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Analysis of cocoa farmer's poverty status in Abia State, Nigeria: The Foster, Greer and Thorbeck (FGT) decomposable poverty measure

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Abstract

A poverty measure is said to be decomposable if the poverty quota or size of a group is a weighted average of the poverty measures of the individuals in the group. This study analyzed Cocoa farmer's poverty status in Abia State, Nigeria with the application of Foster, Greer and Thorbeck (FGT) decomposable poverty measure. A total of 90 farm households found in Ikwuano, Umuahia North and Bende Local Government Areas (LGAs) of Abia State who were the major Cocoa producing LGAs of the State were chosen for the study. A Multi-stage purposive sampling technique was adopted in selecting the respondents. Descriptive statistics and Foster-Greer-Thorbeck (FGT) decomposable poverty measure was employed in analyzing the research objectives. Result from the socio economic characteristics shows that majority (86.67%) were males while 13.33% were females. Analysis from the FGT showed that 36.67% of Cocoa farmers in Ikwuano LGA fell below the estimated poverty line while the other 63.33% were classified as non-poor, whereas 40% of Cocoa farmers in Umuahia North LGA were moderately poor while the other 60% were classified as non-poor. In Bende LGA, 10% of the Cocoa farmers were extremely poor, 36.67% were moderately poor while the remaining 53.33% were classified as non-poor. The result implies that the poverty status in the three Cocoa producing LGAs of the State varies; with greater percentage of the Cocoa farmers classified as non-poor while the others were categorized as poor. It is therefore recommended that greater equality in income distribution should achieved by improving the productivity of the poor Cocoa farmers, especially through increasing their credit facilities, basic education, health and technical skills.

Keywords: Cocoa Farmers, Poverty Status, Foster-Greer-Thorbeck (FGT) decomposable poverty measure, Abia State, Nigeria

Introduction

About 2.8 billion persons of the World's population live on less than $2 a day, and 1.4 billion on less than $1 a day (World Bank, 2013). Poverty is a major limitation of economic development and the dearth of economic opportunity is seen to increase the poverty level of an individual or household.

Research has shown that majority (> 70 %) of the Cocoa (*Theobroma cacao*) farmers are smallholders who live in the rural areas faced with extreme inequality and poverty coupled with the use of obsolete tools and technology; devoid of social amenities (such as electricity, pipe borne water, hospitals and schools); with their income very low (Agwu *et al*., 2014). The International Bank for Reconstruction and Development – IBRD (2008) also observes that high level of income inequality and poverty exists in most subsistence farming households in Nigeria. Canagarajah *et al*., (1997) posits that most of the Cocoa farmers are at the bottom of income distribution chart, and are living in abject poverty. Since the source of livelihood

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and income generation of majority of the poor is agriculture, alleviating poverty entails boosting agricultural production.

The production of this very important cash crop called Cocoa has been experiencing a downward trend which has resulted in poverty and food insecurity to the cash crop farmers. Food insecurity ranks the topmost among the developmental problems facing Nigeria as a whole (Okezie *et al*., 2011). The already fragile food security situation in Sub Saharan Africa and Nigeria in particular is at risk from emerging stress factors. To reduce poverty and hunger in the region, there is an urgent need for global, national, and local actors to pursue innovative approaches to improve agricultural productivity (Iheke and Nwaru, 2013). Moreover, Nigeria which used to be second largest country in Cocoa production in the world after Ghana is presently in the fourth position after Cote d'ivoire, Indonesia and Ghana with production of 210 thousand metric tons representing 5.9% of the world production. This gloomy situation has generated some unpleasant concern to the Nigerian economy and therefore calls for an immediate attention of government, individuals and researchers.

Cocoa remains the most important cash crop in terms of foreign exchange earnings. Nigeria is one of the principal producers of Cocoa and has risen as a major exporter of the product over the last century. In terms of foreign exchange earnings, no single agricultural export commodity has earned more than Cocoa. Nigeria is the fourth leading exporter of Cocoa in the world. Cocoa is mainly exported as beans, processing activities being limited within the country. Cocoa is the main agricultural export in Nigeria (FAO - Food and Agricultural Organization, 2013). Agwu *et al*., (2014) asserts that enterprises that promote income growth and distribution; and enhance revenue of poor households are most likely to lead to poverty reduction; and one of such enterprises is Cocoa production. The export of Cocoa beans accounts for the largest single non-oil foreign earning commodity and contributes significantly to Nigeria's (GDP) Gross Domestic Product (Ogunniyi, 2015).

Foster, Greer and Thorbeck - FGT (1984) proposed a family of poverty indices based on a single formula capable of incorporating any degree of concern about poverty through the poverty aversion parameter α. A poverty measure is said to be decomposable if the poverty measure of a group is a weighted average of the poverty measures of the individuals in the group. An important property of decomposable poverty measures is that a *ceteris paribus* reduction in the poverty measure of a subgroup always decreases poverty of the population as a whole. Decomposable poverty measures are particularly useful in poverty studies where a population is broken down into subgroups defined along ethnic, geographical or other lines. We can use these measures to obtain the contribution of each subgroup to total poverty and to estimate the effect of a change in subgroup poverty on total poverty (Todaro and Smith, 2009).

This study therefore provides a deeper understanding of the poverty status among Cocoa farmers in Ikwuano, Bende and Umuahia North LGA of Abia state, Nigeria. The research findings will provide a quantitative policy framework to tackle the poverty problems among Cocoa farmers. Consequently, for the Cocoa farmers to increase their income, earn foreign exchange and reduce food insecurity; their poverty situation has to be reviewed and abridged. The research is therefore aimed at exploring the poverty status of Cocoa farmers in Abia State, Nigeria.

Methodology

Description of the Study Area

This study was carried out in three major Cocoa producing Local Government Area of Abia State, Nigeria. Abia State is situated in the South-East geo-political zone of Nigeria. Abia State lies between longitudes 7^{o} 23'E and 8^{o} 2'E East of the equator and latitudes 4^{o} 47'N and 6^{o} 12'N North of the Greenwich Meridian. The State is located East of Imo State and shares common boundaries with Anambra, Enugu and Ebonyi States in the North West and North East respectively. On the East and South East, it is bounded by Cross River and Akwa Ibom States and by Rivers State on the South. Abia State is made up of 17 local government areas and most of the people especially the rural dwellers are engaged mainly in subsistence farming.

Abia State is one of the Cocoa producing states in Nigeria. The State is divided into three agricultural zones namely; Umuahia, Ohafia and Aba Agricultural Zones. Umuahia and Ohafia Agricultural Zones are the two major zones of Cocoa production in the state. According to Abia State Government (2012) Cocoa is majorly produced in Bende, Ikwuano, Umuahia North and some parts of Ukwa East and West.

According to Nwaru (2005) most families in Abia state are involved in one farming activity or the other as a primary or secondary occupation, over 70% of the population is involved in agriculture as an occupation. The state is blessed with favourable warm climate and sufficient moisture ideal for the growing of tree crops, root and tuber crops, cereals, vegetables, nuts and food crops including rice, while a good number of the people engage in trading on various agricultural produce, either on retail or wholesale basis. Some of the people engage

in non-farm economic activities, like craft making, carpentry, and bricklaying. Livestock are also kept especially on a small-holder basis (Nwaru and Iheke, 2010).

Sampling Technique and Size

A Multi-stage Purposive Sampling Technique was adopted in selecting the respondents. Data were collected in stages. In the first stage, Umuahia Agricultural zone and Ohafia Agricultural zone were purposively selected from the three agricultural zones in Abia state; because the zones are the major areas of Cocoa production coupled with the presence of higher number of Cocoa farming households. In the second stage, three (3) Local Government Areas (LGAs) were purposively selected from the two agric. zones; which were Ikwuano, Umuahia North and Bende LGAs of Abia State. The selection was based on the fact that the LGAs were the major Cocoa producing LGAs in the State. In the third stage, (3) three Autonomous Communities were purposively selected from each of the Local Government Areas; making a total of (9) nine Autonomous Communities. In the fourth stage, 10 (ten) Cocoa farming households were purposively selected from the nine (9) Autonomous Communities. In all, a total of 90 Cocoa farming households were enlisted for the study.

Analytical Technique

ι. Socio-economic characteristics of the Cocoa farmers were analyzed with the application of descriptive statistics, such as mean, percentages and frequency counts.

ιι. Assessment of the poverty status of the Cocoa farming households was realized with Foster-Greer-Thorbeck (FGT) decomposable poverty measure. The major reason for this choice is due to its decomposability and usage by IBRD, FAO and other agencies.

The general Foster, Greer and Thorbecke (FGT) poverty measure (Pαi) is expressed as

$$P_a = \frac{1}{n}\sum_{i=1}^{q}\left\{\frac{z-Yi}{z}\right\}^{\alpha} \quad - - - - - - - - \quad 1$$

$$\text{When } a = 0, \text{ i.e. Poverty Incidence or Head count } P_0 = \frac{1}{n}\sum_{i=1}^{q}\left\{\frac{z-Yi}{z}\right\}^{0} = \frac{q}{n} \quad 2$$

$$\text{When } a = 1, \text{ i.e. Poverty Incidence or Head count } P_1 = \frac{1}{n}\sum_{i=1}^{q}\left\{\frac{z-Yi}{z}\right\}^{1} - \quad 3$$

$$\text{When } a = 2, \text{ i.e. Poverty Incidence or Head count } P_2 = \frac{1}{n}\sum_{i=1}^{q}\left\{\frac{z-Yi}{z}\right\}^{2} - \quad 4$$

The FGT index of the Cocoa Farmers will be estimated as:

$$Pa = \frac{1}{N}\sum_{j=1}^{q}\left\{\frac{z-Yi}{z}\right\}^{\alpha} \quad - - - - - \quad 5$$

Where Pa = Weighted FGT Poverty Index

q = Number of Cocoa farmers below the Poverty line/number of poor Cocoa farmers

Yi = Per capita Expenditure of the Cocoa farmers

α = Degree of Concern for the depth of poverty, and takes the values 1, 2, 3…

Z = Poverty Line (two-third of Mean Per Capita Household Expenditure (MPCHE) of the farmers); and n = total number of Cocoa farmers in the study area

Po (Head Count) measures prevalence of Poverty

P_1 (Poverty Gap Index) measures the depth of poverty, while

P_2 (Squared Poverty Gap) measures Poverty severity

$$\text{Per Capita Household Expenditure} = \frac{\text{Total Household Monthly Expenditure}}{\text{Household size}} \quad - - \quad 6$$

The poverty line that was used in the study was based on the Cocoa farmers' monthly consumption expenditure. The classification of household poverty status was based on Mean Per Capita Household Expenditure (MPCHE).

$$\text{MPCHE} = \frac{\text{Total Per Capita Household Expenditure}}{\text{Total Number of Cocoa Farming Households}} \quad - - \quad 7$$

Two – thirds (2/3) of the Mean Per Capita Household Expenditure (MPCHE) was used as the moderate poverty line, while one – third (1/3) of MPCHE was used as the line for extreme poverty, i.e. extreme poverty was defined as 1/3 of the mean per capita total household expenditure. Cocoa farmers with MPCHE less than this would be considered extremely poor, (following Iheke and Nwaru, 2013) while those spending > 2/3 of MPCHE are considered to be non-poor Cocoa farmers.

Results and Discussion

Socio – Economic Characteristics of Cocoa Farmers in Abia State, Nigeria

Table 1 is the socio economic characteristics of the Cocoa farmers in Abia State.

From Table 1, it was observed that a greater percentage of the respondents (86.67%) were males and only 13.33% were females. This could be attributed to the high intensive labour requirement for Cocoa farming which the male gender could afford. Ebewore and Emuh (2013) observed that females were mostly involved as helpers and suppliers of labour in some meager aspect of the business, such as weeding, processing and some marketing operations.

To a large extent, age of an individual dictates his availability as a member of the workforce. Greater percentage of the farmer's age ranged from 59 – 68 years (34.44%) and 49 – 58 years (24.44%). This implied that there were older Cocoa farmers compared to their younger counterparts and this could have a negative impact on Cocoa production since young people are economically active, stronger and are expected to cultivate larger farm size compared to the older farmers.

Table 1. Summary of Socio Economic Profile of Cocoa Farmers

	Frequency		Percentage (%)
Gender			
	Male	78	86.67
	Female	12	13.33
Total		**90**	**100**
Age (Years)			
	18-28	4	4.44
	29-38	7	7.78
Minimum (18)	39-48	15	16.67
Maximum (78)	49-58	22	24.44
Mean (55)	59-68	31	34.44
	69-78	11	12.22
Total		**90**	**100**
Membership of Cooperative Society			
	Yes	14	15.56
	No	76	84.44
Total		**90**	**100**
Sources of Credit			
	Bank Loan	4	4.44
	Equity/Personal Savings	69	76.67
	Relatives/Friends	12	13.33
	Cooperative Organizations	1	1.11
	Others	4	4.44
Total		**90**	**100**
Farm Size (Hectare)			
	1-4	12	13.33
	5-8	19	21.11
Minimum (1)	9-12	15	16.67
Maximum (20)	13-16	28	31.11
Mean (14)	17-20	16	17.78
Total		**90**	**100**
Household Size (Person)			
	1-3	2	2.22
	4-6	16	17.78
Minimum (1)	7-9	42	46.67
Maximum (15)	10-12	24	26.67
Mean (7)	13-15	6	6.67
Total		**90**	**100**

Source: Field Survey Data, 2016

The implication of the foregoing is the decreasing availability of an energetic population who could cope with the task of farm operations. Alternatively, this could mean that the older Cocoa farmers might be experienced enough and could afford the huge financial requirements in the establishment and maintenance of Cocoa farms. Also from the age distribution of the respondents in Table 1; 29 – 38 years (signifying 7.78%) and 18 – 28 years (4.44%) represents the least percentage of age ranges. This has a lot of negative implications as the able bodied middle aged farmers (youths) who can cope better with the daily challenges of the enterprise and readily accept new innovations are not enough.

Cooperative is defined as a registered voluntary association of persons, with a common interest formed and operated along democratic principles, for the purpose of economic and social interest. Majority of the Cocoa farmers (84.44%) do not belong to any cooperative society.

Credit helps farm firms to meet seasonal and annual fluctuation in income and expenditure and also for the adoption and acquisition of new technologies. A total of 76.67% of the respondents opined that they use equity capital, while 13.33% got their financial assistance from friends and relatives. The low bank loan (4.44%) can be as a result of unavailability of collaterals or credit unworthiness of the farmers. Lack of credit is generally recognized as one of the major constraints not only in expanding production but also in modernizing agriculture. Kanu (2012) observed that high frequency of personal savings implies that the institutional sources of finance were not well developed and advanced. Also, institutional agencies may not be eager to give loans to farmers due to the inherent risk associated with agriculture.

Majority of the Cocoa farmers (31.11%) cultivated 13-16 hectares of Cocoa, while 21.11% had 5-8 hectares. About 17.78% of the respondents had farm sizes between 17-20 hectares of Cocoa. Only 13.33% cultivated 1-4 hectares. Cocoa farming involves large expanse of farm land. This result implied that majority of the Cocoa farmers has enormous areas of farm land, but were limited due to inaccessible roads, unskilled and semi-skilled labourers (most especially the abled bodied youths) and absence of credit facilities for innovation adoption; hence, they produce below their optimal levels. This result is contrary with Ebewore *et al*., (2013) that majority of the Cocoa farmers were small scale who operated near subsistence level of productivity.

Household size is defined as the total number of individuals headed by a family head who resides in a given apartment. A total of 46.67% of the Cocoa farmers have between 7 and 9 household members, 26.67% have between 10 and 12 members, while 6.67% had 13-15 members in their household. Only 2.22% of the respondents have 1-3 persons. The mean household size was 7 persons. The larger household size connotes that marriage is highly cherished by majority of the respondents which has implication on family labour supply. Similarly, having a larger household size may provide most of the labour needed for Cocoa production, thus, reducing the cost expanded in hiring labourers, thereby leading to increased productivity. On the other hand, Akin-Olagunju and Omonona (2014) observed that Cocoa farmers with larger household size are usually associated with low per capita income especially in resource-constrained economies. In other words, large household size is associated with poverty.

Figure 1 is Pie Chart Showing Sources of Income among Cocoa Farmers in Abia State. The major source of income is equity/personal savings (77%) followed by income from relatives/friends (13%).

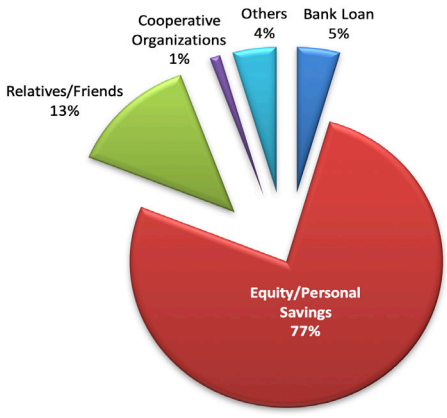

Figure 1. Explosive Pie chart showing sources of income among Cocoa farmers in Abia State, Nigeria (Field Survey Data, 2016)

Poverty Status of Cocoa Farmers in Abia State, Nigeria

The fundamental principle in the determination of the FGT decomposable poverty measure is the estimation of the poverty line. The estimation of the poverty line involves the valuation of the Mean Per Capita Household Expenditure (MPCHE) of Cocoa farmers based on their basic consumption expenditure. The MPCHE was derived for Cocoa farmers in Ikwuano, Umuahia North and Bende L.G.A., and as a group. This result further assisted in the determination of the poverty status of the Cocoa farmers.

Table 2. Mean Per Capita Expenditure (MPCHE) of Cocoa Farmers in Ikwuano LGA; based on their Basic Needs

Basic Needs (Consumption Expenditure)	Amount/Month (₦) MPCHE	Amount/Annum (₦) MPCHE	Percentage (%) of Total Expenditure
3 square meal (food)/drinks	11200.00	134400.00	30.12
Clothing	6050.00	72600.00	16.25
Health/Medication	2766.67	33200.04	7.43
Education	1600.00	19200.00	4.29
Rental Value of Residence/shelter	4833.33	57999.96	12.98
Transportation Cost	7883.33	94599.96	21.18
Miscellaneous	2886.67	34640.04	7.75
TOTAL MPCHE	**37,220.00**	**446,640.00**	**100**
2/3 of MPCHE	24,813.33	297,760.00	
1/3 of MPCHE	12,406.67	148,880.00	

Source: Field Survey Data, 2016

Table 2 shows the average monthly and yearly expenses on basic needs of Cocoa farmers in Ikwuano LGA of Abia State. Food, which is a very basic necessity accounted for about 30.1% of the total MPCHE (Mean per Capita Household Expenditure). The cost of transportation (21.18%) was second highest in terms of the MPCHE of Cocoa farmers in the study area. The amount spent on clothing, shelter, miscellaneous and health care constituted 16.25%, 12.98%, 7.75% and 7.43% respectively. Education (4.29%) has the least percentage of MPCHE. Literacy rate determines the levels of poverty and the distribution of income in an economy. Improving access to education, for example, can reduce inequality (and hence poverty). World-Bank Nigeria Country brief in 2012 declared that the Nigerian economy has realized rapid and impressive economic growth in the last few years, currently estimated at 7.9 percent per annum. Iheke and Nwaru, (2013) observed that as households acquire more education, their rise out of poverty increases. Therefore, increased agricultural productivity depends primarily on the education of the rural farmers to understand and accept the complex scientific changes which are difficult for the illiterate rural farmer to understand.

Greater percentage of MPCHE was spent on food items. The findings corroborated with that of Okezie *et al*., (2011) and Adekemi *et al*., (2012) that food is the most fundamental human need. A study conducted in Akwa Ibom State in 2010 by Etim *et al*., confirms that food constituted the highest Mean Per Capita Expenditure of rural farm households.

Two – thirds (2/3) of the Mean Per Capita Household Expenditure was taken for the moderate poverty line for Cocoa farmers in Ikwuano LGA, while one – third (1/3) was taken as the core/extreme poverty threshold. The value of the moderate poverty line was define as ₦24,813.33 while the extreme poverty line was put at ₦12,406.67. Based on these estimated poverty thresholds, Cocoa farmers in Ikwuano LGA were classified into mutually exclusive groups as presented in Table 3

Table 3. Classification of Cocoa Farmers in Ikwuano LGA, According to Poverty Status

Poverty Status	MPCHE Amount (₦)	Frequency	Percentage (%)
Extremely/Core Poverty (1/3 of MPCHE)	< 12,406.67	2	6.67
Moderately Poor (2/3 of MPCHE)	12406.67 ≤ Z < 24813.33	9	30.00
Non Poor (> 2/3 of MPCHE)	> 24813.33	19	63.33
		30	**100**

Source: Field Survey Data, 2016

Table 3 shows that only 36.67% of Cocoa farmers in Ikwuano LGA fell below the estimated poverty line while the other 63.33% were classified as non-poor. Non-poor Cocoa farmers in Ikwuano LGA were those farmers whose per capita household expenditure (MPCHE) was above or was equal to two-third (2/3) of the mean per capita expenditure of all the Cocoa farmers in Ikwuano, while those whose per capita expenditure was below two-third of the mean per capita expenditure were classified as poor. Based on this development, poverty line was constructed as two-third of the mean per-capita expenditure of all the Cocoa farmers in Ikwuano LGA; which was ₦24,813.33. This implies that Cocoa farmers in Ikwuano LGA whose monthly per capita expenditure fell below ₦24,813.33 were classified as poor while Cocoa farmers in Ikwuano whose per capita expenditure equaled or was above the poverty line were classified as non- poor.

The implication of this result is that majority of the Cocoa farmers in the study area were non-poor. Lawal *et al*., 2011 and Adepoju, 2012 opined that the number of those in poverty has continued to increase In Nigeria, despite the various efforts of government to reduce the incidence through different poverty alleviation programmes and strategies. In a contrasting view, Osayande and Osabuohien (2016) stated that the number of poor Nigerians is put as 58 million or 33.1 percent of the population. This represents an improvement from the previous study conducted in 2009/2010 which put the poverty level at 61% of Nigeria's population. The promotion of Cocoa farming can stimulate linkages between farm and other non-farm activities, which are important for poverty reduction. Iheke *et al*., (2013) suggested that to reduce poverty and hunger in the region, there is an urgent need for global, national, and local actors to pursue innovative approaches to improve agricultural productivity.

Table 4. Mean Per Capita Expenditure (MPCHE) of Cocoa Farmers in Umuahia North LGA; based on their Basic Needs

Basic Needs (Consumption Expenditure)	Amount/Month (₦) MPCHE	Amount/Annum (₦) MPCHE	Percentage (%) of Total Expenditure
3 square meal (food)/drinks	11830.00	141960.00	25.70
Clothing	7850.00	94200.00	17.05
Health/Medication	2730.00	32760.00	5.93
Education	2399.33	28791.96	5.21
Rental Value of Residence/shelter	13833.33	165999.96	30.05
Transportation Cost	3606.67	43280.04	7.83
Miscellaneous	3773.33	45279.96	8.19
TOTAL MPCHE	**46,022.67**	**552,271.92**	**100**
2/3 of MPCHE	30,681.78	368,181.28	
1/3 of MPCHE	15,340.89	184,090.64	

Source: Field Survey Data, 2016

Table 4 shows the mean per capita household expenditure of Cocoa farmers in Umuahia North LGA of Abia State. From the table it is observed that rental value of residence/shelter accounted for a whopping 30.05% of the MPCHE of the farmers. This could be as a result of high cost of living experienced in Umuahia Metropolis as compared to other rural areas of the state. People in towns and cities may have more wealth and resources due to higher infrastructural facilities and employment than those in villages or hamlets, their standard of living is also generally higher.

Food, clothing, miscellaneous expenses and transportation cost constituted 25.7%, 17.05%, 8.19% and 7.83% respectively. A total of 5.93% was spent on medication and health care while 5.21% was spent on education. Greater percentage of MPCHE was spent on food items. The findings also agreed with that of Okezie *et al*., (2011) that food is the most fundamental human need. Asogwa *et al*., (2012) observed that a 1% increase in household income, farm size, economic efficiency and formal education would reduce the intensity of household poverty by 2.69%, 2.28%, 2.21% and 1.02% respectively, and vice versa. On the other hand, a 1% increase in the total value of household assets and the extent of agricultural product commercialization would reduce the intensity of household poverty by 0.15% and 0.06% respectively, and vice versa.

The implication of this result is that fewer amounts were spent on transportation, medication and education respectively. In regards to transportation cost, Umuahia North LGA of Abia state has more efficient road network compared to Ikwuano LGA. This justified the results of Cocoa farmers' MPCHE on transportation in Ikwuano LGA; which accounted for 21.18%,

while that of Umuahia North LGA accounted for only 7.83%.

Okpachu *et al*., (2014) posits the major problems facing Agricultural productivity in Nigeria is illiteracy. This has over the years posed great challenges to Agricultural development as well as productivity. The level of literacy of farmers in Nigeria generally affects agricultural practices.

Table 5. Classification of Cocoa Farmers in Umuahia North LGA, Abia State According to their Poverty Status

Poverty Status	MPCHE Amount (₦)	Frequency	Percentage (%)
Extremely/Core Poverty (1/3 of MPCHE)	< 15340.89	0	0.00
Moderately Poor (2/3 of MPCHE)	15340.89 ≤ Z < 30681.78	12	40.00
Non Poor (> 2/3 of MPCHE)	> 30681.78	18	60.00
		30	**100**

Source: Field Survey Data, 2016

Table 5 shows the classification of Cocoa farmers in Umuahia North LGA, based on their poverty status; two – thirds (2/3) of the Mean Per Capita Household Expenditure was taken for the moderate poverty line, while one – third (1/3) was taken as the core/extreme poverty threshold. The value of the moderate poverty line was defined as ₦30,681.78 while the extreme poverty line was put at ₦15,340.89. Based on these estimated poverty thresholds, Cocoa farmers in Umuahia North LGA were classified into mutually exclusive groups as seen in Table 5 above.

The analysis shows that 40% of Cocoa farmers in Umuahia North LGA were moderately poor while the other 60% were classified as non-poor. The implication of this result is that majority of the Cocoa farmers in the study area were non-poor. Nkang *et al*., (2009) observes that in terms of foreign exchange earnings, no single agricultural export commodity has earned more than Cocoa. Osayande and Osabuohien (2016) stated that the number of poor Nigerians is put at 33.1 percent of the population. This represents an improvement from the previous study conducted which put the poverty level at 61 percent of Nigeria's population.

Evidence has however shown that the growth rate of Cocoa production has been declining, which has given rise to a fall in the fortunes of the sub-sector among other reasons (Nkang *et al*., 2009). However, the problem is that most individual investors and even governments have only vague ideas, of the potential of the industry and as such are sometimes slow in committing investment funds into the sub-sector.

Table 6. Mean Per Capita Expenditure (MPCHE) of Cocoa Farmers in Bende LGA; based on their Basic Needs

Basic Needs (Consumption Expenditure)	Amount/Month (₦) MPCHE	Amount/Annum (₦) MPCHE	Percentage (%) of Total Expenditure
3 square meal (food)/drinks	14066.67	168800.04	29.38
Clothing	6833.33	81999.96	14.27
Health/Medication	3316.67	39800.04	6.92
Education	1682.67	20192.04	3.51
Rental Value of Residence/shelter	12446.67	149360.04	25.99
Transportation Cost	6153.33	73839.96	12.85
Miscellaneous	3376.33	40515.96	7.05
TOTAL MPCHE	**47,875.67**	**574,508.04**	**100**
2/3 of MPCHE	31,917.11	383,005.36	
1/3 of MPCHE	15,958.55	191,502.68	

Source: Field Survey Data, 2016

Table 6 shows the average monthly and yearly expenses on Mean Per Capita Household Expenditure (MPCHE) of Cocoa farmers in Bende LGA of Abia State. From the table, it is observed that food constitute 29.38% of the MPCHE of the farmers. Other non-food items such as clothing, health/medication, education, rental value of residence, transportation cost and miscellaneous; and other unlisted commodities accounted for the remaining 70.62%. The implication of the result is that

food is very necessary for individuals, firms and organization. Etim *et al*., (2010) posits that food constitute the highest Mean Per Capita Expenditure of farm households in Nigeria. Education (3.51%) has the least percentage of MPCHE. The higher the education of the Cocoa farmers, *Ceteris paribus*, the higher the increased agricultural productivity.

Two – thirds (2/3) of the Mean Per Capita Household Expenditure was taken for the moderate poverty line for Cocoa farmers in Bende LGA, while one – third (1/3) was taken as the core/extreme poverty threshold. The value of the moderate poverty line was delineated as ₦31,917.11 while the extreme poverty line was put at ₦15,958.55. Based on these estimated poverty thresholds, Cocoa farmers in Bende LGA; Abia State were classified into mutually exclusive groups as presented in Table 7

Table 7. Classification of Cocoa Farmers in Bende LGA, Abia State According to Poverty their Status

Poverty Status	MPCHE Amount (₦)	Frequency	Percentage (%)
Extremely/Core Poverty (1/3 of MPCHE)	< 15958.55	3	10.00
Moderately Poor (2/3 of MPCHE)	15958.55 ≤ Z < 31917.11	11	36.67
Non Poor (> 2/3 of MPCHE)	> 31917.11	16	53.33
		30	**100**

Source: Field Survey Data, 2016

Table 7 shows that only 10% of Cocoa farmers were extremely poor in the study area; while 36.67% of Cocoa farmers fell below the estimated poverty line or were moderately poor while the remaining 53.33% were classified as non-poor. The implication of this result is that majority of the Cocoa farmers in the study area were non-poor. Adepoju, (2012) opined that the number of those in poverty has continued to increase. The World Bank in 2009 stated that about 2.8 billion persons of the World's population live on less than $2 a day, and 1.4 billion on less than $1 a day. In a contrasting view, Osayande and Osabuohien (2016) stated that the number of poor Nigerians is put as 58 million or 33.1 percent of the population. This represents an improvement from the previous studies which put the poverty level at 61% of Nigeria's population.

Table 8. Mean Per Capita Household Expenditure (MPCHE) of Cocoa Farmers in (Ikwuano, Umuahia North and Bende LGA) Abia State; based on their Basic Needs

Basic Needs (Consumption Expenditure)	Amount/Month (₦) MPCHE	Amount/Annum (₦) MPCHE	Percentage (%) of Total Expenditure
3 square meal (food)/drinks	12365.56	148386.72	28.30
Clothing	6911.11	82933.32	15.81
Health/Medication	2937.78	35253.36	6.72
Education	1894.00	22728.00	4.33
Rental Value of Residence/shelter	10371.11	124453.32	23.73
Transportation Cost	5881.11	70573.32	13.45
Miscellaneous	3345.44	40145.28	7.65
TOTAL MPCHE	**43,706.11**	**524,473.32**	**100**
2/3 of MPCHE	29,137.41	349,648.88	
1/3 of MPCHE	14,568.70	174,824.44	

Source: Field Survey Data, 2016

Table 8 represents the cumulative mean per capita household expenditure of Cocoa farmers in Abia State. This comprises the Cocoa farmers located in the three Local Government Areas of the State, where Cocoa was mainly produced. From Table 8, it is observed that food items accounted for 28.3% of the MPCHE of the farmers in the State. The highest percentage of food items could be as a result of the necessity food have for individuals, firms and organization. Etim *et al*., (2010) posits that food constitute the highest Mean Per Capita Expenditure of farm households in Nigeria.

Rental value of land, clothing, transportation, miscellaneous expenses, health and education constituted 23.73%, 15.81%, 13.45%, 7.65%, 6.72% and 4.33% respectively. Greater percentage of MPCHE was spent on accommodation or rental value of residence. Also fewer amounts were spent on transportation, health care and education expenses respectively. In regards to low amount of MPCHE on education, Okpachu *et al*., (2014) posits that the major problems facing Agricultural productivity in Nigeria is illiteracy. This has over the years posed great challenges to Agricultural development as well as productivity. In this regards, farm firms should inculcate the habits of acquiring formal and informal knowledge; especially formal knowledge backed up with scientific approach on agricultural production, sustainability and development.

Table 9. Distribution of all the Cocoa Farmers in (Ikwuano, Umuahia North and Bende LGA) Abia State, According to their Poverty Status

Poverty Status	MPCHE Amount (₦)	Frequency	Percentage (%)
Extremely/Core Poverty (1/3 of MPCHE)	< 14568.70	5	5.56
Moderately Poor (2/3 of MPCHE)	14568.70 ≤ Z < 29137.41	32	35.56
Non Poor (> 2/3 of MPCHE)	> 29137.41	53	58.89
		90	**100**

Source: Field Survey Data, 2016

Two – thirds (2/3) of the Mean Per Capita Household Expenditure was taken for the moderate poverty line for Cocoa farmers in Abia State, while one – third (1/3) was taken as the core/extreme poverty threshold. The value of the moderate poverty line was defined as ₦29,137.41 while the extreme poverty line was put at ₦14,568.70. Based on these estimated poverty thresholds, Cocoa farmers in Abia State were classified into mutually exclusive groups as presented in Table 9. The non-poor Cocoa farmers in Abia State were classified as those farmers whose per capita expenditure was above or was equal to two-third (2/3) of the mean per capita household expenditure (MPCHE) of all the farmers, while those whose per capita expenditure was below two-third of the mean per capita expenditure were classified as poor. Based on this status quo, the poverty line constructed as two-third of the mean per-capita expenditure of all the Cocoa farmers found in Abia State was ₦29,137.41. This implies that all the Cocoa farmers in Abia State whose monthly per capita expenditure fell below ₦29,137.41 were classified as poor while the Cocoa farmers whose per capita expenditure equaled or was above the poverty line were classified as non- poor.

Table 10 shows that only 41.12% of Cocoa farmers in Abia State fell below the estimated poverty line while the other 58.89% were classified as non-poor. The implication of this result is that majority of the Cocoa farmers in Abia State were non-poor. Osayande and Osabuohien (2016) stated that the number of poor Nigerians is put as 58 million; this represents an improvement from previous study which put the poverty level at 61% of Nigeria's population.

The ultimate goal of agricultural production plans in national development is to raise the standard of living and one of the important yardsticks for measuring standard of living is the average distribution income. Iheke *et al*., (2013) suggested that to reduce poverty and hunger, improve the standard of living and increase farm income there is an urgent need for global, national, and local actors to pursue innovative approaches to improve agricultural productivity.

Conclusion and Recommendation

Majority of the Cocoa farmers (86.67%) were males and only 13.33% were females. This can be attributed to the high intensive labour requirement for Cocoa farming which the male gender could afford. Analysis from poverty status of the Cocoa farmers showed that 36.67% of Cocoa farmers in Ikwuano LGA fell below the estimated poverty line while the other 63.33% were classified as non-poor, while 40% of Cocoa farmers in Umuahia North LGA were moderately poor while the other 60% were classified as non-poor. In Bende LGA, 10% of the Cocoa farmers are extremely poor, 36.67% are moderately poor while the remaining 53.33% were classified as non-poor. It is therefore recommended that greater equality of income is achieved by improving the productivity of the poor, especially through improving credit facilities, basic education, health and the skills of the farmers. Improvement in basic education of the farmers will lead to increased income and enhancement in the quality of life which invariably reduces poverty.

Compliance with Ethical Standards

Conflict of interest

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Author contribution

The author read and approved the final manuscript. The author verifies that the Text, Figures, and Tables are original and that they have not been published before.

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