Original Research Article

Decomposition Analysis of Poverty among Rural Farming Household in Oyo State, Nigeria

ABSTRACT

The incidence of poverty in Nigeria is worrisome, and it has constituted a national menace. The occurrence of poverty incidence had been found to be more pronounced among Rural farming households in the country. However, paucity of data exists in terms of decomposition of household poverty into relevant subgroups using their socio-economic characteristics. Therefore, this paper assessed the decomposition analysis of poverty among rural farming Households in Oyo State, Nigeria using the data collected through a well-structured interview schedule from 170 respondents who were selected through a multi-stage sampling procedure. Data collected were described using frequency counts and percentage while poverty Indices was analyzed using Foster-Greer Thorbecke model and Decomposition analysis. The findings revealed that higher proportion (73.5%) of the respondents were above 40 years, 65.3% were male, 78.2% were married and 27.6% had secondary education, while 62.4% had household size of between 5 and 9 persons. Majority (79.4%) had farm size of more than 1.5 hectares and 62.9% had no access to remittance. Poverty incidence (P_0) was 40.59%, Poverty depth/gap (P_1) was 16.11% and Poverty severity (P_2) was 0.09%, among the respondents using income-poverty line measure. Decomposition analysis showed that Poverty was high among households that were headed by male, young with low literacy level, and large household size. The severity of poverty was higher among households headed by labour of other farms. Effective poverty reduction strategies should therefore focus on education, livelihood diversification and control of household size.

Keywords: Decomposition analysis; poverty; poverty incidence; rural farming households

1. INTRODUCTION

Poverty is a global menace that threatens the standard of living of the people across various countries of the world. Poverty is one of the most serious manifestations of human deprivation and is inextricably linked to human capital development; it is thus an issue of global concern. Poverty is a plague afflicting people all over the world and it is considered one of the symptoms or manifestation of under-development. Nigeria has experienced a high incidence of poverty in the last two decades and this has been largely traced to the adverse macroeconomic performance of the economy especially as dictated by the effects of negative external shocks and the adjustment reforms that were initiated in response to the shocks; succeeding governments have not been able to adequately cope with this deep-rooted problem [1]; He further stated that, studies on poverty in Nigeria have not been given priority until recently. The problem of poverty has been a long standing issue in Nigeria. This is indicated by the low social status and poor living conditions of the inhabitants. The problem has been made worse over the years by the development pattern which has favoured the urban modern sectors to the detriment of the traditional rural sectors [2]. A recent poverty assessment survey has shown that over 70% of the populations are living on less than a dollar per day and over 50% are living below the national poverty line. The survey also revealed that poverty is especially higher in rural areas where majority of the population are resident and derive their livelihoods from agriculture [3]. Nigeria is the world's largest producer of cassava, yam and cowpea – all staple foods in sub-Saharan Africa. It is also a major producer of fish. Yet it is a food-deficit nation and imports large amounts of grain, livestock products and fish. Despite Nigeria's plentiful agricultural resources and oil wealth, poverty is widespread in the country and has increased since the late 1990s. Over 70 per cent of Nigerians are now classified as poor, and 35 per cent of them live in absolute poverty. Poverty is especially severe in rural areas, where up to 80 percent of the population lives below the poverty line and social services and infrastructure are limited. The country's poor rural women and men depend on

agriculture for food and income. About 90 per cent of Nigeria's food is produced by small-scale farmers who cultivate small plots of land and depend on rainfall rather than irrigation systems [4].

The [5] describes poverty as a state where an individual is not able to carter adequately for his or her basic needs of food, clothing and shelter and is unable to meet social and economic obligation, lack gainful employment skills assets and self-esteem and has limited access to social and economic infrastructure such as education, health, portable water and sanitation and consequently has limited chance for his or her capabilities. [6] Asserted that poverty denies its victims the most basic needs for survival, such as food, water, clothing and shelter. A concluding definition recognizes poverty as a way of live characterized by low calorie intake, inaccessibility to adequate health facilities low quality education system, low income, unemployment, and under employment and inaccessibility to various housing and societal facilities [7]. A commonly used measure of the incidence of poverty is the head count ratio. This is defined as, the share of the population whose consumption falls below the 'poverty line'. The poverty line is a specified threshold of income or value of consumption for a given country, sub-region or region, below which one is defined as poor. For developing countries, poverty lines are usually calculated as the monetary value of some minimum bundle of consumption goods and services (food, shelter and health, etc.) required to satisfying basic requirements within a particular social context. Poverty lines may differ among countries/regions in a given space in time, and may also vary over time, as socioeconomic conditions change. Having constructed the poverty line, there is the need to carry out poverty analysis decomposed into various indexes. According to [8] and [9], the most frequently used measurements are:

1. The head count poverty index given by the percentage of the population that lives in the household with consumption per capita less than the poverty line.

2. The poverty gap index which reflects the depth of poverty by taking into account, how far the average poor person's income or expenditure is from the poverty line.

3. The distributional sensitive measure of squared poverty gap which reflects the severity of poverty.

In view of the importance of poverty and the need to analyze the status of rural farming households, the study is set out to;

i. describe the socio-economic characteristics of rural farming households,

ii. determine the farming household's poverty level according to household's characteristics and

iii. determine the decomposition analysis of household poverty of the farmers according to selected socio-economic characteristics

2.0 LITERATURE REVIEW

Poverty is multidimensional in nature and scope and it is directly associated with a household income, asset holding, and other economic activities that mutually generate a livelihood strategy and outcomes [10]. According [11], [12], Poverty level is higher in the rural areas when compared to the urban areas and most of the rural dwellers are small scale farmers that depend on agriculture for food and income.

Statistical evidence showed that the rate of poverty in Nigeria has persistently been on the increase. For instance, According to the official figures published by the National Bureau of Statistics (NBS), the incidence of poverty in Nigeria between 1980 and 2010 rose from 27.2 percent to 69.0 percent. Recently, [13], reported that 40 percent of people in Nigeria lived below its poverty line of 137,430 naira ($381.75) a year and this represents 82.9 million people. [14], revealed that almost half of the Nigerian population is living below the international poverty line of ($2 per day) while unemployment peaked at 23.1%.

Although few studies have highlighted the decomposition of income poverty in Nigeria [15]; [16]; [17]; [18], we still lack understanding of spatial poverty decomposition in rural Nigeria. This is especially important because the majority of the poor reside in the rural areas where most of the people and national resources are located and thus making rural poverty a major driver of aggregate poverty in Nigeria [19]; [20].

3.0 METHODOLOGY
3.1 Description of the study area
The area of study is Oyo State. It was created in 1976 with total area covering 27,249 km2. It is bounded in the south by Ogun State, in the north by Kwara State, west partly bounded by Ogun State and partly by Republic of Benin, east bounded by Osun State [21].

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 being the mainstay of the State economy cannot be over-emphasized, 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 interlay generated revenue in the State. The area is highly urbanized with a population of 5,591,589 [22]. It consists of thirty-three Local Government Areas, (LGAs) with four zonal Agricultural Development Programmes (ADPs) located at Saki, Ogbomosho, Oyo and Ibadan/Ibarapa.

3.2 Sampling Technique
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 areas to 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 poverty Indices was analyzed using Foster-Greer Thorbecke model and Decomposition analysis.

3.3 Poverty Indices
According to [23], poverty indices are the measurement of head count ratio (P_0), depth of poverty (P_1) and Severity of poverty (P_2). The measures related to the different dimension of the incidence of poverty. The three measures are based on a single formular but each index put different weight on the degree to which household or individuals falls below poverty line.

This approach is based on the mathematical formular which explains poverty indices anchored upon the existence of households classification according to income or consumption expenditure.

To determine poverty profile indices, it becomes necessary to use the so called P-alpha
Measured analyzing poverty; its mathematical formulation is derived thus:

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

Where; n = total number of households in population
q = the number of poor households
Z = the poverty line for the household
yi = household income
α = Poverty aversion parameter and takes on value 0, 1, 2

$$\left(\frac{Z - y_i}{Z} \right)^\alpha =$$

Proportion shortfall in income below the poverty line. α takes on value 0,1,2 to determine the type of poverty index. When α = 0 in FGT, the expression reduces to

3

$$P_0 \quad \left(\frac{1}{n}\right) q = \left(\frac{1}{n}\right) \hspace{2cm} (2)$$

This is called the Incidence of poverty, describing the proportion of the population that falls below the poverty line. When α =1 in FGT, the expression reduces to

$$P_1 = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{Z - y_i}{Z}\right) \hspace{2cm} (3)$$

and this is called the Poverty depth When α =2 in FGT, the expression becomes

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

This is called Poverty Severity Index. This index weighs the poverty of the poorest household more heavily than those just slightly below the poverty line. It adds to the poverty depth an element of unequal distribution of the poorest household's income below the poverty line.

4. RESULTS AND DISCUSSION
4.1 SOCIO-ECONOMIC CHARACTERISTICS OF RESPONDENTS
The selected characteristics of the sampled households as succinctly given in Table 1 shows that the majority of the respondents fell between the age 21 and 50 years and constituted 61.2% of the total household interviewed. Therefore, the majority of the respondents are middle-aged people. This distribution has two implications on poverty. While the distributions still rank all the respondents on the average at their economically active age, it also shows that they are still at the child bearing age. In the first reason cited, the ability of family to go about their daily activities in order to earn income with which they cater for their family basic needs is enhanced. Thus, these can result in reduction in poverty. Alternatively, the fact that most are still child bearing age leaves much to be desired. This is because, the larger the family size, the more thinly spread is the family's income on basic needs. Thus, leading to poverty aggravation. This is consistent with the findings of [24].
The gender distribution shows that 65.3% of the farmers were male while 34.7% of the farmers were females. It shows that majority of the farmers are men and shows that female participation is becoming significant in farming. This finding corroborates with those from earlier studies [25].
An assessment of the result of the analysis in Table 1 indicates that over half of those surveyed (78.2%) are married. About 11.2% of them are single while the rest (10.6%) are either divorced or widowed. The distribution generally shows that there are more married respondents than their single, divorced or widowed counterparts. This is consistent with the findings of [26].
Table 1 reveals that 24.7 per cent 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 educated 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 [27].
The distribution of respondents by household size is shown in Table 1. It is clear that most of the household have at least 5-9 members (62.4%), next to this 0-4 members (35.9%), those with household size between 10-14 members constitute 1.8%. From the analysis, this indicates that most of the 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 [28], [29], [30], [31] and [32] reveal that a larger sized household is associated with greater poverty incidence.
The result shows that majority 20.6% of the farming household members cultivates less than 1 hectare of land, 26.5% cultivates between 1.6 – 3 hectares while, 52.9% cultivates greater than 3 hectares and above in the study area. From the findings, majority of the farmers in the study area can be categorized as small-scale farmers. This conformed to the findings of [33].The result in table 1 shows that 62.9% of the farm households had no access to remittance, while 37.1% had access to

remittances. 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.

Table 1: Socio-economic characteristics of the respondents

Variables	Frequency	Percentages (%)
Age (yrs.)		
21-40	45	26.5
41-60	110	64.7
Above 60	15	8.8
Gender		
Female	59	34.7
Male	111	65.3
Marital Status		
Single	19	11.2
Married	133	78.2
Divorced/Widowed	18	10.6
Educational Status		
No formal education	42	24.7
Primary	44	25.9
Secondary	47	27.6
Tertiary	37	21.8
Household Size		
0-4	61	35.9
5-9	106	62.4
10 and Above	3	1.8
Farm Size(ha)		
less than 1.6	35	20.6
1.6-3	45	26.5
3 and Above	90	52.9
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

Source: Field survey, 2021

4.2 POVERTY ANALYSIS

Table 2 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% of the respondent farmers were actually poor. This proportion invariably represents the poverty incidence among the sample, and expectedly agreed with the earlier estimation of the proportion of the poor farmers (i.e. 27.3%) in the sample based on the poverty line definition.

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% of the poverty line to get out of poverty. 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%.

Table 2: 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

Source: Field survey, 2021

4.3 DECOMPOSITION ANALYSIS

The result of the decomposition analysis according to selected household's characteristics as presented in Table 3 revealed that poverty incidence was most noticed among household heads that were male, age over 30 years, low literacy level, household size of 9 and more. As a whole, the incidence of poverty in the study area was 0.7221 implying that 72.21% of the sampled farm households were actually poor. This proportion invariably agreed with the earlier estimation of the proportion of poor farm households (i.e., 76%) in the sample based on the poverty line definition. The study reveals that increase in household size results in increase poverty situation among households in the study area with the incidence, depth and severity highest with values 0.41509, 0.16161 and 0.08733, respectively for household with 5 to 9 members. The result also reveals that incidence, depth and severity of poverty appear higher with values 0.43243, 0.17183 and 0.09066 in male headed households than in female headed households. This may partly be as a result of lack of access to or low productive resources, education, credit, and decision making forums [34]. A close look at the educational level of household reveals that poverty reduces with improved educational level of household head. Although it appears that incidence of poverty is higher among households who had primary school education, this does not downplay the importance of education in poverty reduction. Evidence abounds on the positive impact of education on poverty reduction. Access to education does result in increase in the stock of human capital, and in turn labour productivity and wages which in turn results in reduction of poverty in the households. The role of capacity building and human capital development in eradicating poverty cannot be over emphasis. Education equips the people with information and new technologies that are necessary for enhancing economic activities [35]; [34]. The severity of poverty is higher among households headed by Labour of other farms. It might be completely misleading to absolutely agree that households headed by Labour of other farms in the study area are more vulnerable to poverty. According to [35], access to well-paying steady or secure jobs is germane to reducing poverty and food insecurity. On the other hand, [35] submitted that urban low income (salary/wages) earners or salary/wage workers with no other source of income are often vulnerable to poverty. [36] Added that holding to too long to low paying and unstable jobs put a household at high risk of poverty and food insecurity.

Table 3. Prevalence, Depth and Severity of poverty based on selected socio-economic variables

Variables	P_0 (incidence of Poverty)	P_1 (Poverty depth)	P_2 (Poverty severity)
Age (yrs.)			
21-30	0.66667	0.30114	0.17257
31-40	0.37500	0.20965	0.12514
41-50	0.28813	0.09482	0.05100
51-60	0.45098	0.16471	0.08830
61-70	0.40000	0.13612	0.06015
Gender			
Male	0.43243	0.17183	0.09066
Female	0.35593	0.14099	0.08438
Educational level			

No formal education	0.45238	0.16185	0.09621
Primary	0.50000	0.18641	0.09611
Secondary	0.48936	0.20716	0.11096
Tertiary	0.13513	0.07177	0.04207
Household size			
0-4	0.40983	0.16822	0.09484
5-9	0.41509	0.16161	0.08733
10 and Above	0.00000	0.00000	0.00000

Source: Field survey, 2021

5.0 CONCLUSION AND RECOMMENDATIONS
5.1 CONCLUSION

This study was carried out to analyse the decomposition of poverty among rural farming household in Oyo state, Nigeria using the data collected through questionnaire from 170 respondents who were selected through multistage sampling techniques. The result revealed that majority of the respondents is still within the economic and active age bracket while about 65.3% of the households are headed by male. The prevalence of poverty is higher among households headed by male, young with low literacy level, and large household size. The severity of poverty was higher among households headed by labour of other farms.

5.2 RECOMMENDATIONS

Based on the findings of this study, it is recommended that effective mass literacy programmes and campaign against high fertility rate are necessary to reduce the unappreciated rate of poverty since large household size and those with less educational level are poorer. And, the need for livelihood diversification is of utmost importance so as to pave ways for different income sources because more income source is capable of lifting them above the poverty line.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s

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