

Original Research Article

DETERMINANTS OF POVERTY AMONG GROUNDNUT FARMING HOUSEHOLDS IN JIGAWA STATE, NIGERIA

ABSTRACT:

This research was undertaken to investigate the determinants of poverty among groundnut farming households in Jigawa State. Primary data were obtained through the use of well-structured questionnaire from a sample size of 227 groundnut farming households. The data were analyzed using Foster-Greer-Thorbecke's (FGT) Weighted Poverty Index and Tobit regression model. The results of the (FGT) Weighted Poverty Index showed that the poverty headcount, poverty gap and poverty severity of poor groundnut farming households were 42%, 46% and 77% respectively using an estimated poverty line of 46,320.53. The factors that significantly influenced the poverty intensity of groundnut farming households in the study area were found to be age of household head which was negative and significant at 10%, marital status of household head was negative and significant at 1%, education was negative and significant at 5% and membership of cooperative was negative and significant at 5%. These factors significantly decreased poverty which was in line with *a priori* expectations while that of farming experience and extension contact were positive and significant at 1% and 5% respectively. Government should improve in the educational opportunities of the farmers which will lead to increased income, there is also need for regular sensitization and increased mobilization of groundnut farming households to join farmers' cooperative group especially for those who do not belong to any group.

Keywords: Groundnut, tobit regression, farming households, poverty, policy

1. INTRODUCTION

Poverty is engulfing more and more of the world's human population. According to [1], the number of the poor in the world stood at about 1 billion in 1994, 1.3 billion in 1995, 1.74 billion in 1994, 2.04 billion in 2000, and 2.56 billion in 2002 and has continued to increase despite all developmental effort put in place by both the government and Non-Government Organizations (NGOs) to eradicate poverty [2]. The rising profile of poverty in Nigeria is assuming a worrisome dimension as Nigeria has at least half of its population living in abject poverty [3]. The scourge of poverty in Nigeria is an incontrovertible fact, which results in

25 hunger, ignorance, malnutrition, disease, unemployment, poor access to credit facilities, and
26 low life expectancy as well as a general level of human hopelessness [4].

27 Nigeria is richly endowed and the country's wealth potentials manifest in the forms of natural,
28 geographical and socio-economic factors [5]. With this condition, Nigeria should rank among
29 the richest countries of the world that should have no business with extreme poverty. On the
30 contrary, the population of the country in poverty is given as 68.7 million as of 2004 [6].
31 According to [1], the number of the poor in the world stood at about 1 billion in 1994, 1.3
32 billion in 1995, 1.74 billion in 1994, 2.04 billion in 2000, and 2.56 billion in 2002. This has
33 continued to increase despite all developmental effort put in place by both the government
34 and Non-Government Organizations (NGOs) to eradicate poverty [2]. Nigeria is one of the
35 most resource-endowed nations in the world, but socio-economically, Nigerians are also
36 among the poorest in the world [7]. Hence, there is a persisting paradox of a rich country
37 inhabited by poor people, which has been the subject of great concern for many years, but
38 more especially in the last decade [8].

39 The choice of groundnut farmers for this study lies in the fact that Nigeria is the largest
40 groundnut producing country in West Africa accounting for 51% of the production in the
41 region, the country produces 10% and 39% of the World and Africa's total production
42 respectively, Prior to 1980s, groundnut production declined significantly due to rosette
43 incidence and drought [9]. However, since 1984, production has been increasing at a growth
44 rate estimated to 8% resulting both from area expansion (6%) and increased productivity of
45 2% [10]. Despite the existing empirical information on poverty in Nigeria, there still exists a
46 gap documented on policy related to determinants of poverty among farmers with respect to
47 groundnut farming households in Jigawa state. This makes it difficult to effectively set and
48 implement sustainable anti-poverty policies among groundnut farming households. Hence,
49 the study focused on the following objectives: to determine the poverty status of groundnut

50 farming households; and to estimate the factors that influence the poverty intensity of
51 groundnut farming households in the study area.

52

53 **2. MATERIAL AND METHODS**

54 **Study Area:** The study was conducted in Jigawa State, Nigeria (between latitude 11°N and
55 13°E and longitudes 8°N and 10°35'E). Major economic activity of the people in the area is
56 farming, as about 80% of the population is engaged in farming.

57 **Sampling:** Multi-stage sampling technique was employed in selecting the groundnut farming
58 households for this study. The first stage was a purposive selection of four Local
59 Government Areas from the study area (one Local Government from each of the four ADP
60 zones in the state) on the basis of being the prominent groundnut producing areas of the
61 state. Secondly, eight villages were purposively selected (two villages from each of the four
62 selected local government areas) on the basis of their high intensity of groundnut production
63 activities. Thirdly, simple random sampling was employed in selecting 227 groundnut
64 farming households for enumeration.

65 **Data Collection:** Primary data were obtained through the use of well-structured
66 questionnaire to be administered to household heads using well trained enumerators. The
67 data collected during the field survey were on socio-economic characteristics such as age,
68 farming experience, farm size, farm income, access to credit, number of extension contacts,
69 membership of cooperation, level of education of household heads and the household size
70 as well as data on household expenditure (food and non-food expenditure) for estimating the
71 poverty status of the households.

72 **Data Analysis:** The data were analysed using the Foster-Greer-Thorbecke's (FGT)
73 Weighted Poverty Index and the Tobit regression model.

74 **The Foster, Greer and Thorbecke (FGT) Model Specification**

75 The Foster, Greer and Thorbecke (FGT) measures of poverty [11] as used by [12], [13], [14]
76 and [15] was used to determine the poverty status of the farmers. Poverty head count index,

poverty gap index and squared poverty gap index will be computed to measure the incidence, depth and severity of poverty of the farming households. The General Foster, Greer and Thorbecke (FGT) poverty index (P_{α}) can be expressed as:

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^q \left(\frac{z - y_i}{z} \right)^{\alpha} \dots \dots \dots (1)$$

When:

$$\alpha = 0, \quad P_0 = \frac{1}{n} \sum_{i=1}^q \left(\frac{z - y_i}{z} \right)^0 = \frac{q}{n} \dots \dots \dots (2)$$

That is, poverty incidence or head count

$$\alpha = 1, \quad P_1 = \frac{1}{n} \sum_{i=1}^q \left(\frac{z - y_i}{z} \right)^1 \dots \dots \dots (3)$$

That is, poverty gap or depth

$$\alpha = 2, \quad P_2 = \frac{1}{n} \sum_{i=1}^q \left(\frac{z - y_i}{z} \right)^2 \dots \dots \dots (4)$$

That is, poverty severity

Where:

n = number of households in a group

q = the number of poor households

Z = poverty line (2/3 Mean Per Capita Household Expenditure (MPCHE) of the groundnut farming households)

y = the per capita expenditure (PCE) of the i^{th} household,

α = degree of poverty aversion (0, 1 and 2)

97

98 The Tobit Regression Model

99 Tobit regression model as used by [16], [17] and [18] among others was used to achieve
100 objective 2 of the study. The model is expressed as:

$$101 \quad y_i = y_i^* = X_i\beta + e_i \dots\dots\dots (5)$$

$$102 \quad y_i = 0 \text{ if } y_i^* \leq 0 \text{ (i.e. } Z \leq I) \dots\dots\dots (6)$$

$$103 \quad y_i = y_i^* \text{ if } y_i^* > 0 \text{ (i.e. } Z > I) \dots\dots\dots (7)$$

$$104 \quad i = 1, 2, 3 \dots\dots n$$

105 y_i is the limited dependent variable. It is discrete, when the households are not poor

106 and continuous, when they are poor, X_i is a vector of explanatory variable, β is a vector of
107 unknown coefficients, Z is the poverty line, I is the mean household food expenditure per
108 adult equivalent, e_i is an independently distributed error term.

109 The independent variables specified as determinants of poverty are defined thus:

$$110 \quad Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \beta_7 X_{7i} + \beta_8 X_{8i} + \beta_9 X_{9i} + \beta_{10} X_{10i} + e \dots\dots\dots (8)$$

111 Where,

112 X_1 = Age of household head (years)

113 X_2 = Marital status (married =1, single =0)

114 X_3 = Farming experience (years)

115 X_4 = Education (years of formal schooling)

116 X_5 = Household size (number)

117 X_6 = Farm size (hectares)

118 X_7 = Amount of credit obtained (naira)

119 X_8 = Membership of cooperative (years)

120 X_9 = Farm income (Naira)

121 X_{10} = Extension contact (number of contacts within the production season)

122 e_i = Stochastic error term

123

124 3. RESULTS AND DISCUSSION

125

126 Poverty profile of farming households

127 The result of the poverty profile of groundnut farming households that adopted IAR
128 groundnut varieties and farming households who did not adopt IAR groundnut varieties is
129 presented in Tables 1 respectively. From the estimates of FGT weighted class of poverty
130 indices, the proportion of poor groundnut farming households was found to be 42% using an
131 estimated poverty line of ₦46, 320.53 The poverty head count (poverty incidence) of

groundnut farming households was (0.42). The depth of poverty (poverty gap index) of poor groundnut farming households was found to be (0.46). Also, the degree of inequality (poverty severity) among the poor farming households was (0.77).

Table 1: Poverty profile of adopters and non-adopters of IAR groundnut varieties

Items	Households
Poverty line(N)	46320.53
Poverty headcount	0.42
Poverty gap	0.46
Poverty severity	0.77
Poor (%)	42.00
Non-poor (%)	58.00
Number of observation	227.00

136

137 **Determinants of Household Poverty Status**

138 The maximum likelihood estimates (MLE) of the Tobit regression results of factors
 139 influencing household poverty status among farming households is presented in table 2. The
 140 result revealed a sigma (σ) value of 1.001, with a t-value of 10.661. This was statistically
 141 significant at the $P < 0.01$ level, thus indicating that the model had a good fit to the data.
 142 Furthermore, the value of the intercept was 0.991, meaning that the autonomous poverty
 143 intensity was 0.991 in the study area. 6 out of the 10 explanatory variables related to
 144 groundnut farming households included in the model were statistically significant at different
 145 levels ($P < 0.01$, $P < 0.05$ and $P < 0.1$).

146 Age of household heads was found to be negative and significant at 10% probability level
 147 with an odd ratio of 0.936 which indicates that a unit increase in age of household heads will
 148 decrease the intensity of poverty of groundnut farming households by a factor of 0.936. This
 149 implies that older household heads have a lower poverty intensity than the younger

household heads. This is because the older the farmers the more experience they are which enhances their productivity, hence reducing their poverty status. This result is contrary to the findings of [17] which revealed a positive and significant relationship of farmers' age with peri-urban farming in Nigeria.

Table 2: Tobit regression estimates of the factors influencing household poverty status

Variable	Coefficient	t- value
Constant	0.991***	2.524
Age of household head	-0.017*	-1.670
Marital status	-0.936***	-2.942
Farming experience	0.033***	3.230
Education	-0.033**	-2.179
Household size	-0.002	-0.087
Farm size	0.011	0.760
Amount of credit obtained	0.107E-04	1.146
Membership of cooperation	-0.423**	-2.496
Households income	0.142d-06	0.665
Extension contact	0.032**	2.164
Log likelihood	-188.4006	
Sigma	1.0011	0.661

*** $P < 0.01$ ** $P < 0.05$ * $P < 0.10$

Farming experience was significant and positive in influencing the poverty status of groundnut farming households at 1% probability level. The coefficient of farming experience is 0.033, implying that poverty intensity of household will be increased by 0.033 as farming experience increases by one unit. This is attributable to the fact that as farming experience increases, the age of the household head also increases. This however, leads to a reduction

163 in the farming operations with subsequent reduction in farming income and welfare. Findings
164 are synonymous with [7] and [19].

165 Education was significant and negative in influencing the poverty intensity of groundnut
166 farming households at 5% probability level. The coefficient of years of formal education is -
167 0.033, this means that the poverty severity is decreased by 0.033 for individuals in families
168 whose household heads have formal education. This may be attributed to the fact that highly
169 educated household heads have the ability to adopt improved farming practices faster than
170 the non-educated ones. This increases the productivity and incomes of the educated
171 household heads with subsequent improvement in welfare amongst them. Similar findings
172 were reported by [8] and [20].

173 Membership of cooperative was negative and significant at 5% .The coefficient of household
174 membership of farmer association is -0.423. This means that household membership of
175 farmer association would reduce poverty intensity by-0.423. This implies that the intensity of
176 poverty was lower in a household whose head was a member of a cooperative society or
177 any other farmers' association than in one whose head did not belong to such an
178 organization. This might be as a result of various benefits accruable to members of
179 cooperative societies, such as credit facilities, access to improved production inputs and
180 access to information that could enhance their productive capacity. Similar findings were
181 reported by [15] and [19].

182 Extension contact was found to be positive and significant at 5%. The coefficient of
183 extension contact is 0.032. This means that the poverty intensity is increased by 0.032 as
184 extension contact increases by one unit. A plausible explanation for this is that the method of
185 delivery of extension service to farmers may not be appropriate or the farmers are mis-
186 informed during extension visits by extension agents who are not properly trained. Hence
187 extension contact tends to be counterproductive. This finding disagrees with [19] who found

188 that availability of extension services improved farmers productivity and profitability and
189 hence poverty reduction.

190 The non-significance of farm size and credit in influencing the poverty intensity of groundnut
191 farming households agrees with the findings of [22] who also found out that farm size and
192 credit were not significant in influencing the poverty level of yam farming households.
193 Household size was not significant in influencing the poverty intensity of groundnut farming
194 households and this is in line with the findings of [22] who also established that livelihood
195 assets among farming households in the rural areas was not significant in influencing their
196 poverty level. Household income was not significant in influencing the poverty intensity of
197 groundnut farming households and this study agrees with [20] who noted that there was no
198 significant relationship between non-farm income and poverty intensity in the sudan
199 savannah of Nigeria.

200

201 **4. CONCLUSION**

202

203 The results revealed that about 68 percent of the respondents were still below the poverty
204 line. The poverty headcount, poverty gap, poverty severity of poor groundnut farming
205 households were 42%, 46%, 77% respectively using an estimated poverty line of
206 ~~N~~46,320.53. Based on the results, the most important factors that influenced poverty status
207 in the study area were age of respondent, education and membership of cooperation which
208 had significant effects in reducing the poverty intensity in the study area, while farming
209 experience and extension contact were factors that significantly increase the intensity of
210 poverty in the study area. Arising from the findings of this study, it is recommended that the
211 government should enhance the educational status of the farmers through adult education
212 which will lead to increased income from farming and improvement in their quality of life and
213 hence, poverty reduction. There is also need for regular sensitization and increased
214 mobilization of groundnut farming households to join farmers cooperative group especially

215 for those who do not belong to any group because of the immense benefits accruable from
216 participation in farmers association.

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