food secure, while those with FSI < 1 were food insecure. The results show that 60% of households are food insecure. This supports FAO (2004) and Cruz (2010), who reported that smallholder households are among the most food-insecure despite being food producers.

Table.2: Food Security Classification of Households

Food Security Category	Frequency	Percentage
Food secure	48	40.0
Food insecure	72	60.0
Total	120	100

Foster–Greer–Thorbecke (FGT) Food Insecurity Index

The Foster–Greer–Thorbecke (FGT) index was used to measure incidence, depth, and severity of food insecurity. Table 3 indicates that 60% of households fall below the food security line. P1 (0.28) shows the average food shortfall is 28% of the minimum food requirement. P2 (0.15) suggests inequality among the food insecure, meaning some households are much worse off than others. These results are in line with Adepoju & Adejare (2013) who found high depth and severity of food insecurity in rural Nigeria.

Table 3: Food Insecurity Measures Using FGT Index

Measure	Estimate
Headcount ratio (P0)	0.600
Poverty gap (P1)	0.282
Squared poverty gap (P2)	0.145

CONCLUSION

The study concludes that food insecurity remains a serious challenge among farming households in Katagum LGA, despite their role as primary food producers. A substantial number of households are unable to meet their daily nutritional needs due to limited access to key production resources, small farm sizes, low income levels, and inadequate support infrastructure.

Education, farm size, access to credit, and farming experience were found to be strong predictors of food security. Conversely, larger household sizes and systemic production constraints contributed negatively to household food security status. For food security to be achieved and sustained among rural households, holistic and strategic interventions are needed to address both socioeconomic and institutional challenges affecting farmers. The study recommends that Government and financial institutions should develop tailored agricultural credit schemes for smallholder farmers, particularly with low interest rates and flexible repayment options it is also recommended that extension agent should be present to adequately train farmers, this will help disseminate knowledge on improved agricultural techniques and sustainable practices to rural farmers.

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