Assessment of Poverty Status among Maize Farmers in Osogbo Agricultural Development Programme Zone of Osun State

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Abstract

The quantitative determinant of poverty in Nigeria is a basic requisite for poverty reduction strategy and policy formulation. The paper examined the poverty status of maize farmers in Osogbo Adp zone, using a descriptive statistics, Foster, Greer and Thorbecke poverty (FGT) indices and logit regression model. The data used were generated from a survey involving 178 maize farmers which were selected using multistage sampling technique. The findings revealed that 86% were male, 84.3%, of the respondents were male, married, with mean age of 46.7 years. The mean household size and farm size were 8 percent and 1.31 hectares. The study showed that the respondents' poverty incidence (Po) was 28%, the poverty depth/gap (P1) was.4% and the poverty severity (P2) was 0.8%.The result of logit regression model indicated household size is a the major determinants of poverty among maize farmers. The study concluded that a larger proportion of maize farmers were poor and experienced some constraints such as high cost of food items and insufficient money to purchase food items due to their poverty status in the study area. Government should intensify the ongoing poverty alleviation and empowerment programs in order to reduce poverty among maize farmers in the study area.

Keywords: Poverty Status, Maize farmers, Assessment

INTRODUCTION

Agriculture is regarded as the cornerstone of Nigeria's economy and a major source of income to about 90 percent of the rural dwellers. With more than two-thirds of Nigeria's population depending on agriculture for their livelihoods, agriculture is central to Nigeria's economic development. Agriculture is critical to achieving global poverty reduction targets and it is still the single most important productive sector in most low income countries, often in terms of its share of Gross Domestic Product and almost always in terms of the number of people it employs (Oyakhilomen, *et al* 2014).

However, the agricultural sector has the highest poverty incidence and tackling poverty entails tackling agricultural underdevelopment. The huge size and potential of agriculture in most African economies suggests that strategies designed to promote the early stages of economic growth cannot ignore agriculture. (Garvelink,*et al*, 2012). The low income level of most families is not adequate to provide for their basic needs, especially maize farmers. Nigeria is currently the tenth largest producer of maize in the world, and the largest maize producer in Africa (International Institute for Tropical Agriculture,IITA, 2012). It is estimated that seventy percent of farmers are smallholders accounting for 90 percent of total farm output (Cadini, and Angelucci, 2013), hence this does not actually meet the demand supply of the crop thereby does not have any significant effect on their poverty status.

Poverty is a global phenomenon which threatens the survival of mankind. It cuts across creed, race, and space. The global headcount of extreme poverty has declined from about 42 percent in 1980 to 10 percent in 2016. The numbers of extreme poor globally have also declined within the same period, from 1.9 billion to 736 million (World Bank, 2018a). However, a slowdown in global growth is underway and expected to continue, which will slow down and even reverse progress, particularly for rural areas in the poorest countries (Laborde and Martin, 2018).Moreover, as poverty rates have decreased over time, reducing inequality will have a greater impact on poverty reduction than economic growth (Olindo,

et al, 2014). Given these trends, the ambitious goal of eradicating extreme poverty for all people everywhere will not be fulfilled if explicit actions to reach the extreme poor are not taken on board.

Poverty is a topical issue in developing countries especially Africa and Nigeria in particular. The dearth of studies on quantitative determinants of poverty in Nigeria is a major weak point in the county's poverty reduction policy and strategy formulation. (Olawuyi, et al.)

Objectives of the study

The general objective of this study is to assess poverty level among maize farming households in Osogbo Agricultural Development Programme zone. The Specific objectives of the study are to:

1. Identify the socio-economic characteristics of the respondents in the study area. .
2. examine the living condition of the respondents in the study area
3. Analyze the poverty level of the respondents in the study area.
4. examine the coping strategies employed against poverty by the respondents in the study area
5. Identify constraints to poverty status of the respondents in the study area.

Hypothesis of the study

H$_{o1}$: There is no significant relationship between the selected the socio-economic characteristics of maize farming households and their poverty level.

H$_{o2}$: There is no significant relationship between the coping strategies employed by the respondents and their poverty status in the study area.

Methodology

The study was carried out in Osogbo Agricultural development zone in Osun State. The Osun State Agricultural Development Programme (OSSADEP) is divided into 3 zones namely Osogbo, Ife/Ijesa and Iwo with its headquarters at Iwo. Osogbo Agricultural Development Zone comprises of twelve Local Government Areas out of 30 Local Government areas in Osun State with landed area of 9,251kilometers square is located between latitudes 7.0° North and 30.0° North of the equator and longitudes 4.0° East and 30.0° East of the meridian. It lies in the equatorial rainforest belt and lies between 300 and 600 above sea level with a largely gentle and undulating landscape and it capital is in Osogbo.

Multistage sampling technique was used to select the representative sample. Osun State Agricultural Development Programme (OSSADEP) is divided into 3 zones namely Osogbo, Ife/Ijesa and Iwo. The first stage involved purposive selection of Osogbo agricultural development zone from the three agricultural zones. This is due to the fact that the zone has high concentration of maize farmers which is in line with the work of (Oladejo and Ladipo et al) which stated maize farmers were concentrated in Osogbo agricultural development zone.

The second stage involved simple random selection of 42 percent of the selected blocks in Oshogbo in Osun State of Nigeria which gives a total of 5 blocks.

However, the third stage involved a random selection of 10 percent of the total number of registered maize farmers in all the selected blocks thus, a total number of 178 respondents constituted the samples for the study.

Methods of data analysis

Descriptive statistics (frequency, percentage, mean and standard deviation) was used to analyze the socio-economic characteristics of maize farming households in the study area; the living condition among maize farming households in the study area and coping strategies among maize farming households in the study area.

Foster, Greer and Thorbecke (1984) Poverty Index: was used to analyze poverty status among maize farming households in the study area; Poverty indices are the measurement of headcount ratio (P_0), depth of poverty (P_1) and severity (P_2). These measures are based on a single formula but each index put different weight on the degree to which household or individual falls below poverty line

The mathematical formula of Pα-alpha is written as follows;

$$P\alpha = \frac{1}{N}\sum_{i='1}^{q}\left(\frac{Z-Y_1}{Z}\right)^{\alpha}$$

Where Z = the poverty line for the household

q = the total number of individuals below poverty line

N = the total number of individuals in the reference population

Y_i = per capita expenditure

α = Forster-Greer-Thorbecke (FGT, 1984) poverty index: and takes on the values of 0, 1, and 2.

P_0 When, α = 0 gives the poverty incidence/ head count ratio

P_1 When, α = 1 the depth / gap of poverty

P_2 When, α = 2 the severity/intensity of poverty.

The mean per capita household expenditure (MPCHE)

MPCHE = Total per capita household expenditure = $\frac{Total\ Expenditure}{Household\ Size}$

Z= Poverty line 2/3 of the mean per capita expenditure

Logit Regression model: was used to analyze the association between the poverty status and selected socio-economic characteristics of the respondents in the study area;

$$P_i = E\left(Y_{1=\frac{1}{X_i}}\right) = \frac{1}{1+e^{-(\alpha+\beta X_i)}}$$

$$p_i = \frac{1}{1-e^{-z_i}}$$

Where $z_i = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 \ldots\ldots\ldots\ldots\beta_n X_n$

$Y_{i=1}$ If household is poor and 0 if otherwise

$X_{i=}$ Independent variables, I =1, 2, 3, 15, α_i and β_i

Y is the dependent variable while X_1 to X_{15} are the independent variables.

Y= Poverty level. 1 = poor, 0 = Non-poor

X_1= Age of household head (in years);

X_2 = Gender (dummy)If female 1, 0 otherwise

X_3 = Marital status (dummy)If married 1,0 otherwise

X_4 = Household Size (in numbers)

X_5 = Years spent in school (in years)

X_6 = Years of experience (in years)

X_7= Income from other occupation (#)

X_8 = member of social group (dummy)If member 1, 0 otherwise

x_9= Household dependency (ratio)

X_{10}= Source of power supply (dummy)If PHCN is 1, 0 otherwise

X_{11}= remittance (naira)

X_{12}= expenses on hospital bill (naira)

X_{13}= distance to water (km)

X_{14}= means of transportation (dummy) If trekking 1, 0 otherwise

X_{15}= method of waste disposal

Results and discussion

Socio-economic characteristics of respondents

Table 1 shows the frequency distribution of respondents by sex which shows that 86 percent were male while 14.4 percent were female. Indicating that, there were more male maize farmers' in the study area which maybe as result of farming operations requiring more strength. Age is an important socio-economic characteristic as strength for labour reduces with age. Table 1 revealed that more than half (65.2) percent of the respondents were aged between 31 and 50 years. About 12.9 percent aged between 60 and above this could be regarded as fairly old. Only (7.3) percent were young less than 30 years. The mean age of the respondent was 46.7, this implied the middle age dominated the study areas who are still in their economically active age.

Table1 shows that majority 84.3 percent of the respondents were married while (0.6) percent were widow and single (6.7) percent. This shows that majority were married which could result to larger households and the larger the household the more it affects the poverty status of the respondents. About (24.2) percent of the respondents had no formal education. In essence most of the respondents (74.2) percent had formal education as shown in table 1. This implies that a good number of the farmers in the study area were educated and this will enable them to be more efficient and rational in farm decision making. This is in line with Adebayo (2013), a good percentage of the respondents that had formal education which has a great influence on the limitation of poverty in the study area.

More than half (52.8 percent) of the respondents had between 6 and 10 members of household, only few 18.5 percent had more than 10 members. The mean household size of the respondents was 8 members. Majority (92.7 percent) of the respondents' primary occupation was farming while 7.3 percent of the respondents engaged in non-farming occupation.

Over half of the respondents have between 6-15 years of farming experience while less than 25 has more than 20 years of farming experience, which is an indication that the respondents have been in maize farming for many years and are well experienced. The mean farming experience was 15.6 years. Table 1 indicates that the mean farm size of the respondents in the study area was 1.3 hectares. Majority (86 percent), of the maize farmers have less than 2 hectares of farm land. While (0.6 percent) of the respondents have more than 5 hectares of land for farming. Table 1 revealed that (25.2) percent of the respondents annual income ranges between #401,000- N500,000, followed by 21.91 percent who earned above #500,000 and few earned less or equal to #100,000. The mean income per year was #400,861.8 while the

mean expenditure was #576,880.9. The result shows that the maize farmers spend more than they earn which could be as a result of their poverty.

Living conditions of the respondents

The table 2 revealed that 36.5 percent of the respondents own houses, 47.8 percent were rented, while others lived in houses owned by extended family, and inherited. This implies that more than half (52.1 percent) of the respondents do not pay money on house rent and can lead to reduction of poverty. The table revealed that majority (77.5) percent of the respondents lived in face to face apartment, while others lived in boys' quarters and flat. Over half (52.2) percent lived in houses made of blocks while others lived in houses made of bricks and mud. The housing conditions of a household provide good indicator of welfare measurement. (Akerele et al 2011). The table indicated that half of the respondents (50.6) percent of the respondents used pit latrine, while few (1.7) percent used bush. Majority (70.2) percent of the respondents used covered well, while few (5.1) percent used stream. Less than half of the respondents (42.1) percent burn their waste, while (9.6) percent used paid waste disposal method, and 31.5 percent used undeveloped lands. The table 2 revealed that majority (65.8) percent of the respondents used either private or public hospitals while other used traditional practitioner and self-medication. According to Akinbode, 2013, access to good medical care is essential to the overall well-being of the people.

Poverty status of the respondents

As shown in Table 3, the incidence of poverty among the respondents in the study area was (0.275) representing 28 percent of the farm households were that actually poor based on the poverty line with consumption expenditure level below the poverty line.

The poverty depth (P1) was 0.040 for the respondents in the study area; representing 4 percent, this indicated that poverty in the area was so deep. However, most of those who were poor were greatly below the poverty line. The poverty severity index (P2) was 0.008 for the respondents in the study area representing 0.8 percent of poorest among the poor respondents who requires the standard of living indicators, such as health care services, clean water and income generating activities.

The poverty line is computed as 2/3 of the per capita expenditure mean which gave N55, 845.49k. Therefore an household spending less than the amount mentioned above annually on consumption could be described as being poor relative to other households while any other household that spent the stipulated amount or higher on annual consumption could be described to be non-poor.

Coping strategies employed against poverty by the respondents

Table 4.5 shows the distribution of respondents coping strategies employed against poverty in the study area. The result showed that (64.0) percent respondents always relied on less expensive or preferred food, consume less variety of food (58.4) percent, pray to God in church or mosque(58.4) percent and limit portion size at meal time(38.2) percent, and occasionally use part of savings to buy food (47.2) percent,. The result further revealed that (59.6) percent never borrowed food or rely on others, rely on casual labour for food (63.5) percent, selling of asset (77) percent, and skipping entire days without eating (85.4) percent were coping strategies the respondents never explored.

The coping strategies were categorized into three which are; dietary change, increase in short term household food availability and rationing strategies.

Dietary change includes; rely on less expensive/preferred foods and consume less variety of food. However, rely on less expensive/preferred foods with mean score (2.46) ranked 1st among coping strategies of the respondents. They altered their diet by eating low cost food, this indicated that respondents just eat any food that is available which they might not like due to lack of income. This shows that respondents starts to change the consumption pattern, that is, dietary adjustment in the face of inadequate access to food (Adebayo, 2012). This was followed by consume less variety of food (2.37) which ranked 2nd, and everyone needs variety of foods to take balanced diet, when variety of food is not consumed it shows that the respondents were not taking balanced diet, which might not be good for their complete well-being.

Increase in short term household food availability includes; praying to God in church or mosque which ranked 1st in the category with mean score (1.89), people believe that when they pray to God he can send helpers their way. Using part of saving to buy food which ranked 2nd (1.58), when there are no food people will be left with no choice than to use part of their savings to eat, this was followed by purchase food on credit which with (1.08), this increases their short term household food availability. (Adebayo, 2012). Borrow food or rely on others (0.49), rely on casual labor for food (0.47), withdrawing of children from school (0.32), selling of assets (0.25).

Rationing strategies includes; limit portion size at mealtimes (2.02), this shows they have to limit what they eat, since man cannot do without food rather than going hunger. Reduce number of meals per day (1.67), when number of meals

per day is reduced there will be more for subsequent days ahead. Reduce adult consumption (1.15), children are most important; they don't understand that there is no food .Therefore, adult need to sacrifice for their children to be feed. Skip entire days without eating (0.20).This implies respondents in the study area employed different coping strategies in other to escape poverty.

The mean value of the copying strategies employed by the respondents was 1.5, this shows that any copying strategies that fall above the mean value were copying strategies that were used maximally by the respondents and those that fall below the mean value were used minimally.

Constraints to poverty status among the respondents

Table shows the distribution of respondents according to constraints to poverty. The table indicates that lack of money with weight mean score (2.77) rank 1st as the most severe constraints to poverty in the study area, money is an important tool in live without money there is limit to what an individual could do or achieve in live, lack of money will definitely leads to poverty. High cost of food items ranked 2nd (2.65), according to Adepoju et el (2012), household purchasing power would be eroded in case of high cost of food items thereby reducing access to food. Poor access to credit facilities ranked 3rd (2.53), credit assists in purchase of farm inputs such as fertilizer, herbicides, improved seeds and investment demand which will ultimately increase productivity,(Adekoya 2014).

Large family size ranked 4th (2.46),household size also increases the likelihood of being poor and this could be because of increase in household size directly or indirectly reduces income per-head (per-capita income) as well as impair standard of living of the households. (Okpachu, et al, 2017)Post harvest losses ranked 5th (2.44), post harvest losses affect farmers profit which has way of reducing farmers income and can lead to poverty.

Lack of farm input ranked 6th (2.36), when farmers lack input it will affect their yield and can lead to low productivity. Poor transportation network ranked 7th, poor transportation network affect the movement of goods from one place to the other, which affect farmers income and productivity. According to Warr, 2010 improving rural roads help rural communities to engage with the market economy and lift themselves out of poverty.

Small farm size ranked 8th, this indicates that the respondents were small-scale farmers, a fact which is likely to contribute to the incidence of poverty in there households. Poor marketing channel ranked 9th, when farmers lack proper market channel it will affect their profit and returns which will yield to low profit and affect their poverty status and indebtedness ranked 10th.

Hypothesis

Household size was significant at 1 percent level which was positive and implied that household size has a great importance in the determinant of poverty status, the larger the household size the higher the probability of been poor. Number of years spent in school was significant at 1 percent level and negative which indicates that more years spent in school, lower the probability of been poor. Farm size was significant at 1 percent and also negative, the larger the farm size, the lower the probability of been poor. A positive and significant relationship exist between limit portion size at mealtimes, rely on less expensive/preferred foods , consume less variety of food at 1 percent level of significant while praying to God in church or mosque at 5 percent level of significant.

Conclusion and Recommendation

Objective on poverty status showed that the incidence of poverty (P_0) among the respondents in the study area was (0.275) representing 27 percent of the farm households were actually poor based on the poverty line with consumption expenditure level below the poverty line, the poverty depth (P_1) was 0.040 for the respondents in the study area; this indicated that poverty is not only persuasive but also deeper. However, most of those who were poor were very deficient on spending i.e. greatly below the poverty line and require much improvement in spending to reach the poverty line while the poverty severity index (P2) was 0.008. The severity of poverty index was 0.008 which represents the poorest among the poor of the respondents. Around 27.0percent of the respondents were poor in the study area.

Recommendation

1. Vocational and adult education will improved the level of education and awareness on better agricultural practices in the study area. Government should also create awareness on birth control to reduce large family size.
2. Provision of community based water closet system of toilet should be encouraged as the type of toilet system has a direct impact on the health of the people. The provision of bore-hole system of water supply through community endowment should be encouraged as provision of pipe-borne. Incineration system should also be provided as indiscriminate burning and disposal of refuse could cause air borne diseases and environmental pollution.

3. Provision of other income sources in the form of empowerment programmes into other fields of agriculture which will improve the respondents' stream of income, improve the poverty line and reduce the vulnerability of the respondents to poverty.

4. The respondents should be encouraged to join and become membership of social group especially farmers association, it is believed to have many competitive advantages in terms of risk reduction and uncertainty because of effective access to relevant information.

Table 1: Distribution of respondents according to socioeconomic characteristics

Social economic characteristics	Frequency	Percentages	Mean
Sex			
Male	153	86	
Female	25	14.4	
Age (in years)			
≤ 30	13	7.3	
31-40	37	20.8	46.69
41-50	79	44.4	
51-60	26	14.6	
Above 60	23	12.9	
Marital status			
Single	12	6.7	
Married	150	84.3	
Divorced	1	0.6	
Separated	1	0.6	
Widowed	14	7.9	
Education level			
No formal education	43	24.2	
Primary education	51	28.7	
Secondary education	47	26.4	
Tertiary education	34	19.1	
Adult education	3	1.7	
Household size			
≤5	51	28.7	
6-10	94	52.8	8
Above 10	33	18.5	
Primary occupation			
Farming	165	92.7	
Non- farming	13	7.3	
Farming experience (in years)			
≤5	12	6.7	
6-10	66	37.1	15.6
11-15	34	19.1	
16-20	23	12.9	
20 above	43	24.2	
Farm size (hectares)			
≤2	153	86	1.31
3-5	24	13.5	
5 above	1	0.6	
Income level per year			
≤100,000	7	3.9	
101,000-200,000	18	10.1	
201,000-300,000	35	19.7	
301,000-400,000	34	19.1	
401,000-500,000	45	25.3	
Above 500,000	39	21.9	

Source: Field survey, 2019.

Table 2: Distribution of respondents according living conditions of the respondents

Variables	Frequency	Percentages
Ownership of residential buildin		
Personal house	65	36.5
Rented	85	47.8
Extended family	6	3.4
Inherited	22	12.4
Type of apartment		
Face-face	138	77.5
Boys quarters	3	1.7
Flat	37	20.8
Type of toilet		
Pit latrine	90	50.6
Bush	3	1.7
Water closet	85	47.8
Source of water		
Pipe borne water	33	18.5
Covered well	125	70.2
Uncovered well	11	6.2
Stream	9	50.1
Method of waste disposal		
Open waste dump site	30	16.9
Burnt	75	42.1
Paid disposal	17	9.6
Undeveloped land	56	31.5
Type of medical facility		
Private hospital	21	11.9
Public hospital	96	53.9
Traditional medicine	30	16.9
Self-medication	31	17.4

Source: Field survey, 2019

Table 3: Distribution of respondents according poverty status of the respondents

Poverty status	Poverty Index
Poverty incidence (P0)	0.275
Poverty depth(P1)	0.040
Poverty severity (P2)	0.008

Source: Field survey, 2019

Table 4: Distribution of respondents according to coping strategies employed against poverty

Coping strategies	Always	Occasional	Rarely	Never	WMS	Rank
1.Dietary Change						
a. Rely on less expensive/preferred foods	114(64.0)	37(20.8)	21(11.8)	6(3.2)	2.46	1st
b. Consume less variety of food	104(58.4)	45(25.3)	20(11.2)	9(5.1)	2.37	2nd
2. Increase short term household food availability						
c. Borrow food or rely on others	1(0.6)	14(7.9)	57(32.0)	106(59.6)	0.49	4th
d. Purchase food on credit	3(1.7)	58(32.6)	67(37.6)	50(28.1)	1.08	3rd
e. Use part of saving to buy food	18(10.1)	84(47.2)	60(33.7)	16(9)	1.58	2nd
f. Selling of assets	0 (0.00)	3(1.7)	38(21.2)	137(77)	0.25	7th
g. Praying to God in church or mosque	104(58.4)	7(3.9)	12(6.8)	55(30.9)	1.89	1st
h. Rely on casual labor for food	4(2.3)	11(6.2)	50(28.1)	113(63.5)	0.47	5th
i. Withdrawing of children from school	1(0.6)	8(4.5)	38(21.3)	131(73.6)	0.32	6th
3.Rationing Strategies						
j. Limit portion size at mealtimes	68(38.2)	51(28.7)	55(30.9)	4(2.2)	2.02	1st
k. Reduce adult consumption	15(8.4)	46(25.8)	68(38.2)	49(27.5)	1.15	3rd
l. Reduce number of meals per day	34(19.1)	69(38.8)	57(32.0)	18(10.1)	1.67	2nd
m. Skip entire days without eating	0 (0.00)	11(6.2)	15(8.4)	152(85.2)	0.20	4th

Source: Field survey, 2019

Table 5: Distribution of respondents according to constraints to poverty status

Constraints	Very severe	Severe	Mild	WMS	Rank
Poor access to credit	120(67.4)	34(18.0)	26(14.6)	2.53	3
Lack of money	143(80.3)	29(16.3)	6(3.4)	2.77	1
High cost of food items	125(70.2)	43(24.2)	10(5.6)	2.65	2
Indebtedness	68(38.2)	36(20.2)	74(41.6)	1.96	10
Lack of input	92(51.7)	56(31.5)	30(16.9)	2.36	6
Poor transportation network	78(43.8)	80(44.9)	20(11.2)	2.32	7
Poor marketing channel	56(31.5)	76(42.7)	46(25.8)	2.06	9
Poor water supply	20(11.2)	39(21.9)	119(66.9)	1.44	13
Post harvest losses	82(46.1)	48(27.0)	48(27)	2.44	5
Small farm size	62(34.8)	71(39.9)	45(25.3)	2.09	8
Large family size	96(53.9)	70(39.3)	12(6.7)	2.46	4
Poor storage facilities	40(22.5)	76(42.7)	62(34.8)	1.88	11
Crop failure	30(16.9)	46(25.8)	102(57.3)	1.60	12
Chronic illness	4(2.2)	10(5.6)	164(92.1)	1.1	14

Source: Field survey, 2019

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