

DETERMINANTS OF POVERTY AMONG FARM HOUSEHOLDS IN IKORODU LOCAL GOVERNMENT AREA OF LAGOS STATE, NIGERIA

By

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Abstract

In Nigeria, poverty is seen as a rural problem where majority engages in agricultural production as a means of livelihood. Therefore, this study examined the socio-economic factors influencing poverty of farming households in Ikorodu Local Government Area (LGA) of Lagos State. Primary data were collected with the aid of questionnaire administered on 120 respondents in the LGA using a multi-stage sampling technique. Socio-demographic data were subjected to descriptive statistical analysis; poverty data were profiled using Foster, Greer and Thorbecke index while multiple regression models were used for inferential analysis. Results revealed that many (67.5%) of the farming households were poor. The level of education of household heads significantly determined farming households' poverty level ($p < 0.05$) as well as poor households' poverty depth ($p < 0.01$) and severity ($p < 0.05$). Also, farming experience of the household head significantly influenced household's poverty level ($p < 0.1$), depth ($p < 0.1$) and severity ($p < 0.05$). Off-farm activities was a determinant of household's poverty level ($p < 0.05$), depth ($p < 0.01$) and severity ($p < 0.1$). Marketable surplus significantly determined farming households' poverty depth ($p < 0.1$) and severity ($p < 0.1$). Consequently, these factors significantly influence the chances of poor households escaping from and sinking deeper into poverty. Therefore, included in the study's recommendations is that rural poverty alleviation stakeholders should give vocational training in relevant agricultural sciences to farming households (heads in particular).

Keywords: Poverty, Farming household, Marketable surplus, Subsistence, Agriculture.

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Introduction

One of the famous studies dated 1899 was Seebom Rowntree's conceptualization of factors influencing poverty (Foster *et al*, 2010). Rowntree used a concept of subsistence poverty as a measurement and drew a poverty line in terms of minimum weekly sum of money which was necessary to enable households secure the necessities for a healthy life. It is the value of income or consumption expenditure necessary for minimum standard of nutrition and other necessities (Foster *et al*, 2010). This measure was the concept that was used to differentiate the poor from non-poor. Hence, poverty line can be said to be the threshold income below which an individual/household is considered poor (Ellis, 2000).

Poverty is more easily recognized than defined (Foster *et al*, 2010). Therefore, a universally acceptable definition of the term has remained elusive (Nsikak-Abasi and Solomon, 2010). However, poverty can be regarded as the inability to adequately meet the basic human necessities, such as food, shelter, clothing and medicare (CBN/IBR&D, 1999; IBR&D, 2010; Ibrahim and Umar, 2008). It is also a state of deprivation of human needs to which a person, household, community or nation can be subjected to.

Poverty can be absolute or relative. Absolute poverty refers to subsistence poverty, based on assessment of minimum subsistence requirements, involving a judgment on basic human needs and measured in terms of resources required to maintain health and physical efficiency (Foster *et al*, 2010). The poverty line from this approach has a fixed value of US\$1.25/day (Sola, 2007). Relative poverty varies with income or economic growth. The poverty line from this approach is commonly expressed as a fixed percentage of the mean or median income or expenditure (Akinleye *et al*, 2007; Adepoju *et al*, 2011; Awoyemi *et al*, 2011; Balogun *et al*, 2011; Jagbojo, 2012).

A conclusive definition recognize poverty as a way of life characterized by low calorie intake, inaccessibility to adequate health facilities, low quality education system, low income, unemployment and under employment as well as inaccessibility to various housing and social facilities (Onibokun and Kumuyi, 1996).

Poverty is strongly influenced by education and location but in Nigeria, poverty is seen as a rural problem where majority of the inhabitants engage in agricultural production as a means of livelihood (Olorunsanya, 2009; Olorunsanya and Omotesho, 2012). In fact rural poverty is widely regarded as the main constituent of poverty (Patel, 2004; Olorunsanya and Omotesho, 2012). Although the relative importance of rural poverty varies substantially from one country to another, in developing countries as a whole, more than 70 percent of total poverty is found in rural areas; consequently, the evidence is clear that broad-based agricultural development provides an effective means of both reducing poverty and accelerating economic growth (FAO, 2001; Olorunsanya, 2009).

Reducing poverty in Nigeria has been the most persistent challenge facing the government. As indicated in IBR&D (1996) studies across the country, poverty in Nigeria is overwhelmingly a rural problem (Onu and Abayomi, 2009). To achieve poverty reduction, it becomes necessary to empirically profile poverty prevalence and factors influencing poverty among farm households. The need to investigate poverty and its determinants has also been justified by Bandabla (2005) who argued that a credible statistic on poverty is a potent tool illuminating the living conditions of the poor for policy makers.

Furthermore, Schultz (1979) asserted that most of the people in the world are poor, mostly earning their living from agriculture; hence, the knowledge of the economics of agriculture yields the knowledge of the economics of being poor while the knowledge of the economics of being poor gives much of the economics that really matters.

Therefore, this research study attempted to proffer answers to the following questions:

1. What are the causes of poverty among farm households?
2. What is the relationship between factors such as personal characteristics and poverty of respondents?

Objectives of the Study

The broad objective of this study is to assess farm households' poverty profile in Ikorodu Local Government Area of Lagos State. Specifically, the study is to:

1. determine the poverty status of the respondents.

2. describe the socio-economic characteristics of profiled respondents in the study area.
3. estimate the determinants of farm household's poverty profile.
4. examine income and expenditure differentials between the profiled respondents.

Hypothesis

The hypotheses tested in the study are stated in the null form as follows:

H₀: There is no significant difference in the income of profiled farm households.

H₀: There is no significant difference in the expenditure of profiled farm households.

Methodology

Study Area

Lagos State is the most populated State in Nigeria and consists of 20 Local Government Area (LGA) including Ikorodu LGA. Ikorodu LGA was chosen as the study area being the largest, predominantly rural and the overall second largest LGA in the State (LSBD, 2012). The LGA, with a land mass of about 161.95sqm, covering 22 kilometers on longitude 20⁰53'E and 29⁰14'E as well as latitude 60⁰24'N and 60⁰1'N lies about 36km North-East of the city of Lagos and 26 km from Ikeja, the State capital (LSBD, 2012). Bordering the LGA is Ogun State to the North, Lagos lagoon to the South, Kosofe LGA to the West and Epe LGA to the East (LSBD, 2012).

The dominant vegetation of the area is forest-savannah and tropical forest found along river course with a climate that follows the usual tropical feature having bimodal rainfall pattern of two rainfalls (LBD, 2012). The average rainfall is 1,210mm per annum occurring from March to October while the dry season occurs mostly from November to February (LBD, 2012). The average maximum temperature is 26.4⁰ C while the average minimum temperature is 17.9⁰ C (LBD, 2012). Majority of the inhabitants of the study area are farmers noted for arable crops, vegetable, livestock, fishing and non-fishing activities (LBD, 2012).

Data Collection and Sampling Technique

The data used for this study were collected through the use of pretested questionnaire administered to farm household heads in the study area. The data collected include socio-economic characteristics such as information on household head (gender, age and marital status), household size, saving pattern and specific poverty indices such as household income and expenditure.

A multi-stage (two-stage) sampling technique was used to select the study respondents. The sampling frame consists of the lists of farm families in villages/communities in Ikorodu LGA obtained from Lagos State Ministry of Agriculture and Cooperatives (LASMAL) and Lagos State Agricultural Development Authority (LASADA). In the first stage, four villages/communities i.e. Imota, Igbogbo, Odogunyan and Ikorodu were randomly selected from the LASMAL/LASADA lists. The second stage involved the random selection of thirty (30) farm families from (each) selected village/community. In all, a total of one hundred and twenty (120) respondents were selected for the study.

Analytical Technique

The analytical tools used were descriptive statistics, Foster, Greer and Thorbecke (FGT) index (Foster *et al*, 1984) and Logit and Tobit regression models.

Descriptive Statistics

This include table of frequencies, mean and percentages for the presentation of the socio-economic characteristics of the respondents such as household head's age,

marital status, educational qualification, farming experience and gender as well as household's income and expenditure.

The FGT Index

The FGT index was used to determine the threshold which was used to categorize the level of poverty among farm households in the study area. The FGT index is computed with the mathematical formula stated below:

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^H \left(\frac{Z - Y}{Z} \right)^{\alpha} \dots\dots\dots (i)$$

where:

- Z = poverty line
- N = total Sample
- H = the number of poor (below poverty line).
- Y = average household monthly *per capita* expenditure

α = poverty index which takes value of 0, 1 and 2

1. When $\alpha = 0$, the poverty index (PID) becomes Head Count Ratio or Poverty Incidence Index (HCR or PII) i.e. the proportion of people below the poverty line. It is used to determine the number of households having *per capita* income below the poverty line. It is stated as: $P_0 = H/n$. where H is the head count. The PII (P_0) gives the prevalence of poverty at a point in time.
2. When $\alpha = 1$, PID becomes the Poverty Gap Index (PGI) i.e. the aggregate short fall in income of the household from the poverty line. It measures the difference between actual income and minimum non-poverty income. The proportion of the poverty line (value) that the average poor require to meet the poverty line; the lower the value, the lower the poverty gap. The PGI (P_1) gives the depth of poverty at a point in time.
3. When $\alpha = 2$, PID becomes poverty severity index (PSI) i.e. PSI gives more weight to the poverty gap of the poorest. The closer the value is to 1 (100%), the harder the poverty condition of the household. The PSI gives the severity of poverty at a point.

Regression Models

These analytical functions were used to determine the socio-economic factors influencing farm household's poverty profile.

Logit Regression Model

The Logit model is a non-linear regression tool use in modeling dichotomous outcome variables. This model was used to assess the determinants of farm household's poverty incidence in the study area.

$$Y_i = f(X_{ij}, \mu_i) \dots\dots\dots (ii)$$

where:

$$Y_i = \ln \frac{P_i}{1-P_i}$$

P_i = Household's poverty status (1 if Poor, 0 if Non-poor)

X_{ij} = Vector of socio-economic variables of household

μ_i = Random error term

Explicitly:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots\dots\dots + \beta_{11} X_{11} + \mu \dots\dots\dots (iii)$$

where:

Y= Y_i = as defined previously

- X₁ = Gender of household head (1 if male, 0 if female)
- X₂ = Age of household head (years)
- X₃ = Marital Status of household head (1 if married, 0 otherwise)
- X₄ = Educational qualification of household head (years spent in school)
- X₅ = Farming experience (years)
- X₆ = Off-farm activities (1 if yes, 0 otherwise)
- X₇ = Farm size (ha)
- X₈ = Household size (persons)
- X₉ = Marketable surplus (₦)
- X₁₀ = Farm produce consumed (₦)
- X₁₁ = Farm produce given as gift (₦)
- μ = μ_i = as previously defined.

Tobit Regression Model

This model was used to examine the factors influencing farm household’s poverty level i.e. poverty gap and severity in the study area. The estimation procedure adopted for the Tobit model was Maximum Likelihood Estimation (MLE).

$$Y_i = X_i\beta_i + \mu_i \dots\dots\dots (iv)$$

where:

Y= Y_i; X_{1, 2, ..., 10}; μ are as previously defined.

Results and Discussion

Household’s Poverty Status

This sub-section presents the relationship between households’ characteristics and poverty indices (i.e. poverty incidence, gap/depth and severity). The relative poverty index (RPI) approach was adopted for this study. The RPI i.e. ₦2,795.05 (US\$18.63) was computed as 2/3 of the monthly mean *per capita* expenditure of ₦3,726.73 (US\$24.84)*. Any household with monthly expenditure below the poverty line (i.e. ₦2,795.05) is classified as poor while those with expenditure of ₦2,795.05 (US\$18.63) and above are classified as non-poor. Expenditure is known to play a very important role in the poverty level of household because it reflects the true level of actual income. Hence, expenditure is more preferable to income since incidental inflows like remittances and gifts, which do not occur regularly, are part of household income.

Description of Household by HCR (PII)

Table 1 shows that 67.5% of the households surveyed were poor while 32.5% were non-poor. It implies that more households fell below poverty line in the study area.

Table 1: Distribution of Household According to HCR (PII)

<i>Headcount</i>	<i>Frequency</i>	<i>Percentage</i>
Non-poor	39	32.50
Poor	81	67.50
Total	120	100.0

Source: Field Survey, 2012

NG₦ 150 ≡ US\$1

Description of Profile of Household’s Poverty by Household Characteristics

Table 2 reveals that 79% of the poor households were headed by males while 21% (of the poor households) were headed by females. Furthermore, male headed households needed ₦563.76 (US\$3.76) to reach the poverty line while female headed households require ₦774.51 (US\$5.16) to reach the poverty line (Table 2). However, female

headed households had higher poverty severity value of 0.1343 compared to 0.0783 for male headed households (Table 2). This implies that female headed households were farther from poverty line in the study area. Poverty may vary among households by household heads' age groups.

Table 2 shows that household head with age range of 41 - 50 years had highest poverty incidence while poverty depth and severity were higher in the households whose head aged 60 years or more. The highest incidence of poverty among households head with age range of 41 - 50 years may be due to larger number of people depending on them for their livelihood while the absence of poverty among households headed by 30 year olds or younger may be due to no or low number of dependants.

Also, table 2 presents the relationship between educational level of household heads and household poverty status. Poverty level is highest among household whose heads had no formal education (Table 2). Poverty incidence, depth and severity were 17.3%, 0.3173 and 0.1538 respectively for household heads with no formal education while it was 2.5%, 0.2602 and 0.1720 respectively for household heads with tertiary education (Table 2).

It implies that education determines the level of opportunities available to improve livelihood strategies, enhance income and stabilize expenditure; thus reduce the level of household poverty.

Education brings enlightenment, socialization and knowledge which translate to good managerial ability as well as adoption and utilization of improved technologies. From table 2, it is evident that households whose heads were widowed had higher level of poverty incidence, depth and severity (2.5%, 0.3705 and 0.2358 respectively) compared with the households whose heads were married (97.5%, 0.2183, 0.0873 respectively). It implies that widow/widowers may lack access to family labour and other resources that the household whose heads were married possessed.

According to table 2, poverty incidence was high among households with 5 - 8 members and decreases for the extreme household sizes i.e. less than or equal to 4 members and greater than or equal to 17 members. Poverty incidence, depth and severity of household with size of 5 - 8 persons were 61.7%, 0.1745 and 0.0591 respectively (Table 2). The poverty depth and severity was high in household with a size of 13 - 16 persons (0.5296 and 0.3102 respectively). The household size has an effect on poverty level in that the income of the household head is spread among the household members.

Table 2: Farming Household's Profile of Poverty (Demographic Characteristics)

<i>Characteristic</i>	<i>P₀(%)</i>	<i>P₁</i>	<i>P₂</i>
<i>Gender</i>			
Male	79.00	0.2017	0.0783
Female	21.00	0.2771	0.1343
Total	100.00	-	-
<i>Age</i>			
≤30	-	-	-
31 – 40	21.00	0.1291	0.0466
41 – 50	38.30	0.2147	0.0818
51 – 60	29.60	0.2595	0.1053
≥60	11.10	0.4677	0.2492
Total	100.00	-	-
<i>Educational Status</i>			
No Formal Education	17.30	0.3173	0.1538
Primary Education	29.60	0.2300	0.0817
Secondary	50.60	0.1842	0.0696
Tertiary	2.50	0.2622	0.1720
Total	100.00	-	-
<i>Marital Status</i>			
Married	97.50	0.2183	0.0873
Widowed	2.50	0.3705	0.2358
Single	-	-	-
Divorced	-	-	-
Total	100.00	-	-
<i>Household Size</i>			
≤4	-	-	-
5-8	61.70	0.1745	0.0591
9-12	28.40	0.3554	0.1619
13-16	4.90	0.5296	0.3102
≥17	4.90	0.4664	0.2274
Total	100.00	-	-

Source: Field Survey, 2012.

Description of Household's Poverty Status by Income and Expenditure

About the same proportion of poor households (3.1%) and (3.4%) of non-poor households used farm produce worth about NGN19,999 (US\$133.33) for subsistence (Table 3). Conversely, a higher proportion of poor households (18.8%) than non-poor households (8%) used farm produce worth about NGN100,000 (US\$666.67) for subsistence (Table 3). Furthermore, the mean worth of farm produce consumed by poor households (NGN72,145 or US\$480.97) was more than that of the non-poor households (NGN56,503.67 or US\$376.69). However, there was no significant difference between the levels of and mean worth of farm produce used for subsistence by poor and non-poor households in the study area (Table 4).

Farm produce worth NGN9,999 (US\$66.66) was given out as gifts by a lower proportion of poor households (59.4%) than (80.7% of) non-poor households while produce worth NGN15,000 (US\$100) or more was given out as gifts by a higher proportion of poor households (28.1%) farm than (9.1% of) non-poor households (Table 3). Also, the mean worth of farm produce given out as gifts by poor households (NGN13,574 or US\$480.97) was far more than that of the non-poor households (NGN7,370.01 or US\$49.13).

Consequently, there was a significant difference ($p < 0.1$) between the levels of and mean worth of farm produce given out as gifts by poor and non-poor households in the study area (Table 4).

Farm produce worth up to NGN19,999 (US\$1,333.33) was sold to generate income by a larger proportion (46.9%) of poor households compared with (37.5% of) non-poor households (Table 3). About 9% of the non-poor households sold produce worth up to NGN50,000 (US\$3,333.33) or more while produce of this worth was not sold by any poor households in the study area. Also, non-poor households sold produce of higher mean worth (NGN259,873.53 or US\$1,732.49) than poor households (NGN239,445.94 or US\$1,596.31) in the study area (Table 3). However, while there was significant difference ($p < 0.05$) between the levels of farm produce sold by poor and non-poor households, no significant difference existed between the mean worth of produce sold by the two households in the study area (Table 4). Annually, about 13% of poor households did not spend beyond NGN100,000 (US\$666.67) while all non-poor households spent beyond this amount (Table 3). Conversely, not more than 3.1% of the poor households spent above NGN30,000 (US\$2,000) while about 14% of the non-poor households spent above the amount per annum (Table 3). Consequently, there was a significant difference ($p < 0.01$) between the levels of and mean expenditure of poor and non-poor households in the study area (Table 4).

Table 3: Profiled Farming Household's Distribution According to Income and Expenditure

<i>Value ₦ (US\$)</i>	<i>Poor</i>		<i>Non-poor</i>		<i>Total</i>	
	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>
<i>Consumption</i>						
≤19999(133.33)	1	3.10	3	3.40	4	3.30
20000(133.33) - 39999(266.66)	6	18.80	25	28.40	31	25.80
40000(266.67) - 59999(399.99)	12	37.50	30	34.10	42	35.00
60000(400.00) - 79999(533.33)	5	15.60	13	14.80	18	15.00
80000(533.33) - 99999(666.67)	2	6.20	10	11.40	12	10.00
≥100,000(666.67)	6	18.80	7	8.00	13	10.80
Total	32	100.00	88	100.00	120	100.00
Mean	72145.00(480.97)		56503.67(376.69)		61181.45(407.88)	
<i>Produce as Gift</i>						
≤4,999(33.33)	9	28.10	32	36.40	41	34.20
5000(33.33) - 9999(66.66)	10	31.30	39	44.30	49	40.80
10000(66.67) - 14999(99.99)	4	12.50	9	10.20	13	10.80
15000(100.00) - 19999(133.33)	4	12.50	5	5.70	9	7.50
≥20000(133.33)	5	15.60	3	3.40	8	6.70
Total	32	100.00	88	100.00	120	100.00
Mean	13574.00(90.49)		7370.01(49.13)		9024.38(60.16)	
<i>Marketable Surplus</i>						
≤99999(666.67)	6	18.80	7	8.00	13	10.80
100000(666.67) - 199999(1333.33)	9	28.10	26	29.50	35	29.20
200000(1333.33) - 299999(1999.99)	4	12.50	28	31.80	32	26.70
300000(2000.00) - 399999(2666.66)	6	18.80	11	12.50	17	14.20
400000(2666.67) - 499999(3333.33)	7	21.90	8	9.10	15	12.50
≥500000(3333.33)	0	0.00	8	9.10	8	6.70
Total	32	100.00	88	100.00	120	100.00
Mean	239445.94(1596.31)		259873.53(1732.49)		253764.35(1691.76)	
<i>Annual Expenditure</i>						
≤100,000(666.67)	4	12.50	0	0.00	4	3.33
100001(666.67) - 150000(1000.00)	9	28.13	7	7.95	16	13.33
150001(1000.01) - 200000(1333.33)	14	43.75	38	43.18	52	43.33
200001(1333.34) - 250000(1666.67)	1	3.13	21	23.86	22	18.33
250001(1666.67) - 300000(2000.00)	3	9.38	10	11.36	13	10.83
≥300001(2000.01)	1	3.13	12	13.64	13	10.83
Total	32	100.00	88	100.00	120	100.00
Mean	162687.50 (1084.58)		226329.55 (1508.86)		209358.33 (1395.72)	

Source: Field Survey, 2012

Table 4: Farming Household's Income and Expenditure Differentials

<i>Income and Expenditure Variable</i>	<i>Chi-square Statistic</i>	<i>P-value</i>	<i>Student-t Statistic</i>	<i>P-value</i>
<i>Consumption</i>	4.0810	0.5381	-1.2110	0.2330
<i>Produce as Gift</i>	8.2670*	0.0823	-1.7890*	0.0831
<i>Marketable Surplus</i>	12.4490**	0.0293	0.8560	0.3955
<i>Annual Expenditure</i>	26.1460***	0.0001	4.3380***	0.0001

Table 5 reveals that household size and marketable surplus were the significant determinants of household poverty status ($p < 0.1$ and $p < 0.05$ respectively). Following *a priori* expectation, the larger the household size; the higher the probability of a household been poor (Table 5). In actual fact, a unit (one person) increase in household size increases the probability of a household been poor by 62% (Table 5). On the other hand, in line with *a priori* expectation, the higher the marketable surplus; the lower the probability of a household been poor (Table 5). In marginal terms, a NGN1 (US\$0.007) increase in the value of marketable surplus decreases the probability of a household been poor by 23% (Table 5).

Table 5: Determinants of Farming Household's Poverty Status

<i>Variable</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>T-Ratio</i>	<i>Marginal Effect</i>
<i>Constant</i>	3.3912	11.3050	0.2999	-
<i>Gender</i>	-1.2888	0.8763	-1.4708	-0.1666
<i>Age</i>	0.6322	2.3601	0.2679	0.0817
<i>Education</i>	0.2389	0.3582	0.6669	0.0309
<i>Marital Status</i>	-1.9261	1.6597	-1.1605	-0.2490
<i>Farming Experience</i>	0.3582	1.0096	0.3548	0.0463
<i>Off-Farm Activities</i>	0.1464	0.6102	0.2399	0.0189
<i>Household Size</i>	4.8281*	1.4316	3.3725	0.6242
<i>Farm Size</i>	0.5012	1.3914	0.3602	0.0648
<i>Marketable Surplus</i>	-1.7858**	0.7711	-2.3160	-0.2309
<i>Produce Consumed</i>	0.1244	0.6932	0.1794	0.0161
<i>Produce as Gift</i>	0.5409	0.3494	1.5484	0.0699
<i>Likelihood Ratio</i>	48.4521	P-value = 0.00001	-	-
<i>Cragg-Uhler R²</i>	0.4839	-	-	-

*** *Sig. at 1%*, ***Sig. at 5%*.

According to Table 6, the (significant) determinants of farming households' poverty level were gender ($p < 0.1$), level of education ($p < 0.05$), farming experience ($p < 0.1$) and off-farm activities ($p < 0.05$) of the household head as well as household size ($p < 0.1$). Male-headed households tend to have higher level of poverty index with a 19.78% increasing possibility of been poor (Table 6). The higher the level of education of the household head, the lower the level of household poverty index (Table 6). A year increase in household head's level of education will cause a 8.5% reduction in the possibility of the household been poor (Table 6).

The farming experience of the household head was found to be a poverty decreasing factor with a year increase in household head's farming experience reducing the possibility of a household been poor by about 28% (Table 6). Off-farm activities involvement by household heads was a poverty increasing factor while household size was a poverty reducing factor (Table 6). A household with a head involved in off-farm activities had a 5% increasing possibility of being poor (Table 6). An increase in household size by one person can cause 56.28% decreasing possibility of a household been poor (Table 6). Both off-farm activities of household head and house size were

contrary to *a priori* expectation. Due to the fact that the households' primary vocation is farming in which the household had expertise, any diversification away from the occupation particularly non-farm related activities impoverish the household. However, on the other hand, household size might have reducing effect on household's poverty level when some members of the household augment the earnings of the (household's) head.

Table 6: Determinants of Farming Household's Poverty Level

<i>Variable</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>T-Ratio</i>	<i>Marginal Effect</i>
<i>Constant</i>	6.9351*	1.3934	4.9770	-
<i>Gender</i>	1.7056*	0.4858	3.5109	0.1978
<i>Age</i>	0.0419	0.0292	1.4376	0.3365
<i>Education</i>	-0.0675**	0.3641	-1.8543	-0.0848
<i>Marital Status</i>	-0.3021	0.7493	-0.4033	-0.0438
<i>Farming Experience</i>	-0.0654*	0.0217	-3.0150	-0.2787
<i>Off-farm Activities</i>	0.6106**	0.3122	1.9555	0.0502
<i>Household Size</i>	-0.3697*	0.0804	-4.5990	-0.5628
<i>Farm Size</i>	0.0445	0.4201	0.1059	0.0082
<i>Marketable Surplus</i>	0.000004	0.000002	1.6399	0.1603
<i>Produce Consumed</i>	0.00001	0.00001	1.5772	0.0917
<i>Produce given as Gift</i>	0.00001	0.00002	0.3365	0.0115
<i>Log-Likelihood Function</i>	-391.6354	-	-	-
<i>Squared Correlation</i>	0.5729	-	-	-

*** *Sig. at 1%*, ***Sig. at 5%*.

Table 7 reveals that the significant determinants of poor farming households' poverty depth were gender ($p < 0.1$), level of education ($p < 0.01$), farming experience ($p < 0.1$) and off-farm activities ($p < 0.01$) of the household head as well as household size ($p < 0.1$) and marketable surplus ($p < 0.1$). Male-headed poor households tend to have lower depth of poverty with about 64% increasing possibility of escaping from poverty (Table 7). The higher the level of education of the head of a poor household, the higher the depth of household's poverty (Table 7). A year increase in household head's level of education will cause about 24% reduction in the possibility of the household escaping from poverty (Table 7).

This might be due to the fact that farming household heads often do not have formal training related to agriculture. Contrary to *a priori* expectation, the farming experience of the head of poor households was found to be a poverty depth increasing factor (Table 7). A year increase in household head's farming experience will cause a 85% reduction in the possibility of a household escaping from poverty (Table 7). This could be that most of the poor household heads were laggards who refused to adopt modern farming techniques by relying only on their experiences. Off-farm activities involvement by heads of poor households was a poverty depth reducing factor while household size was a poverty depth increasing factor (Table 7).

A household with a head involved in off-farm activities had about 19% increasing possibility of escaping from poverty (Table 7). This might be that the farming households were adding value to household farm produce. An increase in household size by one person can cause a 173% increasing possibility of a household escaping from poverty (Table 7). This might be that an appreciable proportion of produce were used for subsistence by the household due to effort in achieving food security for (household) members.

The more the marketable surplus of a (poor) household, the lower the depth of household's poverty (Table 11). A NGN1 (US\$0.001) increase in the value of household marketable surplus leads to a 62.49% increasing possibility of escaping from poverty (Table 7).

Table 7: Determinants of Farming Household's Poverty Depth

<i>Variable</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>T-Ratio</i>	<i>Marginal Effect</i>
<i>Constant</i>	-0.0581	1.2464	-0.0466	-
<i>Gender</i>	-1.7882*	0.4950	-3.6128	-0.6352
<i>Age</i>	-0.0273	0.0296	-0.9214	-0.6697
<i>Education</i>	0.0621***	0.0362	1.7144	0.2389
<i>Marital Status</i>	0.9607	0.7376	1.3025	0.4266
<i>Farming Experience</i>	0.0648*	0.0220	2.9422	0.8456
<i>Off-farm Activities</i>	-0.7429*	0.3145	-2.3621	-0.1869
<i>Household Size</i>	0.3715*	0.0805	4.6161	1.7319
<i>Farm Size</i>	0.2297	0.4275	0.5372	0.1295
<i>Marketable Surplus</i>	-0.00001*	-0.000003	-2.0604	-0.6249
<i>Produce Consumed</i>	-0.00001	-0.00001	-1.2012	-0.2180
<i>Produce given as Gift</i>	-0.00001	-0.00002	-0.7911	-0.0862
<i>Log-Likelihood Function</i>	33.6080	-	-	-
<i>Squared Correlation</i>	0.5088	-	-	-

*** *Sig. at 1%*, ***Sig. at 5%*.

Table 8 reveals that the significant determinants of poor farming households' poverty severity were gender ($p < 0.1$), level of education ($p < 0.05$), farming experience ($p < 0.1$) and off-farm activities ($p < 0.1$) of the household head as well as household size ($p < 0.1$) and marketable surplus ($p < 0.1$). Male-headed poor households tend to have lower severity of poverty with about 59.45% decreasing possibility of sinking deeper into poverty (Table 8). Contrary to *a priori* expectation, the higher the level of education of the head of a poor household, the higher the severity of household's poverty (Table 8). A year increase in household head's level of education will cause about 42% increase in the possibility of the household sinking deeper into poverty (Table 8). This might be due to the fact that farming household heads often do not have formal training related to agriculture.

Also deviating from *a priori* expectation, the farming experience of the head of poor households was found to be a poverty severity increasing factor (Table 8). A year increase in household head's farming experience will cause a 89% increase in the possibility of a household sinking deeper into poverty (Table 8). This could be that most of the poor household heads were laggards who refused to adopt modern farming techniques by relying only on their experiences. In line with *a priori* expectation, off-farm activities involvement by heads of poor households was a poverty severity reducing factor while household size was a poverty severity increasing factor (Table 8). A household with a head involved in off-farm activities had 25.29% decreasing possibility of sinking deeper into poverty (Table 8). This might be that the farming households were adding value to household farm produce. An increase in household size by one person can cause about 175% increasing possibility of a household sinking deeper into poverty (Table 8). This might be that an appreciable proportion of produce were used for subsistence by the household for the food security of (household) members.

Also following *a priori* expectation, the more the marketable surplus of a (poor) household, the lower and the severity of household's poverty (Table 8). A NGN1 (US\$0.001) increase in the value of household's marketable surplus leads to a 89.06% decreasing possibility of sinking deeper into poverty (Table 8).

Table 8: Determinants of Farming Household's Poverty Severity

<i>Variable</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>T-Ratio</i>	<i>Marginal Effect</i>
<i>Constant</i>	-0.2627	1.4941	-0.1758	-
<i>Gender</i>	-1.5562*	0.5360	-2.9032	-0.5945
<i>Age</i>	-0.0204	0.0337	-0.6037	-0.5379
<i>Education</i>	0.1003**	0.0429	2.3374	0.4151
<i>Marital Status</i>	-0.6486	0.8039	-0.8068	-0.3097
<i>Farming Experience</i>	0.0636*	0.0235	2.7021	0.8919
<i>Off-farm Activities</i>	-0.9347*	0.3666	-2.5497	-0.2529
<i>Household Size</i>	0.3493*	0.0837	4.1737	1.7511
<i>Farm Size</i>	0.3810	0.4868	0.7827	0.2311
<i>Marketable Surplus</i>	-0.00001*	-0.000003	-2.2452	-0.8906
<i>Produce Consumed</i>	-0.00001	-0.00001	-0.9467	-0.2497
<i>Produce given as Gift</i>	-0.00001	-0.00002	-0.6854	-0.1030
<i>Log-Likelihood Function</i>	25.6660	-	-	-
<i>Squared Correlation</i>	0.5292	-	-	-

*** *Sig. at 1%*, ***Sig. at 5%*.

Summary

Poor farming households were more (67.5%) than the non-poor (32.5%) households in the study area. Gender had significant effect on household poverty with male-headed poor households being better off than female-headed poor households in terms of poverty gap and severity. The level of education of household heads was a significant determinant of farming households' poverty level ($p < 0.05$) as well as poor households' poverty depth ($p < 0.01$) and severity ($p < 0.05$) and poverty dimensions were highest among household whose heads had no formal education. While household head's educational achievement reduces the possibility of a household being poor, it actually reduces the possibility of a poor household escaping from poverty but increases the possibility of sinking deeper into poverty.

The farming experience of the household head was a significant determinant of poverty level ($p < 0.1$), depth ($p < 0.1$) and severity ($p < 0.05$). Household head's farming experience reduced the level of household poverty while it increases the possibility of poor household sinking deeper into poverty and reduces the possibility of a poor household escaping from poverty. Off-farm activities was a significant determinant of poverty level ($p < 0.05$), depth ($p < 0.01$) and severity ($p < 0.1$). Off-farm activities involvement by heads of poor households was a poverty level increasing factor while it was poverty depth and severity reducing i.e. it increases possibility of escaping from and decreases possibility of sinking deeper into poverty.

Household size had significant effect on poverty status ($p < 0.1$), level ($p < 0.1$), depth ($p < 0.1$) and severity ($p < 0.1$) with poverty dimensions decreasing for households with extreme household sizes i.e. 4 or less and 17 or more members. The levels of marketable surplus differed significantly ($p < 0.05$) between poor and non-poor households as well as indirectly and significantly determined farming households' poverty depth ($p < 0.1$) and severity ($p < 0.1$). Consequently, high marketable surplus respectively increases and decreases the chances of poor households escaping from and sinking deeper into poverty.

Conclusion and Recommendation

The possibility of farming households' head lacking formal education in agricultural disciplines could delimit such heads taking advantage of education in efficiently managing farms. This could also result in laggardly attitude of household heads to adoption of modern farming techniques, rather than relying sole on their experiences in farming over the years. Furthermore, as a consequence rather than adopting technologies to improve output and gaining more marketable surplus, most of the household heads might have believed that farming is not profitable and hence diversified into off-farm agriculture-unrelated activities. Hence, the produce from the farm (not only having negligible subsistence effect) would earn insufficient income that would be thinly spread in households with 'bloated' membership. Therefore these factors had high influence on poverty dimensions for both poor and non-poor households.

In view of the above, stakeholders in poverty alleviation in the rural sector need to take steps in:

- i. giving vocational training in relevant agricultural sciences to farming households (heads in particular);
- ii. encouraging and empowering farming households to focus on agro-allied enterprises such as agro-processing when diversifying into off-farm activities;
- iii. educating farming households on the benefits of family planning.

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