



POVERTY STATUS AND FACTORS INFLUENCING NON-FARM ACTIVITIES AMONG RURAL FARMING HOUSEHOLDS IN OYO STATE, NIGERIA

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Abstract

Poverty has been seen as a global menace that threatens the standard of living of rural farming households across various countries of the world. Poverty incidence is more pronounced in Sub-Saharan Africa, and Nigeria has recorded a high incidence of poverty among the rural farming households in the country, thus making the diversification into non-farm activities an important area to explore. This paper therefore, investigated the poverty status and determinants of non-farm activities among rural farming households in Oyo State, Nigeria. A well-designed questionnaire was used to elicit data from 170 respondents that were selected using multi-stage sampling procedure. Descriptive statistics, Foster, Greer and Thorbecke (FGT) poverty indices and logit regression model were used for data analysis. The findings revealed that 65.3% of the respondents were male, 78.2% were married, 21.8% had tertiary education and 62.4% had between 5 and 9 household size. Majority (79.4%) had farm size of more than 1.5 hectares and 75.3% had more than 10 years of farming experience, while 60.6% and 62.9% had no access to credit and remittance, respectively. Government work, trading and private business among others, were the common non-farm activities among the respondents. Poverty incidence (P0), depth/gap (P1) and severity (P2) were 40.6%, 16.1% and 8.8%, respectively. The result of logit regression model indicated that gender ($\beta = -0.7957$), educational attainment ($\beta = 0.6034$), farm size ($\beta = -0.9930$), access to remittance ($\beta = -0.7417$) and total expenditure ($\beta = 0.0000$) were the major determinants of non-farm activities among rural farming households in the study area. Therefore, education, access to credit facility and social intervention programmes should be given priority among the rural farming household in the study area.

Keywords: Foster Greer and Thorbecke Model, non-farm activities, poverty status, logit regression, rural farming households

I. Introduction

Poverty is intrinsically linked to growth of human capital, and is therefore a worldwide problem. Poverty is one of the severe manifestations of human deprivation. Poverty is one of the symptoms or manifestations of underdevelopment that afflicts individuals worldwide. Poverty emasculates the potential of people and organizations. For individuals, particularly rural residents, it has clear and latent implications. It is paradoxically human ingenuous and dehumanizing. Poverty encompasses inadequate income and denial of the basic necessities such as education, health services, clean water and sanitation [39] which are essential for human survival and dignity. The record reveals that more than a billion individuals in the globe now live in poverty, with Nigeria hosting more than 60 million, 6 percent of the total [37]. Though Nigeria is blessed with abundant physical and human resources, there had been progressively worsening welfare and poverty condition of its nationals [29]. Nigeria still faces enormous difficulties with its population of 146 million individuals from 250 ethnic groups.

In Nigeria, poverty in most rural areas tends to rise because of relative population growth and decline in farming revenues. Poverty is defined by the revenue dimension as a low-and low-consumption condition. In many rural areas agriculture alone cannot provide sufficient livelihood opportunities. Rural non-farm activity can play a potentially role in reducing rural poverty. Previous studies like [12], [8], [33], indicate the importance of non-farm enterprises to rural incomes. Research has also shown that household earns more income from rural non-farm activities than from farm activities in many developing countries. Poverty also puts households into the non-farm sector, because despite the importance of farming activity in the economy, they cannot profitably employ all of family work in agricultural manufacturing. In latest times, the poverty rate in the rural environment has so dramatically increased that it has an impact on farms and their earnings. Nigeria's rural infrastructure has been overlooked for long while health, education and water investments have been concentrated mainly in the municipalities. On the global scene, the level of poverty in the rural areas is higher than in urban areas [10]. Rural poverty accounts for nearly 63 per-cent of poverty worldwide, reaching 90 per-cents in some countries like Bangladesh and between 65 and 90 per-cent in sub-Saharan Africa [38]. In almost all countries, the conditions—in terms of personal consumption and access to education, health care, potable water and sanitation, housing, transportation, and communications—faced by the rural poor are far worse than those faced by the urban poor [19]. High poverty in rural regions has led to fast population growth and migration to metropolitan regions, with or without general economic growth. Indeed, the attempts of rural poor people to break from poverty by shifting to towns create a lot of urban poverty. Distorted government policies in favour of non-agricultural activities and expenditures have been major contributors to rural poverty [24].

Some studies have been conducted on determining the level of poverty in rural centres of Nigeria. However, many of these studies revealed that rural poverty gap in Nigeria is widening and evidences abound that among the rural poor, the farming households are poorer. Evidence in literature (e.g. [38]; [17], [18]; [4]; [3] shows clearly that poverty incidence in Nigeria is higher among the rural-folks, households that rely mainly on agricultural income and those with low paid work in the rural non-farm sector. The National Bureau of Statistics NBS, 2006 survey revealed that poverty in Nigeria is largely a rural phenomenon. It reveals that 63.8 per-cent of rural households are poor against 43 per-cent in urban household. While this may not be unconnected with the rather low productivity that have characterised Nigeria's agriculture over the past four decades [2], it suggests the need to critically examine the livelihood options available to the rural folks in Nigeria, most especially those of the rural farm households.

However, many of these studies revealed that poverty amidst plenty is the world's greatest challenge. Poor people live without fundamental freedoms of action and choice that the better off take for granted [34]. In a study on rural poverty, [26] argue that since rural people derive a livelihood in one form or another from non-farm activities, increasing profitability and the range of these activities would improve living conditions in rural areas. [13] and [1] observed that participation in non-farm activities offers the predominantly peasant farmers in Africa the opportunity for income diversification and reduction of income variability/risks.

Agriculture as the way out from extreme poverty is the focus of policies in Africa. In Africa, however, this accomplishment has not been recorded other than in many Asian and Latin American countries, which have played an important part in reducing poverty and transforming their economies in agricultural growth. As opposed to the rest of the world, most African countries still haven't met the criteria for a successful farming revolution. This has resulted in increased scepticism within the international debate on growth and poverty reduction in the region. The Green Revolution, which worked well elsewhere, was at least in the event of development in Africa not effective. In Nigeria, a number of government programs have been launched on all levels to reduce poverty and its

incidence. These programmes include National Directorate of Employment (NDE), the Family Support Program (FSP), the National Agricultural Land Development Authority (NALDA), and Directorate for Food, Roads, and Rural Infrastructure (DFRRI), Family Economic Advancement Program (FEAP) and National Poverty Eradication Program (NAPEP) [32]. There have been many failings in poverty reduction, mainly owing to the misconception that farm homes are focusing almost solely on agriculture in developing nations and doing little rural non-agricultural work. Even today, the image remains broad. It is clear that the traditional view of rural economies as solely agricultural is out of date. Policy debate continues to be about equating agricultural revenue with rural revenue and urban and rural / agricultural connections. This led to the Ministry of Commerce and Industry focusing on urban sectors and farming and a trend even among farmers and those interested.

However, there is widespread proof that the agricultural sector, including the landless, is a significant source for farmers and other rural families (i.e. revenue generated by wage paid operations and self-employed in trade, manufacturing, and other services). Farm households across the developing world earn an increasing share of their income from non-farm sources[33]. Recent studies in Nigeria [11]; [31] observed that income from household members' participation in non-farm activities have been contributing significantly to farm households' welfare in Nigeria. Any effort at poverty reduction must prioritize knowledge of the structure and determiners of rural incomes and consider whether rural households vary according to revenue sources and to what extent their financial status and welfare are explained. Agricultural is not the only basis of the rural economy but instead is based on a range of businesses and activities. Farming remains important but rural people are looking for diverse opportunities to increase and stabilise their incomes. Worldwide, rural households are engaged in a variety of non-farm activities to generate income [2]; [40]. A broad variety of non-agricultural operations can and does take place in rural homes, including soldering, hair salons, car repair, food-processing and baking, woodworking such as carving, carpentry and metalwork, lities such as clothing, barbary, hair-playing facilities, plumbing and painting, and other radio and vehicle fittings. Rural families are often inclined to take on many jobs, but few efforts were made to systematically link this behaviour to policy on reducing rural poverty. Previous studies on farm and non-farm activities [5]; [20]; [9]; [21] reported that the contribution of non-farm income sources to the rural economy cannot be neglected because it has grown substantially during the last two decades and its share to total household income ranges between 30% and 50% in some developing countries.

The study aims to assess the poverty status and factors influencing non-farm activities among rural households, as well as roles non-farm sector can play in supporting rural households to alleviate poverty in the rural areas of southwest, Nigeria.

II. Research Methodology

2.1 Study area

The study was carried out in Oyo State, Nigeriawith total area covering 27,249 km². The ecological zone of this area ranges from rain forest and mangrove forest. The rainfall ranges from 2500 to 3000 mm per annum, which is distributed over April to October with a spell of dry period between late July and early August. Agricultural sector forms the base of the overall development thrusts of the area, and cannot be over-emphasized being the mainstay of the State economy, with farming as the main occupation of the people. Crops usually grown include Maize, Yam, Cassava, Cocoyam, Melon, Cowpea, Cashew and Vegetables under mixed cropping practices. Apart from the primary roles of providing food and shelter, employment, industrial raw materials, it remains an important source of internally generated revenue in the State. The area is highly urbanized with a population of 5,591,589 [28]. It consists of thirty-three Local Government Areas, (LGAs) with four zonal

Agricultural Development Programmes (ADPs) located at Saki, Ogbomosho, Oyo and Ibadan/Ibarapa.

2.2 Sources and Types of Data

Structured and open questionnaires were used to collect information from households which were randomly selected. It should also be emphasized here that oral interviews as well as personal observations was also considered in the data collection. Multistage sampling technique was used to select respondents for the study. First stage involved simple random selection of 3 ADPs zones from the four ADPs zones in the state. Followed by random selection of one local government (LGs) from each selected zones after which five villages were randomly selected from each of the local government areasto make a total of 15 villages.Finally, 14 farming households were randomly selected from each village to give a total of 210 respondents which constituted the sample size for the study. After the field sample was completed, 170(80.95%)questionnaires were returned and used for analysis. The data generated were subjected to different forms of analysis which include Descriptive analysis (frequency distribution, percentages), and Logit regression model in examining some correlates of rural farming household’s decision to participate in non-farm activities.

2.3 Logit regression model

The effect of some socio-economic correlates on farming households’ decision to participate in non-farm activities was analysed using logistic regression analysis.Logit regression has been defined as the amount of change in the value of one variable associated with a unit change in the value of another variable; Logit regression analysis therefore helps to determine the effect of changes in the explanatory variables on the dependent variable. Logit model is used whenever the dependent variable is binary (also called dummy) which takes values 0 or

1. The logit model assumes,

$$P (Y_t = 1/x_t) = \frac{\exp (x_t\beta)}{1 + \exp (x_t\beta)} \dots\dots\dots (1)$$

An equivalent form can be stated thus,

$$\frac{\text{Exp} (x_t b)}{1 + \exp (x_t b)} = \frac{1}{1 + \exp (x_t b)} \dots\dots\dots (2)$$

This can be expressed as, $q_{it} = bx_{it} + e_{it} \dots\dots\dots (3)$

Where q_{it} = an unobservable latent variable for household participating in non-farm activities.

- X_{it} = Vector of explanatory variables
- b = Vector of parameter to be estimated
- e_{it} = error term

The observed binary (0, 1) for whether household participate in non-farm activities is assumed as in the usual logit model.

$$q_{it} = \begin{bmatrix} 1 \text{ if } q_{it} \geq 0 \\ 0 \text{ otherwise} \end{bmatrix} \text{ i.e. participation} = \begin{bmatrix} 1 \\ 0 \end{bmatrix}$$

The probability that the binary assumes the value 1 is,

$$\text{Prob.} (q_{it} = 1) = \frac{e^{\alpha_i} + \beta^x x_{it}}{1 + e^{\alpha_i} + \beta^x x_{it}}$$

The X_s are:

- X₁ = Age of household (years)
- X₂ = Sex (Male =1, 0 otherwise)
- X₃ = Marital status (Married = 1, Single, Divorced or Widowed = 0)
- X₄ = Educational Attainment (years)
- X₅ = Household size (Number)
- X₆ = Farming experience (years)
- X₇ = Membership of cooperative society (Cooperative society = 1, otherwise = 0)
- X₈ = Access to credit (Access =1, 0 otherwise)
- X₉ = Remittance (Remittance= 1, otherwise = 0)
- X₁₀ = Farm Size (Ha)
- X₁₁ = Total Expenditure
- X₁₂ = Poverty status (Poor = 1, Non-poor = 0)
- e_{it} = error term

The estimated b will reveal the effect of each variable on household participation in non-farm activities embarked upon by rural households.

III. Results

3.1 Socio-economic characteristics of respondents

Results in Table 1 show that out of the one hundred and seventy respondents interviewed, 65.3% of the respondents were male while 34.7% of the total respondents were female. The implication of this is that, we have more males than females in the study area. More so, majority (78.2%) are married. About 11.2% of them are single while the rest are either divorced or widowed. The distribution generally shows that there were more married respondents than their single, divorced or widowed counterparts. Furthermore, 24.7% of the respondents had no formal education, while others had primary (25.9%), secondary (27.6%) or tertiary (21.8%). Most of the respondents in the study attained up to secondary education which is the modal class, 27.6% of the total respondents had secondary education which is the minimum education level while about 24.7% had no formal education. Only 21.8% of the sampled respondents had tertiary education which is the utmost education level attained in the study area. The distribution reveals that a sizeable number of all the respondents are not education and this could possibly affect the poverty status of the respondents. The finding is consistent with the profile (i.e. poor education) of the rural poor in Africa given by [36].

Also, the study revealed that most of the household have at least 5-9 members (62.4%), next to this 35.9%, those with household size between 10-14 members constitute 1.8%. From the analysis, this indicates that most of the

Table 1: Socio-Economic Characteristics of Respondents

Socio-economic variables	Frequency	Percentage (%)
Sex		
Female	59	34.7
Male	111	65.3
Marital status		
Single	19	11.2
Married	133	78.2
Divorced/widowed	18	10.6
Educational Level		
No schooling	42	24.7
Primary education	44	25.9

Secondary education	47	27.6
tertiary education	37	21.8
Household size		
0-4	61	35.9
5-9	106	62.4
10-14	3	1.8
Farm size		
less than 1.6	35	20.6
1.6-3	45	26.5
greater than 3	90	52.9
Access to credit(₦)		
None	103	60.6
less than 20000	2	1.2
20001-100000	31	18.24
100001-200000	32	18.76
200001-300000	2	1.2
Access to remittance		
None	107	62.9
Less than 20000	11	6.5
20001-40000	23	13.5
40001-60000	14	8.3
60001-80000	8	4.8
80001-100000	7	4.1

respondents have larger household size which enables them to receive various forms of assistance from both their wives and children on the farm and large household size is usually associated with increased poverty because of reduced income per capita and a general reduction in the level of well-being. Studies by [23], [37], [15],[14] and [16] reveal that a larger sized household is associated with greater poverty incidence. Majority (79.4%) had farm size of more than 1.5 hectares while 20.6% had farm size less than 1.5 hectares. From the findings, majority of the farmers in the study area can be categorized as small-scale farmers. This conformed to the findings of [35]. Also, the study revealed that 75.3% of the farming household members had more than 10 years of farming experience while 24.7% of the farming household members had less than 10 years of experience in farming. The result show that majority of the farming household members in the study area have reasonable farming experience in the study area. This agrees with the findings of [35].

More so, the survey indicates that 60.6% and 62.9% of the rural farming household had no access to credit and remittance respectively. This situation may have impacts on household's income in the short and long run. This is because remittance is another source of income for households. Hence, it should be noted that the number of income sources and participation in non-farm activities can have direct relationship.

3.2 Distribution of respondents based on participation in farm and non-farm activity

The farm and the non-farm activities engaged in by rural households in the study area are shown in Table 2. About 47.6% of the respondents are into farming activities while 52.4% are into one non-farm activity or the other. It can be deduced from the table that majority of the respondents are into non-farm activity and this emphasized the growing importance of non-farm activities in the rural economy and also agree with findings of [6] that in Nigeria, almost of all households have at least some off-farm income and on the average.

Table 2: Distribution of respondents based on participation in farm and non-farm activity

Activity	Frequency	Percentage
Farm	81	47.6
Non-farm	89	52.4
Total	170	100

3.3 Non-Farm Activities Engaged in by the Rural Households

The different types of non-farm activities engaged in by the rural households in the study area are shown in Table 3 below. Non-farm activities engaged in includes; Artisans (Tailoring Blacksmiths, Mechanics, Hair dressing etc.) which accounted for 8.2% of respondents, Trading, Labour of other farms, Private business, Civil service and Other paid jobs accounted for 14.1%, 1.2%, 5.9%, 21.2% and 1.8% respectively. The distribution clearly shows that civil service job is the most important source of non-farm activities in term of employment generation.

Table 3: Non-Farm Activities Engaged in by the Rural Households

Non-farm activity	Frequency	Percentage
Trading	24	14.1
Artisan/Craftwork	14	8.2
Labour of other farms	2	1.2
Private business	10	5.9
Civil servant	36	21.2
Other paid employment	3	1.8
Total	89	100

3.4. Extent and Manifestations of Poverty among the respondents

To determine and describe the extent and manifestations of poverty among all farmers (i.e. poor and non-poor farmers), the FGT measures of poverty were employed. The FGT model allowed the estimation of the poverty incidence, poverty gap and poverty severity for the sample. Table 4 presents the results of the poverty analysis using the FGT model.

When $\alpha = 0$, (poverty incidence) it implies that there is zero concern for poverty incidence. The poverty measure given by then reduces to the incidence measure of poverty. For the poor farmers, the value was 0.4058. This implies that 40.5 per-cent of the respondent farmers were actually poor. This proportion invariably represents the poverty incidence among the sample. When $\alpha = 1$, (poverty depth) it conveys that there is uniform concern for poverty depth among the study sample. The value for the poor farmers in the sample was 0.1611. This implies that poor farmers required 16.11 per-cent of the poverty line to get out of poverty. The value of the poverty gap for the poor farmers in the sample is thus ₦897.40 (or 0.1611 multiplied by ₦5570.48).

Finally, when $\alpha = 2$, it implies that a distinction is made between the poor and the poorest. This follows since the poverty gap or depth is not sensitive to re-distribution among the poor. The assumption with the poverty gap is that a Naira gained by the poor would have the same effect on poverty as that gained by the moderately poor. As such, to capture the sensitivity to income re-distribution among the poor and non-poor, there exists the need to estimate the severity of poverty among the study sample. The value for the poor using the FGT model was 0.0884. This conveys that the severity of poverty among the poor farmers in the study area is 08.84 per-cent.

Table 4: Incidence, Depth and Severity of Poverty among the Respondents.

Index	FGT
Poverty incidence (P0)	0.405882
Poverty gap or depth (P1)	0.161135
Poverty severity (P2)	0.088485

3.5 Logit regression model

Logit regression was used to determine the probability of participation of household members in non-farm activities since they are basically farmers. The model predicts participation in non-farm employment with one per-cent level of significant (revealed by chi square obtainable from the log) likelihood values. With respect to individual characteristics the coefficients of gender, educational attainment, farm size, private transfers and total income have positive influence on their participation in non-farm activities i.e. the probability of the household participating in non-farm increases as these variables increase, only educational attainment, farm size, total income and gender, private transfers of the household heads are statistically significant at 1 per-cent and 10 per-cent test level respectively.

3.5.1 Gender

The coefficient for the gender is -0.7957492, there is a significant relationship between the gender of household heads and their participation in non-farm activities. It is significantly different from zero because its p value is 0.086. Hence, this variable was found to be insignificant at 10% level. The negative coefficient of the gender variable implies that female household members participate more in non-farm activities than the male household members. The males have a significant role to play in the family as household heads. Thus, provide the household food and other basic needs. For this reason, therefore, the larger their participation in non-farm activities is directed to farming that will supply food.

3.5.2 Educational attainment

The coefficient for the variable school attended is 0.6034322; this means that for every one unit increase in the year of school attended, it is expected that there will be a 0.6034 increase in participation in non-farm activities; holding all other independent variables constant and also it is significantly different from zero because its p value is 0.003. Hence, this variable was found to be positive and significant at 1% level. This implies that households with educated heads are more likely to participate in non-farm activities than one with an uneducated head. The positive relationship depicts that the higher the number of years of education, the higher the level of participation in non-farm activities.

3.5.3 Farm size

The coefficient for the variable farm size is -0.9930034. It is significantly different from zero because its p value is 0.002. Hence, this variable was found to be negative and significant at 1% level. This implies that, those with large farm size were less involved in non-farm activities.

3.5.4 Access to remittance

Access to remittance is significantly related to participation of rural farming households in non-farm activities. The coefficient signifies that for every one Naira increase in access to remittance there is likelihood of -0.7416827 increases of households participating in non-farm activities. It is significantly different from zero because its p value is 0.074. The probability is significant at 10% and the possible explanation is that remittance gives the household an opportunity to be involved in income generating activities so that derived revenue increases financial capacity and purchasing power of the household. Access to remittance also supports consumption when households face hard times. It would be possible to spend the remittance on some other income generating activities so that incomes from these activities can position the household head on a better status.

3.5.5 Total expenditure

The coefficient depicts that for every one naira increase in total expenditure, 0.0000347 increase in the participation of non-farm activities is expected, holding all other independent variables constant. This variable was positive and significant at 1% level. Hence, the positive relationship showed that the higher the total income the higher the participation in non-farm activities. This is expected because as expenditure increases all other things being equal there will be increase in access to participation in non-farm activities i.e. households that have access to better expenditure opportunities are less likely to participate in non-farm activities than those households who had little or no access.

3.5.6 Other variable

The household size is however negatively (-0.2185) related in the result presented in the Table 5 below. This means that the higher the number of household the less or smaller the level of income per capita especially when only few of them are working. Although, the household size is not significant in the area under study area, this could be due to the fact that majority of the members of the household perform one economic activity or other in order to generate income. For instance, it has been established in several studies in developing countries [26]; [25];[30] that small-sized households are less prone to poverty than large-sized households because the income per capita (a measure of wellbeing status) of the former is usually larger than that of the latter. Access to credit is not statistically significant but the coefficient indicates that for every unit increase in access to credit there will be 0.6645 increases in participation in non-farm activities. It has a positive sign showing that the more the access to credit the better the participation in non-farm activities in the study area. Poverty status dummy which is negative (-0.1080) and statistically not significant showing that those household who are poor earn less from farming activities can earn more income from participation in non-farm activity.

Table 5: Logit estimation for participation in non-farm activities by rural farm households

Variable	Coefficient
Age (X_1)	0.0226 (0.0276)
Gender (X_2)	-0.7957 (0.4632)
Marital status (X_3)	0.3257 (0.5563)
Educational attainment (X_4)	(0.6034) (0.2056)

Household size (X_5)	-0.2185 (0.0169)
Member of cooperative society (X_6)	0.6797 (0.4679)
Farming experience (X_7)	-0.0307 (0.0327)
Farm size (X_8)	-0.9930 (0.3131)
Poverty status (X_9)	-0.1080 (0.5639)
Access to credit facility (X_{10})	0.6645 (0.4867)
Access to remittance (X_{11})	-0.7416 (0.4152)
Total Income (X_{12})	0.0000 (0.0000)

*Coefficients significant at 10 percent

**Coefficients significant at 5 percent

***Coefficients significant at 1 percent

Prob. > chi2 = 0.0000 Figures in parenthesis are standard error. Log-likelihood = -85.19231

Finally, the coefficient (0.0226) of age of the household head had a positive relationship with participation in non-farm activities but it was not statistically significant. This means that an increase in the age of the household head increased the participation in non-farm activities. This participation increases with age but for the elderly this effect declines in importance, probably because while experience increases access, health problems decreases it. Age of household head was measured in years. This is possible because households acquire more and more experience in farming operations.

IV. Conclusion and Recommendations

The socio-economic characteristics of the respondents show that the respondents were young, married with a fairly large household size. Sizeable number had no formal education with only about one-third educated up to tertiary level. They were well experienced in farming but they mostly had no access to credit and remittance. Incidence of poverty was relatively high among the respondents. Gender, educational attainment, farm size, access to remittance and total expenditure were the determinants of non-farm activities among the respondents. It is therefore recommended that education, access to credit facility and Social interventions should be prioritised among the rural farming household in the study area.

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