ASSESSMENT OF POVERTY STATUS AMONG COCOA FARMERS IN ETUNG LOCAL GOVERNMENT AREA, CROSS RIVER STATE, NIGERIA

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Abstract

This study assessed the poverty status of cocoa farmers in Etung Local Government Area, Cross River State, Nigeria. Specifically, the study estimated the food and non-food expenditure of farmers, analyzed their poverty levels, and determined the factors influencing poverty. A multistage sampling procedure was employed to select 98 cocoa farmers, and primary data were obtained through structured questionnaire. Data were analyzed using descriptive statistics, the Foster-Greer-Thorbecke (FGT) poverty indices, and inferential statistics. The results showed that majority (74.5%) of the respondents were male, with a mean age of 43.8 years. About 44.9% were married, with mean household size of 5 persons. The poverty headcount index was 0.327, indicating that about 33% of the farmers lived below the poverty line. The poverty gap and severity were 0.326 and 0.035, respectively, suggesting significant shortfalls in income and inequality among the poor. Logistic regression analysis revealed that age, household size, income, farm size, access to credit, and land ownership significantly influenced poverty status. The study concludes that poverty is prevalent among cocoa farmers in the area, and recommends policies aimed at improving access to credit, promoting farm expansion, and implementing social welfare programs to alleviate poverty and improve livelihoods.

Keywords: Poverty status, cocoa, logistic regression, *per capita* expenditure

Introduction

Poverty refers to the inability to attain a minimum standard of living. It is a social condition characterized by the inadequacy of access to basic human needs (food and non-food) for the sustenance of a socially acceptable minimum standard of living in a given society (Dia *et al*., 2023). Poverty is characterized by disease, low life expectancy, physical and mental retardation.

According to World Bank (2024), about 692 million people (8.5% of the world's population) live on less than $2.15 per day. Sub-Saharan Africa accounted for 16% of the world's population, but 67% of the people living in extreme poverty. In Nigeria, poverty is higher in rural areas, where 72% of people are poor, compared to 42% of people in urban areas. Approximately 70% of Nigeria's population live in rural areas, yet these areas are home to 80% of poor people; the intensity of rural poverty is also higher: 42% in rural areas compared to 37% in urban areas (NBS, 2022).

Series of studies have shown that agriculture has a great potential of alleviating poverty. Some subsectors of agriculture, particularly the crop subsector, have been found to be very essential in poverty alleviation. Crops like: cocoa, oil palm, cassava, cashew etc. have been termed cash crops from which the farmers and the economy as a whole could

earn income (Babatunde *et al*., 2016). Cocoa stands out as one of the most important cash crops in Nigeria, providing a source of income for thousands of rural households and generating foreign exchange earnings for the country.

Cocoa (*Theobroma cacao*) is a small (4–8 m tall) perennial tree crop from the family of *Sterculiaceae* and genus *Theobroma*. Cocoa primarily comes from three tropical regions: Southeast Asia, Latin America, and West Africa. Côte d'Ivoire is the single largest producer of cocoa beans, accounting for approximately 31% of the world's supply. Other leading cocoa farming countries include Brazil, Cameroon, Ghana, Indonesia, and Nigeria. The crop was introduced to West Africa region in the early 19th century and to Nigeria in the year 1874 (Ogunwolu *et al*, 2022). It is an important source of income for rural farmers. Approximately 95% of cocoa grown in the world is produced by smallholder farmers who cultivate between 2.5 hectares of land (Anga, 2016).

According to Oni (2020), cocoa crops were the major foreign exchange earners for Nigeria in the 1950s, 1960s, and the 1970s and were the second largest producer in the world. However, due to the discovery and exploitation of oil, its significant share of world output has diminished. Recent statistics indicate that cocoa production in Nigeria contributes approximately 2% to the Gross Domestic Product (GDP), despite having recorded increased earnings by 279% (NBS, 2024).

Previous studies on cocoa farming in Nigeria have primarily focused on productivity, value chain analysis, and market constraints (Adebayo *et al*., 2019). Despite the high occurrence of poverty in rural areas, there is limited research on the actual poverty status of cocoa farmers in Etung Local Government Area. This study therefore provides a deeper understanding of the poverty status among cocoa farmers in Etung Local Government Area of Cross River State, Nigeria. The research was therefore aimed at exploring the poverty status of Cocoa farmers in Etung Local Government Area of Cross River State, Nigeria.

The objectives of this study were to:

i. estimate the food and non-food expenditure of cocoa farmers
ii. analyze the poverty levels of cocoa farmers, and
iii. determine the factors influencing poverty status of cocoa farmers in the study area.

Research Methodology

Study area

This research work was carried out in Etung Local Government Area of Cross River State Nigeria. Etung Local government Area is one of the 18 Local government Areas in Cross River State, Nigeria. It is situated at the Central Senatorial District of Cross River State and was carved out from the former Ikom Local Government Area in 1996. The headquarters is at Effraya. The Local Government Area shares an international boundary with the Republic of Cameroon to the East. It is bounded in the North by the Ikom Local Government and in the south by Obubra and Akamkpa local

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Government Areas. The area lies between latitude 5.8589°, 5°51'32"N, and longitude 8.7916°, 8°47'30"E; It has a land mass of 815 km², and a population of about 80,196 (Nigerian Population Commission, 2006), with a growth rate of 2.5%, the population is projected at 125,078 as at 2024. The people of Etung local Government area speak Ejagham language and are predominantly farmers, traders and craftsmen. The climate is tropical, characterized with high relative humidity. The primary activities are farming and trading, and crops grown in the area include cassava, yam, maize, vegetables, plantain, banana, oil palm and cocoa. Etung is noted as the largest cocoa producing Local Government Area in Cross River State (Omang, *et al.,* 2012).

Sampling Procedure

A list of 6000 registered cocoa farmers was gotten from Cross River Agricultural Development Programme, Calabar. This constituted the sample frame from which a sample of 98 farmers was randomly selected, derived using the Taro Yamane formula for calculating sample size.

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

Where

n = the sample size

N = the finite population

e = the level of significance

1= Unit

$$n = \frac{6000}{1 + 6000(0.1)^2}$$

$$n = 98$$

Data Collection

The data used for this study were obtained from primary source using structured questionnaire. The questionnaire was designed to elicit information on the socio-economic characteristics, farming characteristics, household food expenditure, poverty status of cocoa farmers and factors influencing poverty.

Data Analysis

Both descriptive and inferential statistics were used in the data analysis. Objective 1 was estimated using descriptive statistics. Objective 2: The Foster, Greer and Thorbecke (1984) class of weighted poverty measures. Objective 3: Logistic regression analysis

Foster, Greer and Thorbecke (FGT) model

Foster, Greer and Thorbecke (1984) model which includes the head count ratio P_0, poverty gap ratio P_1, and poverty severity P_2 is expressed as

$$P_\alpha = \frac{1}{n}\sum_{n=1}^{q}\left(\frac{z-y}{z}\right)^\alpha \quad \text{.........................(1)}$$

$\alpha=0$, $P_0 = \frac{1}{n}\sum_{n=1}^{q}\left(\frac{z-y}{z}\right)^0$ Poverty incidence or headcount (P_0) …………………..…..(2)

$\alpha=1$, $P_1 = \frac{1}{n}\sum_{n=1}^{q}\left(\frac{z-y}{z}\right)^1$ Poverty gap or depth(P_1)……………………………….(3)

$$\alpha=2, \quad P_2 = \frac{1}{n}\sum_{n=1}^{q}\left(\frac{z-y}{z}\right)^2 \qquad \text{Poverty}$$

severity(P_2)…………………………(4)

Where,

z = Poverty line ($\frac{2}{3}$ mean *per capita* household expenditure)

y = daily *per capita* expenditure of the household

i = individual household

q = Number of poor households

n = Total number of the sample under consideration

α = Poverty aversion parameter (takes a value of 0, 1, 2, for headcount, gap, and severity)

Poverty line

This is the pre-determined and well-defined standard of income or value of consumption in the study. The line was based on the income of the households. Two third ($\frac{2}{3}$) of the mean *per capita* expenditure (monthly) was used as the poverty line. The mean *per capita* household expenditure (MPCHE) was obtained by dividing the total of all the individual household *per capita* expenditure by the number of households surveyed.

PCHE (monthly)

$=\frac{\text{total household expenditure}}{\text{household size}}$ …………………(5)

MPCHE (monthly)

$=\frac{\text{total PCHE}}{\text{Total number of households}}$……………..(6)

Poverty line = $\frac{2}{3}$ × MPCHE …………………………………….(7)

Logistic (Logit) regression model

The logistic (logit) probability function is given as

$$Pi = \frac{1}{1+e^{-zi}} = f(z_i)$$ ……………………………………… (8)

Where Pi is the probability that a household i (i = 1, 2 … n) will be poor. Index Z_i is a random variable which predicts the probability of a household being poor or non-poor. The probability P_i in equation 8 is further transformed to give equation 9.

$$Pi = \frac{e^{zi}}{1+e^{zi}}$$ ……………………………………… (9)

Therefore, for the *i*th observation, a household was

$$Z_i = \text{In } P_i / 1\text{-}Pi = \beta o + \Sigma\beta o X$$ ……………………………………… ….(10)

Therefore, ln (P/1-P) = 1, if the household is poor while ln (P/1-P) = 0, if non-poor.

Explicitly, the model is empirically estimated as

$$Y = \beta_0+\beta_1X_1+ \beta_2X_2+\beta_3X_3+…..\beta_{11}X_{11}+\varepsilon$$ ………………… …………..………. (11)

Y = Poverty status of household (1= if poor, 0= non-poor)

β_0 = constant

$\beta_1 – \beta_{11}$ = coefficient of the independent variables

X_1 = Age of household head(years)

X_2 = Sex of household head (1 = if male, 0 = otherwise)

X_3 = Household size (number of persons in the household)

X_4 = Educational status of household head (years of formal education)

X_5 = Farm income (₦)

X_6 = Farming experience (years)

X_7 = Farm size (hectares)

X_8 = Membership of association (member = 1 and 0, otherwise)

X_9 = Access to credit (yes = 1, 0 = otherwise)

X_{10} = Marital status (1 = married, 0 = otherwise)

X_{11} = Land ownership (1 = if owned, 0 = if otherwise)

ε = Error term

The software used for the Logit regression analysis is SPSS.

Results and Discussion

Socio-economic Characteristics of the respondents

Table 1 shows the age of cocoa farmers surveyed, majority (33.0%), were between ages 40-49, and the mean age of 43.8 years, fell within this group. This implies that, most of the respondents were within this age, which is economically instructive. This contrasts Adebiyi and Okunlola (2013) who found that the mean age of farmers was 55 years. Majority of the cocoa farmers were male (74.5%) while 25.5 % were female. The result implies that cocoa farming in the study area is male-dominated. This is in tandem with Akinpelu *et al.,* (2021) who reported that majority (77.01%) of farmers were males.

A percentage of 44.9 of the total respondents married. This implies that, farmers in the study area were mature and could effectively take crucial decisions jointly with their spouses, which is actually in line with Osarenren e*t al.,* (2016) who discovered that most respondents (75%) were married. Majority (61.2%) of cocoa farmers had an average household size of 1-5, with a mean household size of 5 persons. This confirms the assertion of Dia *et al.,* (2023) who discovered that the mean household size was 5 people. Approximately half of the respondents (49.0 %) had secondary education. This corroborates the findings of Agom *et al.,* (2012) which revealed that majority (76.5%) of the farmers had attained one level of formal education or the other. Majority (60,2%) were members of one association or the other, and majority (76.5%) have had access to credit at some point in time. This in contrary to the findings of Ifeanyi (2020), who discovered that a total of 76.67% of the respondents opined that they use equity capital.

The findings indicated that majority of the farmers (36.7%) fall within the income bracket of ₦4,000,000.00 and above with a mean annual income of ₦5,581,714.29

The distribution of farm sizes of the respondents shows that most (56.1%) of them cultivated 1–2 hectares of cocoa than 1 hectare of farm land, with the mean farm size of 1.8 hectares. Majority (53.1%)

owned their farm lands either through inheritance or outright purchased, and majority (58.2%) had 11–20 years farming experience. This is at odds with the result of Awoyemi and Aderinoye-Abdulwahab (2019) which points that 38 percent of the respondents have been in farming for 21-40 years.

Household poverty status

Table 2 shows the summary statistics of the household monthly expenditure on food and non-food items. About 33.3 % of the total mean per capita expenditure was on food and 66.7% on non-food. This probably is due to the fact that majority of the respondents are full time farmers that grow other food crops outside cocoa to support their daily food needs.

Table 3 shows the poverty of status of the respondents. The total household *per capita* expenditure was ₦56,327,598.00 while the mean household *per capita* expenditure was ₦574,771.41 and two-third of the mean (poverty line) was ₦383,180.94 meaning that any household in the study area with *per capita* monthly expenditure greater than or equal to N383,180.94 was considered to be non-poor, while any household with *per capita* monthly expenditure below N383.180.94 was considered poor. The incidence of poverty as measured by the headcount index was 0.327. This implies that 33% of the sample population is living in poverty. The poverty gap was 0. 326. This implies that 32% is the extent to which the poor fall below the poverty line. The severity was 0. 035. The result indicates that 3.5% is the distance separating the poor from the poverty line and the inequality

among the poor. Therefore, 0.035 multiplied by ₦383,180.94 which is ₦13,411.33 is the amount required to bring an average poor to the poverty line. Since the total number of the poor household in the study area is 32.7%, the average monthly amount required to bring all the poor to the poverty line is 32.7% multiplied by ₦13,411.33 which is ₦438,550.49.

Factors influencing poverty

Table 4 presents the factors influencing the poverty status of the respondents. The diagnostics show that the model is a good fit to explain poverty status by the independent variables. The strength of association between the dependent variable (poverty) and the independent variables is captured by pseudo-R-square estimated as 0.396. This indicates that the strength of association between the dependent and the independent variables is about 39.6%, even though in binary outcomes such as this, this association does not really count (Gujarati and Porter, 2009).

As shown in the Table, the coefficient of age, household size, educational level, income, farm size, access to credit and land ownership are significant while, sex, farming experience, membership to association, and marital status are not significant.

Age was found to have a positive and significant coefficient at 5% level. The age coefficient of .116 implies that a unit increase in age increases the likelihood of being poor by 11.6%. This supports the assertion of Ogwumike and Akinnibosun (2013) who opined that this is due to the fact

that at the early stage of life there is always greater energy which would probably have helped the households at that time to increase output and income.

Household size was found to have a negative and significant coefficient at 1% level. This suggests that the numbers of household members in a family or household affect their wellbeing positively on socio-economic status of a given household. The coefficient of -.599 means that as the number of households increases by one unit the probability of been poor reduces by 59.9%. This is consistent with Azeez *et al.,* (2015), who found that household size tends to reduce per capital expenditure, depending on the distribution of household members between adult and children and whether such adults are working, thus supplementing household needs (income) and reducing poverty.

Educational level was found to be negative and significant at 10% level. The coefficient of -.072 implies that for every unit increase in education, the odds of being poor decreases by 7%. This is consistent with the findings of Idiong and Iko (2019) who found that the probability of being poor decreased with increasing level of education.

Moreso, income was found to be negative and significant at 1% level. this means that as the income of the cocoa farmer increases by one unit (one naira), there is less likelihood of becoming poor since increase in income, all things being equal will translate into a higher standard of living and social wellbeing. The coefficient of -.224 implies that as the income of the cocoa increases by one unit, the likelihood of becoming poor reduces by 22.4%. This

agrees with Ogwumike and Akinnibosun (2013), who opined that the likelihood of farming households being poor is reduced if the income from farming activities increases. Farm size was also found to be negative and significant at 1% implying that as the farm size increases by one unit (one hectare), there is less likelihood of becoming poor, since increase in farm size will result in increase in output and ultimately increase in farm income and wellbeing.

Since access to credit and ownership of land are both negative and significant at 5% level, the same interpretation holds. This confirms the assertion of Nwahia *et al.,* (2021) who opined that households with larger farm holdings were expected to generate more income.

Conclusion

The study showed that about 33% of the sample population are living in poverty and factors such as age, household size, income, farm size, access to credit and land ownership were the major determinants of poverty status among cocoa farmers in the study area. This incidence rate is notably distinct from figures reported in similar agricultural settings, such as the 54% poverty incidence found among farmers in Ebonyi State, underscoring the regional variability that targeted policy must address.

Recommendations

The study recommends that:
1. To reduce the mean monthly expenditure on non-food items, government should provide social welfare schemes such as free education, low-cost housing and

affordable health care for rural household's cocoa farmers inclusive.

2. Given the high incidence of poverty among cocoa farmers, it is essential to design and implement targeted poverty alleviation programs like vocational training, off-farm income generation, and initiatives that promote skill development and job creation.

3. The government, microfinance institutions, and cooperatives should design special agricultural credit schemes for cocoa farmers, with minimal collateral requirements and low interest rates.

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Table 1: Socio economic characteristics of cocoa farmers in Etung Local Government Area, Cross River State

Variable	Frequency	Percentage	Mean
Age			
20 – 29	18	18.4	
30 – 39	17	17.3	
40 – 49	32	33.0	
50 – 59	16	16.3	
60 and above	15	15.0	
Total	**98**	**100**	**43.8**
Sex			
Male	73	74.5	
Female	25	25.5	
Total	**98**	**100%**	
Marital status			
Single	36	36.7	
Married	44	44.9	
Divorced/widowed	18	18.4	
Total	98	100%	
Household size			
1 -5	60	61.2	
6-10	36	36.7	
11- 15	2	2.1	
Total	**98**	**100%**	**5**
Educational level			
No formal education	3	3.1	
Primary	17	17.3	
Secondary	48	49.0	
Tertiary	30	30.6	
Total	**98**	**100**	**12**
Farming experience			
1-10	18	18.4	
11-20	57	58.2	
21-30	13	13.2	
31-40	10	10.2	
Total	**98**	**100%**	**17**
Farm size			
<1 hectare	32	32.7	
1-2 hectares	55	56.1	
3-4 hectares	11	11.2	
Total	**98**	**100%**	**1.8 hectares**
Association			
Yes	59	60.2	
No	39	39.8	
Total	**98**	**100%**	
Access to credit			
Yes	75	76.5	
No	23	23.5	
Total	**98**	**100**	
Farm income			
<1,000,000	1	1.0	
1,000,001 – 1,500,000	9	9.2	
1,500,001 – 2,000,000	10	10.2	
2,000,001 – 2,500,000	9	9.2	
2,500,001 – 3,000,000	14	14.3	
3,000,001 – 3,500,000	5	5.1	
3,500,001 – 4,000,000	14	14.3	
>4,000,000	36	36.7	
Total	**98**	**100**	**5,581,714.29**
Land ownership			
Yes	52	53.1	
No	46	46.9	
Total	**98**	**100**	

Source: computed from field survey data, 2025.

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Table 2: Household monthly expenditure among cocoa farmers

Item	Mean monthly expenditure	% of total expenditure
Food	191,590.46	33.3
Non-food	383,180.93	66.7
Total	**574,771.39**	**100**

Source: computed from field survey data, 2025.

Table 3: Poverty status of cocoa farmers in Etung Local Government Area

P_0	P_1	P_2
0.327	0.326	0.0352

Source: computed from field survey data, 2025.
(P_0=Head count, P_1=Poverty gap, P_2=Poverty severity)

Table 4: Result of the estimated Logistic regression of factors influencing poverty among cocoa farmers in Etung Local Government Area

Variable	Coefficient	Std. Err	Sign	EXP(B)
Age X_1	.116	.059	.048**	.891
Sex X_2	-1.599	.832	.551	.202
Hhsz X_3	-.599	.189	.001*	1.821
Edu.X_4	-.072	.086	.073***	.931
Income X_5	-.224	.130	.017*	1.000
Farmexp X_6	.060	.055	.279	1.061
Farmsz X_7	-9.604	3.644	.008*	.000
Masso X_8	-1.039	.704	.140	.354
Accredit X_9	-2.403	1.093	.028**	11.058
Marstatus X_{10}	-.149	.396	.707	.862
Landown X_{11}	-1.782	.810	.028**	.168
Constant	3.716	2.213	.093	41.098

Note: *** Significant at 1%, **Significant at 5% and * Significant at 10%

Number of observations = 97

LR Chi^2 (11)　　　= 32.53

Prob> Chi^2　　　= 0.0006

Pseudo R^2　　　= 0.396

Log Likelihood　　　= 90.483

Source: computed from field survey data, 2025.