

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 becoming an increasing issue of concern to the world's human population. According to [1], the population of the poor in the world was about 1 billion in 1994, 1.3 billion in 1995, 1.74 billion in 1997, 2.04 billion in 2000, and 2.56 billion in 2002. This 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 hunger, ignorance, malnutrition, disease, unemployment, poor access

26 to credit facilities, and low life expectancy as well as a general level of human hopelessness
27 [4].

28 Nigeria is richly endowed and the country's wealth potentials manifest in the forms of natural,
29 geographical and socio-economic factors [5]. With this condition, Nigeria should rank among
30 the richest countries of the world that should have no business with extreme poverty. On the
31 contrary, the population of the country in poverty is given as 68.7 million as of 2004 [6].
32 Nigeria is one of the most resource-endowed nations in the world, but socio-economically,
33 Nigerians are also among the poorest in the world [7]. Hence, there is a persisting paradox
34 of a rich country inhabited by poor people, which has been the subject of great concern for
35 many years, but more especially in the last decade [8].

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

49

50 2. MATERIAL AND METHODS

51 **Study Area:** The study was conducted in Jigawa State, Nigeria (between latitude 11⁰N and
52 13⁰E and longitudes 8⁰N and 10⁰35'E). Major economic activity of the people in the area is
53 farming, as about 80% of the population is engaged in farming.

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

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

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

70 The Foster, Greer and Thorbecke (FGT) Model Specification

71 The Foster, Greer and Thorbecke (FGT) measures of poverty [11] as used by [12], [13], [14]
72 and [15] was used to determine the poverty status of the farmers. Poverty head count index,
73 poverty gap index and squared poverty gap index will be computed to measure the
74 incidence, depth and severity of poverty of the farming households. The General Foster,
75 Greer and Thorbecke (FGT) poverty index (P_{α}) can be expressed as:

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

When $\alpha=0$, that is, poverty incidence or head count, then

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

When $\alpha=1$, that is, poverty gap or depth, then

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

When $\alpha=2$, that is, poverty severity, then

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

Where:

n = number of households in a group

q = the number of poor households

Z = poverty line = 2/3 of 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)

92 The Tobit Regression Model

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

$$95 \quad Y_i^* = \alpha + X_i\beta + e_i \dots\dots\dots(5)$$

$$96 \quad Y_i = 0, \text{ if } Y_i^* \leq 0 \dots\dots\dots(6)$$

$$97 \quad Y_i = Y_i^* \text{ if } Y_i^* > 0 \dots\dots\dots(7)$$

$$98 \quad i = 1, 2, 3 \dots \dots n$$

99 Y_i^* is the limited dependent variable. It is discrete, when the households are not poor

100 and continuous, when they are poor,

101 X_i = vector of explanatory variable,

102 β = vector of unknown coefficients,

103 Z = poverty line,

104 I = mean household food expenditure per adult equivalent,

105 e_i = independently distributed error term.

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

107
$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \beta_7 X_{7i} + \beta_8 X_{8i} + \beta_9 X_{9i} + \beta_{10} X_{10i} + e_i \dots \dots \dots (8)$$

108 Where,

109 X_1 = Age of household head (years)

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

111 X_3 = Farming experience (years)

112 X_4 = Education (years of formal schooling)

113 X_5 = Household size (number)

114 X_6 = Farm size (hectares)

115 X_7 = Amount of credit obtained (naira)

116 X_8 = Membership of cooperative (years)

117 X_9 = Farm income (Naira)

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

119 e_i = Stochastic error term

120

121 **3.0 RESULTS AND DISCUSSION**

122 **3.1 Descriptive Statistics of Variables**

123 Descriptions of the variables employed in the model with their summary statistics are given
124 in Table 1. The values of the standard deviations show how far or close the variations are
125 from/to the mean. These values however are lower than the mean values. These imply that
126 the variations with respect to each of the variable are close to the means. This is because
127 the lower the standard deviation, the closer are the distributions to the mean.

128 **Table 1: Description and Summary Statistics of Variables Employed**

Variables	Measurement	Mean	SD	Min	Max
Age of farmer	Number of years	37.4	7.22	20	80
Marital status	Married =1, Single =0	1.00	0.00	0	1

Farming experience	Number of years	15.08	11.64	2	50
Formal education	Number of years	7.27	1.17	0	25
Household size	Number of persons	9.72	3.82	1	22
Farm size	Hectare	0.76	0.35	0.5	50
Credit obtained	Amount in naira	32325.00	15242.30	0	100000
Cooperative membership	Number of years	2.76	1.13	0	5
Household Income	Annual income in naira	56300.00	31167.26	25000	120000
Extension contact	Number of contacts	4.14	0.35	0	7

SD =Standard Deviation, Min=Minimum, Max=Maximum

3.2 Poverty profile of farming households

The result of the poverty profile of groundnut farming households is presented in Table 2. From the estimates of the FGT weighted class of poverty indices, the proportion of poor groundnut farming households was found to be 42% using an 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, while the degree of inequality (poverty severity) among the poor farming households was 0.77.

Table 2: Poverty profile of groundnut farming households

Items	Households
Poverty line(₦)	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

3.3 Determinants of Household Poverty Status

The maximum likelihood estimates (MLE) of the Tobit regression results of factors influencing household poverty status among farming households is presented in table 3. The result revealed a sigma (σ) value of 1.001, with a t-value of 10.661. This was statistically

145 significant at the $P < 0.01$ level, thus indicating that the model had a good fit to the data.
 146 Furthermore, the value of the intercept was 0.991, meaning that the autonomous poverty
 147 intensity was 0.991 in the study area. 6 out of the 10 explanatory variables related to
 148 groundnut farming households included in the model were statistically significant at different
 149 levels ($P < 0.01$, $P < 0.05$ and $P < 0.1$).
 150 Age of household heads was found to be negative and significant at 10% probability level
 151 with an odd ratio of 0.936 which indicates that a unit increase in age of household heads will
 152 decrease the intensity of poverty of groundnut farming households by a factor of 0.936. This
 153 implies that older household heads have a lower poverty intensity than the younger
 154 household heads. This is because the older the farmers the more experience they are which
 155 enhances their productivity, hence reducing their poverty status. This result is contrary to the
 156 findings of [17] which revealed a positive and significant relationship of farmers' age with
 157 peri-urban farming in Nigeria.

158 **Table 3: Tobit regression estimates of the factors influencing household poverty**
 159 **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
Formal 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 cooperative society	-0.423**	-2.496
Household Income	0.142E-06	0.665
Extension contact	0.032**	2.164
Log likelihood	-188.4006	
Sigma	1.0011	

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

161 Farming experience was significant and positive in influencing the poverty status of
162 groundnut farming households at 1% probability level. The coefficient of farming experience
163 is 0.033, implying that poverty intensity of household will be increased by 0.033 as farming
164 experience increases by one unit. This is attributable to the fact that as farming experience
165 increases, the age of the household head also increases. This however, leads to a reduction
166 in the farming operations with subsequent reduction in farming income and welfare. Findings
167 are synonymous with [7] and [19].

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

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

185 Extension contact was found to be positive and significant at 5%. The coefficient of
186 extension contact is 0.032. This means that the MHPCE is increased by 0.032 as extension

187 contact increases by one unit. A plausible explanation for this is that the method of delivery
188 of extension service to farmers may not be appropriate or the farmers are mis-informed
189 during extension visits by extension agents who are not properly trained. Although this
190 finding disagrees with [19] and [21] who found that availability of extension services
191 improved farmers' productivity and profitability and hence reduced poverty, it can be
192 attributed to the fact that the farmers' awareness are probably not translated into actual
193 performance. Hence, the extension contact tends to be counterproductive.

194

195 The non-significance of farm size and credit in influencing the poverty intensity of groundnut
196 farming households agrees with the findings of [21] who also found out that farm size and
197 accessibility to credit were not significant in influencing the poverty level of yam farming
198 households. Household size was not significant in influencing the poverty intensity of
199 groundnut farming households and this is in line with the findings of [22] who established
200 that livelihood assets among farming households in the rural areas was not significant in
201 influencing their poverty level. Household income was not significant in influencing the
202 poverty intensity of groundnut farming households and this study agrees with [20] who noted
203 that there was no significant relationship between non-farm income and poverty intensity in
204 the sudan savannah of Nigeria.

205

206 **4. CONCLUSION**

207

208 The results revealed that about 42 percent of the respondents were still below the poverty
209 line. The poverty headcount, poverty gap, poverty severity of poor groundnut farming
210 households were 42%, 46%, 77% respectively using an estimated poverty line of
211 ~~N~~46,320.53. Based on the results, the most important factors that influenced poverty status
212 in the study area were age of respondent, education and membership of cooperation which
213 had significant effects in reducing the poverty intensity in the study area, while farming

214 experience and extension contact were factors that significantly increase the intensity of
215 poverty in the study area. Arising from the findings of this study, it is recommended that the
216 government should enhance the educational status of the farmers through adult education
217 which will lead to increased income from farming and improvement in their quality of life and
218 hence, poverty reduction. There is also need for regular sensitization and increased
219 mobilization of groundnut farming households to join farmers cooperative group especially
220 for those who do not belong to any group because of the immense benefits accruable from
221 participation in farmers association.

222

223

224 REFERENCES

225

226 1. Angaye GS. Poverty amid plenty in Nigeria Rivers, Journal of Social Science, 2005.
227 1(2): 13-46.

228

229 2. United Nations Development Programme (UNDP). Human Development Report,
230 2005. Oxford University Press, New York.

231

232 3. Ojo EO. Imperatives of Sustaining Democratic Values. In Ojo, E. O (ed), Challenges
233 of Sustainable Democracy in Nigeria. Ibadan: John Archers Publishers Limited,
234 2008. Pp.3-24

235

236 4. Abiola AG and Olaopa OR. Economic Development and Democratic Sustenance in
237 Nigeria. In E. O. Ojo (ed), Challenges of Sustainable Democracy in Nigeria. Ibadan:
238 John Archers Publishers Limited, 2008. Pp.25-34.

239

240 5. Omotola JS. Combating Poverty for Sustainable Human Development in Nigeria:
241 The Continuing Struggle. Journal of Poverty, 2008. 12(4), 496-517.

242

243 6. United Nations Development Programme (UNDP). Human Development Report
244 Nigeria 2008-2009. Achieving Growth with Equity. 2010. United Nations
245 Development Programme.

246

247 7. Etim NA, Edet GE and Esu BB. Determinants of poverty among peri-urban Telfera
248 Occidentalsfarmers in Uyo, Nigeria. Journal of Agricultural and Social Science,
249 2009. 5: 49-51.

250

251 8. Etim NA and Patrick IV. Estimating the determinant of poverty among fishing
252 households in Akwa Ibom State, Nigeria. Journal of Agriculture and Social Science,
253 2010. 6: 61-63.

254

255 9. Ndjeunga J, Ntare BR, Waliyar F, Echekwu CA, Kodio O, Kapran I, Diallo AT,
256 Amadou A, Bissala HY and Da Sylva A. Early adoption of modern groundnut
257 varieties in West Africa. Working Paper Series no. 24. Sahelian Center, BP 12404

- 258 Niamey, Niger: International Crops Research Institute for the Semi-Arid Tropics.
259 2008. 62 pp.
260
- 261 10. Ndjeunga J and Ibro A. Groundnut trends and prospects in west and central africa.
262 Technical report, International Crops Research Institute for the Semi-Arid Tropics
263 (ICRISAT). Unpublished Paper, 2010.
264
- 265 11. Foster J, Greer J and Thorbecke E. A Class of Decomposable Poverty Measures.
266 *Econometrica*, 1984. 52: 761–766.
267
- 268 12. Dontsop-Nguezet PM, Diagne A, Okoruwa VO and Ojehomon V. Impact of improved
269 rice technology on income and poverty among rice farming household in Nigeria: A
270 Local Average Treatment Effect (LATE) Approach. Contributed paper prepared for
271 the 25th conference of the Centre for the Studies of African Economies (CSAE). St
272 Catherine College, University of Oxford, UK. 20th – 22nd March 2011. pp. 1 – 31.
- 273 13. Moyo S, Norton GW, Alwang J, Rhinehart I and Demo MC. Peanut research and
274 poverty reduction: Impacts of variety improvement to control peanut viruses in
275 Uganda. *American Journal of Agricultural Economics*, 2007. 89 (2): 448–60.
276
- 277 14. Omilola B. Estimating the Impact of Agricultural Technology on Poverty Reduction in
278 Rural Nigeria. IFPRI Discussion Paper 00901, 2009. pp. 1 -30.
279
- 280 15. Amaza PS, JK Olayemi, AO Adejobi, Y Bila and I Iheanacho. Baseline
281 Socioeconomic Survey report: Agriculture in Borno State, Nigeria. International
282 Institute of Tropical Agriculture, Ibadan, Nigeria, 2007 pp: 84.
283
- 284 16. Mignouna DB, Mutabazi KDS, Senkondo EM and Manyong VM. Contributions of
285 agricultural improved technologies to rural poverty alleviation in developing
286 countries: case of imazapyr-resistant maize in western Kenya, 55TH Annual AAERS
287 National Conference, 2012. pp : 1 -19.
288
- 289 17. Asogwa BC, Umeh JC and Okwoche VA. Estimating the Determinants of
290 Poverty Depth among the Peri-Urban Farmers in Nigeria. *Current Research Journal*
291 *of Social Sciences* 2012. 4(3): 201-206
292
- 293 18. Adejobi A O and Akinola CA. An Analysis of the Effects of Agricultural Output
294 Commercialization on Household Welfare in Osun State of Nigeria. Paper presented
295 at the International Conference of the African Association of Agricultural Economists
296 (ICAAAE) held in Tunisia 2012. Pp 73-78.
297
- 298 19. Umeh JC and Asogwa BC. Econometric Model of Poverty for the Farming
299 Households in Nigeria: A Simultaneous Equation Approach. In: Xuan, L., (Ed.),
300 2nd International Conference on Agricultural and Animal Science (CAAS 2011),
301 Maldives. International Proceedings of Chemical, Biological and Environmental
302 Engineering, November 25-26, 2011. 22: 82-87.
303
- 304 20. Damisa MA, Sanni, SA, Abdoulaye T, Kamara AY and Ayanwale A. Household
305 typology based analysis of livelihood strategies and poverty status in the Sudan
306 Savannah of Nigeria: Baseline conditions. *Learning Publics Journal. Agricultural*.
307 2011. 2(1): 146-160.

- 308 21. Ogbonna MC, Onyenweaku CE and Nwaru JC. Determinants of Rural Poverty in
309 Africa: The case of yam farm Households in Southeastern Nigeria. *International*
310 *journal of agricultural and rural development*, 2012. 15 (2): 1129 – 1137.
311
- 312 22. Lawal JO, Omonona BT and Oyinleye OD. Effects of Livelihood Assets on
313 Poverty Status of Farming Households' in Southwestern, Nigeria. Paper prepared
314 for presentation at the EAAE 2011 Congress Change and Uncertainty Challenges
315 for Agriculture, Food and Natural Resources, 2011.
316

317
318