International Journal of Community and Cooperative Studies
Vol.7 No.4, pp.17-29, October 2019
Published by ECRTD- UK
ISSN 2057-2611(Print), ISSN 2057-262X(Online)

DIFFERENTIALS IN POVERTY LEVELS OF COCOA FARMER COOPERATORS AND NON-COOPERATORS IN SOUTHWESTERN NIGERIA

Ige, Abosede O*. and R. Adeyemo

Department of Agricultural Economics, Obafemi Awolowo University, Ile-Ife, Nigeria.

ABSTRACT: *The study examined the differentials in poverty levels of cocoa farmer cooperators and non-cooperators in southwestern Nigeria. Multistage sampling technique was used in selecting 156 cooperators and 156 non-cooperators from the study area. Data obtained were analysed using descriptive statistics, p-alpha measures of poverty, and tobit regression model. The monthly mean per adult equivalent household expenditure of the cooperators and non-cooperators were ₦9298.12 ($47.19) and ₦5333.03 ($27.1) respectively. The incidence, depth and severity of poverty among the cooperators were 25.00%, 5.32% and 1.59% while those of non-cooperators were 40.38%, 14.68% and 6.41% respectively. Tobit regression analysis results revealed that, cooperative membership, credit and occupation were negatively related to poverty depth, while household size, farm size and farming experience, were positively related to poverty depth.*

KEYWORDS: Cocoa, poverty levels, differentials, cooperators, non-cooperators, tobit regression model.

INTRODUCTION

Cocoa is currently the most important agricultural export commodity of Nigeria, and is very vital to the Gross Domestic Product (GDP) (Arene and Nwachukwu, 2013). Cocoa contributes to foreign exchange earnings, generates income for producers and states involved in cocoa production and provides employment for a sizeable number of people both directly and indirectly (Afolayan, 2017). In spite of its significant contribution to the economy, cocoa production in the country witnessed a downward trend in output. In the 1970s for instance, cocoa output peaked at 308,000 tonnes. Unfortunately, this figure dropped sharply in 1980 and 1981 to 155,000 tonnes. The downward trend continued to 110,000 tonnes by 1990 and 1991 farming season. Although in 2010/2011 production season, output increased to 212,000 tonnes, but declined to 200,000 tonnes in 2015/2016 production season (FAO, 2011 and ICCO, 2018). This has resulted in increase in poverty among cocoa farmers in Nigeria (Adegeye, 2006; Oseni and Adams, 2013).

Poverty in Nigeria is especially severe among smallholder farmers who dwell in the rural areas (Apata *et al.,* 2010 and Okunmadewa *et al.,* 2010), with agriculture

accounting for the highest incidence over the years (Edoumiekumo *et. al.*, 2014). According to Nigeria *Living Standard Survey* Report (NBS, 2012), about 73.2% of the rural population in Nigeria were described as poor compared to 61.8% of the population in the urban areas. Poverty entails low income, low or no access to production inputs, low productivity, illiteracy and lack of access to information and basic necessities of life. It describes a condition of low income that leads to low saving, resulting in low investment and, consequently low productivity (Adegeye, 2006; Amao *et al., 2013*). Farmers are trapped in this vicious poverty cycle with farmers unable to improve their living standard. Yet, increased agricultural productivity has been found to be a critical factor in combating rural poverty (Omonona *et al.,* 2008; Akinlade *et al.,* 2015). Under this situation, the farmers need strong institutions like cooperatives to break out of the vicious circle of debilitating poverty.

As one of the effective means of overcoming most of the obstacles to sustainable smallholder cocoa production, cooperative farming in which farmers pull their resources together to increase agricultural productivity and enhance the economic and social status of member farmers has been suggested (Nweze, 2003). According to Adeyemo (1984), a number of programmes have been introduced to improve agriculture in Nigeria, in most cases these programmes have not been able to meet the goals for which they were designed except channeled and supported by cooperatives. Consequently, to increase production as well as achieve better returns on output, cooperatives have played catalytic roles in agriculture. Hence, the growing evidence that making use of cooperative is an effective strategy to combat poverty (Aref ,2011; Otto and Ukpere, 2011; Mwangi *et. al*., 2012). Oluyole, (2018) opined that Nigeria had comparative advantage in the production and exportation of cocoa. This necessitated the placement of cocoa in the centre-stage as the most important export tree crop by the Nigerian government with emphasis on increased production in to order to diversifying the economy and nation's export base and also to reduce poverty (ATA, 2012). However, it is not certain whether or not cooperative societies as it is currently being practiced among cocoa farmers can help reduce poverty. Therefore, the understanding of differentials in poverty levels of cocoa farmer cooperators and non-cooperators will shed light on the extent of poverty between the two groups. The specific objectives were to:

(i) examine the socio-economic characteristics of the cooperative and non-cooperative cocoa farmers in southwestern Nigeria;
(ii) determine the incidence, depth and severity of poverty between the two groups; and
(iii) estimate the determinants of poverty among the respondents.

LITERATURE/THEORETICAL UNDERPINNING

Cooperative as defined by International Cooperative Alliance (ICA, 1996) is an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly-owned and democratically controlled enterprise. Agricultural cooperatives are important in the socioeconomic development of the rural economy. According to Mwangi *et. al*., (2012) the poor in developing countries have used both collective action through formal and informal

cooperative organisations to improve their well-being. There are rising expectations that by leveraging collective action, cooperatives can help smallholders aggregate their surplus output, achieve scale economies in marketing, mobilize savings and credits facilities and bargain for better terms of trade in the marketplace to improve rural welfare and livelihoods (World Bank, 2005;Collion and Rondot, 1998; DFID 2010). Poverty in absolute sense is a situation where a section of the population is unable to meet its bare subsistence essentials of food, shelter and clothing in order to maintain minimum standard of living (Omonona, 2008). Relative poverty therefore exists when a person's provision with goods and services is lower than that of others. According to Nigeria profile report (2010), poverty is defined in terms of the minimal requirements necessary to afford minimal standards of food, clothing, healthcare and shelter. The relative approach which this study adopted takes a proportion of mean consumption expenditure as the poverty line. This method considers both food expenditure and non-food expenditure using the per capita expenditure approach. Poverty is complex in nature and consumption-based poverty measures are usually more stable than those of income. This is because consumption tends to fluctuate less than income (which can even go to zero in certain months due to seasonality), making it a better indicator of living standards. Unlike income, consumption also reflects the ability of a household to borrow or mobilize other resources in time of economic stress.

Determinants of poverty among farming households in Nigeria had been carried out by many scholars. Poverty in farming households in Nigeria is driven by socioeconomic, asset, and institutional characteristics of the farmers. Studies have shown that age and farming experience positively influence poverty depth (Asogwa *et al.,* 2012; Igbalajobi *et al.,* 2013; Ogwumike *et al.,* 2014). As age rises above productive level, it results to a decline in the farming activities, leading to reduction in farm income and welfare. This also applies to farming experience, because as age increases, farming experience also increases. Studies have also shown that, household size can either positively or negatively influence poverty depth (Asogwa *et al.,* 2012; Igbalajobi *et al.,* 2013; Ogwumike *et al.,* 2014; Akinlade, *et al.,* 2015). A large household is expected to provide cheap labour on farm, thereby increasing their productivity. However, when most members of the households are dependants, the household poverty level is worsened by increase in family size. Poverty depth is negatively influenced by level of education. Highly educated household heads have the ability to adopt improved farming techniques faster than the non-educated ones. This, increases the productivity and incomes of the educated heads with subsequent improvement in welfare (Igbalajobi *et al.,* 2013, Akinlade, *et al.,* 2015). Asogwa *et al.,* (2012) and Akinlade, *et al.,* (2015), found poverty depth to decrease with increase in farm size. This means that the larger the farm size the less the likelihood of the household been poor, because they are expected to generate more income, which would enhance their consumption level and subsequently improve their household poverty status. Empirical evidence has also shown that poverty depth is reduced by access to credit and occupation (Asogwa *et al.,* 2012; Igbalajobi *et al.,* 2013). Households with access to credit are able to acquire productive assets, this will enhance their productivity, household's income-generating ability and welfare. Research has also shown that membership of social organizations decreased poverty in rural households in Nigeria (Asogwa *et al.,* 2012; Igbalajobi et al. 2013). Cooperative societies provide several benefits for their members such as credit

facilities, access to improved production inputs, access to market and access to information, this could enhance their productive capacity and welfare.

METHODOLOGY

The study area

The study was carried out in the Southwestern geopolitical zone of Nigeria. It comprises of Oyo, Osun, Ogun, Ekiti and Lagos states. The Cooperative movement in Nigeria started in Southwestern zone (Adegeye, 2006; Agbetunde, 2007). The zone lies between longitude 2^0 42' and 6^0 03'east of Greenwich and latitude 5^0 49' and 9^0 17' north of the equator. The region is bounded in the North by Kwara and Kogi States and in the East by Edo State. In the west it is bounded by the Republic of Benin and in the South by the Atlantic Ocean. The four main agricultural zones in the region are the swamp on the Atlantic coast, tropical rainforest, the derived savannah in the middle and the guinea savannah in the north. The area enjoys bi-modal rainy season which lasts from April to October and a dry season from December to March with an annual rainfall of 135mm and mean temperature of 35^0 C. The total population of the six states is 27,722,427 (NPC, 2006), while the total land mass of the area is 67,174.6 km^2. Agriculture is the major source of income for a large proportion of people in the area. The tropical climate in the area favours the growth of permanent crops such as cocoa, oil palm and arable crops (maize, yam and cassava).

Sample technique and data collection

A multi-stage sampling technique was employed in selecting the respondents from the study area. The first stage involved the purposive selection of two States, Osun and Ekiti States based on the proportion of cocoa production and the existence of Cocoa Cooperative Societies. The second stage involved the purposive selection of Ekiti Southwest, Ise/Orun and Gbonyin, from Ekiti State and Atakumosa East, Boluwaduro and Ife central Local Government Areas from Osun State making a total of six L.G.As. Two Cocoa Marketing Produce Societies were selected from each LGA at the third stage. At the final stage, 13 cooperators were randomly selected from each cocoa marketing produce society while, 13 non-cooperators were also selected from the same communities through the use of snowball technique. In all, 52 cooperators and non-cooperators were selected from each LGA hence, a total of 312 farmers were interviewed from the two states.

Figure 1. Map of Nigeria showing the Southwest zone.

Analytical Technique

Descriptive statistics was used to explain the socio-economic characteristics of respondents. This involved the calculation of percentages, frequency counts and mean values for parameters such as farmers' age, gender distribution, level of education, income level, farm size and output level. Poverty line and indices, as adapted from Codjoe *et al.* (2013) was adopted. The poverty line was generated based on farmers' consumption expenditure.The poverty line in the area was derived from Mean household expenditure per adult equivalent. Adult equivalent was generated from Organization for Economic Corporation and Development Scale adopted by Osberg and Xu (1999) in WB, (2005) as follows:

$AE=1+0.7(N_{1adult}-1)+0.5N_{2children}$ …….....…….(1)

Where,

AE = adult equivalent

N_1 = the number of adult aged 15 and above

N_2 = the number of children aged less than 15

The respondents' expenditure per adult equivalent was used in classifying them into three groups namely;

1. non-poor: these are farmers whose expenditure per adult equivalent was above two-third of the poverty line. i.e NP>2/3 of the mean expenditure.
2. moderately poor: these are farmers whose expenditure per adult equivalent was below the poverty line i.e P<2/3 of the mean expenditure.
3. core poor: these are farmers whose expenditure per adult equivalent was below one-third of the mean expenditure poverty line. i.e P<1/3 of the mean expenditure.

The poverty line was set at two-third of mean household expenditure per adult equivalent. This poverty line was employed in the calculation of the Foster-Greer-Thorbecke index. The index is calculated using the formula

$$P_x=\frac{1}{N}\sum_{i=1}^{a}\frac{(z-y_1)^a}{z} \quad \text{……...……(2)}$$

Where,

N = the total population in the group of interest

Z = Poverty line

N = Number of individual below the poverty line

Y_1 = Consumption expenditure Per adult equivalent of i-th household in which the individual lives

x = the degree of concern for the depth of poverty, it takes on the value of 0, 1 and 2, for poverty incidence, poverty gap and poverty severity respectively.

The indices are then derived as follows:

$$P_0=\frac{1}{N}\sum_{i=1}^{a}\frac{(z-y_1)^0}{z} \quad \text{…….. ….(3)}$$

$$P_1=\frac{1}{N}\sum_{i=1}^{a}\frac{(z-y_1)^1}{z} \quad \text{……..(4)}$$

$$P_2=\frac{1}{N}\sum_{i=1}^{a}\frac{(z-y_1)^2}{z} \quad \text{…….(5)}$$

Finally, tobit regression model was used to estimate the determinants of household poverty among cocoa based farming households. The model used was developed by Tobin (1958), and following McDonald and Moffit (1980), as adopted by, Omonona *et al.* (2008) and Asogwa *et. al.*,(2012). The model has been extensively

used by economists to measure the effect of changes in the explanatory variables on the probability of being poor and the depth or intensity of poverty (McDonald and Moffit, 1980). The model is stated as:

$q_i=p_i=\beta X_i+u_i(if p_i>p_i^*)$……(6)
$q_i=0=\beta X_i+u_i(if p_i\leq p_i^*)$……..(7)
i=1,2,3,…312 ……..(8)
where,

qi = dependent variable. It is discrete when the household is not poor and continuous when poor

P_i = depth of the intensity of poverty defined as (Z- Y/ Z),

pi* = poverty depth when the poverty line (Z) equals the per adult equivalent household(Y)

X_i = vector of explanatory variables

β = is the vector of unknown coefficients and u_i is an independently distributed error term.

The model was explicitly stated as:
$q_i=\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+\beta_8X_8+ u_i$.....(9)
Where,

X_1 = Household size,
X_2 = Age of the household head (years),
X_3 = Farm Size (ha),
X_4 = Years of education of household head (years),
X_5 = Years of farming experience,
X_6 = Amount of credit accessed (₦),
X_7 = Primary occupation of respondent (D= 1 if farming; 0, if otherwise),
X_8= Cooperative membership,
e_i = errors term

RESULTS AND DISCUSSION

Socio-economic distribution of respondents

The age distribution of the respondents as presented in Table 1, revealed that the mean age of the cooperators was 57.6 ± 17.66, while the non-cooperators was 47.3± 17.49 years. Age of the farmer is very crucial for any agricultural enterprise, because age of the farmer has an important bearing on his effectiveness. The result further indicated that about, 55.9% of the cooperators were over 50 years, while 30.2% of the non-cooperators were over 50 years old. This implied that most of the farmers were getting too and would also not be receptive to adopt new ideas and take risks. The average number of years spent in school by the cooperators and non-cooperators were 7.7±4.9 and 6.6 ±4.4 years respectively. The number of years spent in school by the cooperators was significantly higher than that of the non-cooperators. Table 1 further revealed that 84.6 % of cooperators and 77.6% of non-cooperators were married, while the average household size for cooperators was 5.7± 2.6 and 4.5± 2.5 persons for the non-cooperators. The average cocoa farm size of the cooperators and non-cooperators were 3.65±1.97 hectares and 3.10±1.44 hectares respectively. This indicates that the cooperators had more cocoa land holdings than the non-cooperators. The economic

useful life of cocoa plantation is, generally taken to be 25 years (ICCO, 2013). The mean age of the plantation for the cooperators and non-cooperators were 18.42± 8.8 years and 20.49± 9.52 years respectively.

Table 1. Socio-economic Characteristics of the Respondents

Variable	**Cooperators**		**Non-Cooperators**	
Age (years)	**Freq.**	**%**	**Freq.**	**%**
Below 30	11	7.10	30	19.20
31-50	58	37.50	79	50.60
51-70	47	30.00	27	17.30
71-90	38	24.40	20	12.90
Above 90	2	1.30	-	-
Mean	57.66		47.30	
Standard Deviation	17.66		17.49	
T-test	5.18***			
Level of Education				
No school	27	17.30	27	17.30
Adult school	6	3.80	7	4.50
Quranic school	-	-	1	0.60
Primary	44	28.20	52	33.30
Secondary	70	44.90	61	39.10
Tertiary	9	5.80	8	5.10
Mean	7.66		6.69	
Standard Deviation	4.9		4.43	
T-test	1.84*			
Marital status				
Single	4	2.60	24	15.40
Married	132	84.60	121	77.60
Widowed	16	10.30	10	6.40
Divorced	1	0.60	1	0.60
Separated	3	1.90	-	-
Household size				
≤3	33	21.20	48	30.80
4 – 6	67	42.90	82	52.60
7 – 9	44	28.20	19	12.20
10+	12	7.70	7	4.40
Mean	5.72		4.58	
Standard Deviation	2.67		2.50	
T-test	3.86*			
Farm size				
≤2.00	52	33.30	62	39.70
2.01 - 4.00	63	40.40	70	44.90
4.01 – 6.0	23	14.70	22	14.10

6.01+	18	11.50	2	1.3
Mean	3.65		3.10	
Standard Deviation	1.97		1.44	
T-test	2.88***			
Age of Cocoa Farms				
≤10	62	39.70	33	21.20
11 – 20	45	28.80	56	35.90
21 – 30	37	23.70	45	28.80
31 – 40	12	7.70	21	13.50
41+	-	-	1	0.60
Mean	16.35		20.49	
Standard Deviation	8.88		9.52	
T-test	3.969***			

, **, ** Significant at 1% ,5% and 10% respectively
Data Analysis, 2015

Poverty Profile of Cooperative and non-Cooperative Cocoa Farming Household
The monthly mean per adult equivalent household expenditure of the cooperators and non-cooperators were ₦9298.12 ($47.19) and ₦5333.03 ($27.1) respectively (prevailing exchange rate when data was collected: ₦ 197 to 1 USD, Source Central Bank of Nigeria, 2015). The cooperators and non-cooperators were classified by line either as non-poor, moderately poor, or core poor, as shown in table 2. Based on the monthly mean per adult equivalent expenditure, ₦6198.13 ($31.46) and ₦ 3555.32 ($18.05) were the poverty lines for the moderately poor cooperators and non-cooperators respectively, while the poverty lines for the core poor were ₦3099.07 ($15.73) and ₦ 1777.66 ($9.02) for the cooperators and non-cooperators respectively. The moderately and core poverty lines for the cooperators were found to be higher than the non-cooperators, indicating that the cooperators had better standard of living than non-cooperators. The percentage of the moderately poor cocoa cooperators in table 2 was about 10.9%, while those categorised as being non-poor constituted about 89.1%. In other words none of the cooperators fell below ₦3099.07 ($15.73) poverty line. In the case of the non-cooperators, the percentage of the moderately poor was about 32.7%, while those categorised as non-poor constituted about 40.4%. In addition 26.9% of the non-cooperators were extremely poor, they fell below ₦1777.66 ($9.02) poverty line. The t-test analysis showed that there was a significant difference among the cooperators and non-cooperators in different poverty categories at 1% level of significance.

As shown in Table 3, the incidence of poverty was higher (40.4%) among the non-cooperators than the cooperators (25%). The depth of poverty for cooperators was 5.3%, which was lower than that of the non-cooperators (14.7%). Thus, the non-cooperators sank deeper into poverty than the cooperators. The severity of poverty, which takes into account not only the distance separating the poor from the poverty line, but also the inequality among the poor was 1.59% for cooperators and 6.41% for non-cooperators. This implies that the non-cooperative members were poorer than their

cooperative counterparts. This result might be connected to the numerous benefits offered by cooperatives to their members ranging from finance to education.

Table 2. Distribution of Respondents According to Poverty Level

Poverty level	**Cooperators**		**Non-Cooperators**	
	Freq.	**Percent**	**Freq.**	**Percent**
Non- poor	139	89.10	63	40.40
Moderately	17	10.90	51	32.70
Core poor	0	0.00	42	26.90
Total	156	100	156	100
T-test	9.129***			

***Data Analysis, 2015* *** Significant at 1 %**

Table 3. Distribution of Respondents According to Poverty Level

	Cooperators		**Non-Cooperators**	
Poverty level	**Index**	**Percent**	**Index**	**Percent**
Incidence (P_0)	0.2500	25.00	0.4038	40.38
Depth (P_1)	0.0532	5.32	0.1468	14.68
Severity (P_2)	0.0159	1.59	0.0641	6.41

Data Analysis, 2015

Table 4 revealed that poverty incidence was found to be higher among female respondents (47.4%) than the male respondents (40.6%). This result agreed with the findings of Obisesan, (2012). Also, the incidence of poverty was lower for the male cooperators (23.3%) and higher for the male non-cooperators (40.8%). However it is worthy to note that cooperators with the lowest poverty indices; incidence (21.8%), depth (3.2%) and severity (0.8%) were those aged less than 40 years. The result also showed that cooperators with over six years of education had the lowest level of poverty incidence (20.25%), compared with the non-cooperators (31.88%) in the same level. Respondents with 7- 13 members were the poorest (41.5%). The incidence of poverty was lower for cooperators (15.4%) whose primary occupation was not farming and also for non-cooperators (28.1%) in the same category. This is in line with the findings of Ogwumike (2013).

Table 4. Distribution of Poverty Profile of Respondents by Socioeconomic factors

	Cooperators			**Non-Cooperators**		
Gender	P_0 **(%)**	P_1 **(%)**	P_2**(%)**	P_0 **(%)**	P_1 **(%)**	P_2**%)**
Male	23.29	4.72	1.39	40.82	15.01	6.61
Female	50.0	14.15	4.59	41.50	15.10	6.64
Age						
<40	21.87	3.16	0.87	30.26	9.05	3.75
41-50	32.43	9.46	3.48	50.00	19.68	8.37
51 -70	27.66	5.86	1.55	40.74	14.56	6.30
> 70	17.5	2.58	0.46	60.00	27.65	14.25
Education						
None	22.22	3.31	0.64	44.44	19.08	9.27

1-6	34.0	6.14	1.43	48.33	17.36	7.55
> 6	20.25	5.48	2.01	31.88	10.62	4.31
Household size						
<3	3.03	0.78	0.20	18.33	0.82	0.10
4 – 6	16.42	4.81	1.93	50.00	17.22	7.00
7-13	48.21	8.60	2.00	69.23	32.22	16.25
Primary Occupation						
Farming	74.62	31.99	16.55	68.54	32.03	17.79
Others	57.7	18.54	8.35	46.88	22.67	13.14

Data Analysis, 2015

Factors affecting poverty profile of Cocoa farmer cooperators and non-cooperators.

The result of the maximum likelihood estimates of the Tobit regression (Table 5), showed that the model fitted the data reasonably. The log-likelihood was -95.09 with a chi-square value of 194.98 which was significant at 1%. This indicates that variation in poverty depth was explained by the maximum likelihood estimates of the specified explanatory variables, suggesting that the model as specified explained significantly non-zero variations in factors influencing poverty. The pseudo R- Square value suggests that 50.6% variation in poverty depth was explained by variations in the specified explanatory variables, hence the model has good explanatory power on the changes in poverty depth among the respondents with 95% level of confidence. The coefficients of six explanatory variables (household size, cooperative membership, farm size, farming experience, credit and occupation) were significant at acceptable level of significance. Household size was significant and positively related to poverty depth. The result of the marginal analysis indicates that an increase in the household size by one member will likely increase the poverty depth of the respondents by about 2.4 %. Evidence from other studies (Asogwa *et al.*, 2012;Ogwumike *et al.*, 2014; Akinlade, *et al.,* 2015) point to the same direction between poverty and household size. The larger the household size the poorer the household is likely to be.Credit access was negative and statistically significant at 5%. This indicates that the depth of poverty reduces with increase in access to credit and vice versa. The farmers with access to credit had lower levels of poverty. This confirms the assertion by Asogwa *et. al. (2012)* that households whose heads had access to credit facilities had a lower level of poverty intensity than those whose heads did not have such access. This is also in line with the general believe that credit is an anti-poverty strategy because of the important role it plays among rural populace (Omonona, 2008; Obisesan 2013; Igbalajobi *et al.*, 2013).

The coefficient of farm size was positive and significant at 1%. This means that as the farm size increases the poverty depth increases. This could be as a result of the ageing cocoa farms resulting in lower outputs and hence incomes from the farms were dwindling. Cooperative membership was negative and statistically significant at 1%. This means that as the farmers become members of Cooperative Societies, poverty depth reduces by 25.5%. This result might not be unconnected to the numerous benefits offered by cooperatives to their members ranging from finance to education. This

finding is also supported by several studies (Brichall, 2004; Omonona, 2008; Obisesan 2013; Asogwa *et al.,* 2012; Igbalajobi et al. 2013) who reported that Cooperative organizations have the potential to reduce poverty effectively, more than any other forms of economic organization provided their values and principles are respected. Primary Occupation for the respondents was negative and statistically significant at 10% indicating that as farmers tend to take farming as secondary occupation their depth of poverty reduces by 3.0% this is in line with the study of Ogwumike (2013). Farming experience was also statistically significant at 1% and positively related to poverty depth. This result showed that a one unit increase in the years of farming experience will increase the poverty depth by 0.1%. This is attributable to the fact that as farming experience increases, the age of the household head also increases. This leads to a reduction in the farming operations with subsequent reduction in farm income and wellbeing. Findings are similar with Asogwa *et al.,* (2012).

Table 5. Maximum Likelihood Estimates of Tobit Model for Factors affecting Poverty profile of Cooperative and Non-Cooperative Cocoa Farmers.

Variables	**Maximum likehood estimate (β)**	**Conditional marginal effects**
Cooperatives	0.7778*** (0.0823)	-.25504*** (0.0267)
Household size	0.0240*** (0.0104)	0.0248*** (0.0033)
Age	-0.0035 (0.0023)	-0.0011 (0.0007)
Farm size	0. 0603*** (0. 0224)	0.0197*** (0.0073)
Years of education	-0.0093 (0.0068)	-0.0030 (0.0022)
Experience	0.0058** (0.0025)	0.0019** (0.0008)
Credit	-6.60e-07** (3.28e-07)	-2.17e-07** (1.07e-07)
Occupation	- 0.1085** (0.0590)	(-0.0355) (0.0193)

Source: Data Analysis, 2015

Constant -0.1085 (0.1645)***, Sigma 30.45, Chi^2 194.98, Prob> Chi^2 0.0000, Pseudo R^2 0.5060, Loglikelihood -95.09

NOTE: ***Significant at 1%, ** Significant at 5%, *Significant at 10%. Figures in parentheses represent standard error.

CONCLUSION

Although widespread poverty in Nigeria is especially severe among smallholder farmers who live in the rural areas where agriculture is the main occupation, there are rising expectations that by leveraging collective action, cooperatives can help smallholder cocoa farmers aggregate their surplus output, achieve scale economies in

marketing, and bargain for better terms of trade in the market place thereby reducing poverty among farmer members. The study showed that most of the cocoa farms had been established a long time ago and only few farms have just been replanted. The relative poverty lines for the cooperators were higher than the non-cooperators, the percentage of cooperators who were non-poor was higher than the non-cooperators. Also, the poverty incidence, depth and severity were higher among the non-cooperators than the cooperators. The result of the marginal analysis indicated that an increase in the household size, farm size, and farming experience would likely increase the depth of poverty of the respondents. Access to credit and membership of Cooperative Societies leads to reduction in poverty depth.

Recommendation

Based on the findings of the study, it is essential that old cocoa grooves be replaced by new and improved seedlings, if the cocoa subsector is to be revitalized in the area of study. Efforts should be made to encourage non-cooperators to affiliate with Cooperative Societies so as to benefit from the numerous services offered by cooperatives, to improve their productivity which would translate to raised income and hence, reduction in poverty.

References

Adegeye, A. J. (2006) *A comparative analysis of the costs of production and producer prices of a tonne of cocoa from matured trees in Nigeria before and during the structural adjustment programme*, Ife Journal of Agriculture, 2 14-18.

Adeyemo, R. (1984) *Economics of Resource Productivity in Group Farming Systems in the savanna Zone of Oyo State Nigeria*, Midsouth Journal of economics, U.S.A 8(1) 1-6.

Afolayan, S. O. (2017) *Problems and Prospects of Cocoa Production in Nigeria Economy*: A Review, International Journal of Social Sciences, 11 2.

Agbetunde, L.A. (2007): "Essentials of Cooperatives". Lagos Feetal Consulting.

Agricultural Transformation Agenda (2012): Federal Government of Nigeria.

Akinlade, R. J., Adeyonu, A. G. and Carim-Sanni, A. (2015) *Income inequality and poverty among farming households in Southwest, Nigeria*, International Journal of Agricultural Economics and Rural Development, 7(1) 59-66.

Amao J.O., Ayantoye K., Fadahunsi O.D. (2013) *Poverty among Farming Households in Osun State*. Nigeria. Int. J. of Humanities and Soc. Sci., 3 21.

Apata, T., Apata, O., Igbalajobi, O., & Awoniyi, S. M. O. (2010) *Determinants of rural poverty in Nigeria:evidence from small holder farmers in south-western*, Nigeria, Journal of Science and Technology Education Research, 1(4) 85-91.

Aref, A. (2011) *Rural Cooperatives for Poverty Alleviation in Iran*. Life Bank, Washington, DC.

Arene, C. J. and Nwachukwu, E. C. (2013*) Response of Cocoa Export Market to Climate and Trade Policy Changes in Nigeria*, Journal of Agriculture and Sustainability, 4 (2) 245-277.

Asogwa B. C., Okwoche B.A. Umeh J.C. (2012*) Estimating the Determinants of Poverty Depth among the Peri-Urban Farmers in Nigeria*, Current Research Journal of Social Sciences 4(3) 201-206.

Codjoe F. N. Y., Bonsu A.M. and Mabe F. N. (2013) *Cocoa-Based Information and Knowledge Acceptability and Rural Poverty in the Eastern Region of Ghana*, Journal of Economics and Sustainable Development. 4 7.

Collion, M-H. and P. Rondot. (1998) Background, discussions, and recommendations. (In: P. Rondot and M-H. Collion, eds.), *Agricultural Producer Organizations*, Their Contribution to Rural Capacity Building and Poverty Reduction". Washington, DC: World Bank.

Department for International Development (DFID) 2005. How to Leverage the Cooperative Movement for Poverty Reduction. DFID Growth and Investment Group.

Edoumiekumo S. G., Karimo T.M and Tombofa S.T. (2014) *Income Poverty in Nigeria: Incidence, Gap,*

Severity and Correlates, American Journal of Humanities and Social Sciences 2(1) 1-9.
FAO, (2011) Production data base for Nigeria.
Igbalajobi, O., A.I. Fatuase, and I. Ajibefun. (2013) *Determinants of Poverty Incidence among Rural Farmers in Ondo State, Nigeria*, American Journal of Rural Development 15 131-137
International Cooperative Alliance (ICA) (1995): *Statement on the Cooperative Identity*, in Review of International Cooperation, 88 3.
International Cocoa Organization (ICCO) (2018) Quarterly Bulletin of Cocoa Statistics, 19 4.
International Cocoa Organization (2013). Quarterly Bulletin of Cocoa Statistics
McDonald, J. F and Moffit, R. A. (1980) *The Uses of Tobit Analysis*. Review of Economics and Statistics, 62 318 -321.
Mwangi E., Markelova H., and Ruth Meinzen-Dick. (2012) *Collective Action and Property Rights for Poverty Reduction Insights from Africa and Asia*. Published for the International Food Policy Research Institute.
National Bureau of Statistics (2012) Annual Socio-Economic Survey: Nigeria Poverty Profile Report. Document produced by National Bureau of Statistic. Abuja, Nigeria. www.nigerianstst.gov.ng
National Population Census (NPC) (2006).
Nweze, N.J, (2003) *Cooperative promotion in rural communities:* The project approach" Nigeria journal of Agric 2(2) 76- 89.
Obisesan, A.A. (2013*) Credit Accessibility and Poverty among Smallholder Cassava Farming Households in South West, Nigeria* Greener Journal of Agricultural Sciences, 3(2) 121-129.
Ogwumike, F.O. and Akinnibosun, M.K. (2013) *Determinants of Poverty among Farming Households in Nigeria*, Mediterranean Journal of Social Sciences, 4 (2) 365-373.
Okunmadewa, F., Olaniyan, O., Yusuf., S. A., Bankole, A. S., Oyeranti, O. A., Omonona, B. T., Olayiwola, K. (2010*) Poverty and Inequality among Rural Households in Nigeria.* In F. O. Ogwumike (Ed.), Poverty and Inequality in Nigeria.
Oluyole, Kayode A. (2018) *Competitiveness and Comparative Advantage of Cocoa Production in Southwestern*: A Policy Analysis Approach. Universal Journal of Agricultural Research, 6(2) 57-61.
Omonona, B. T., Udoh, E. J and Adeniran, A. A. (2008) *Poverty and its Determinants among Nigerian Farming Households: Evidence from Akinyele LGA of Oyo State, Nigeria*, European Journal of Social Sciences, 6 (3) 402-413.
Oseni, J. O. and Adams, A.Q. (2013) *Cost benefit analysis of certified Cocoa production in Ondo state Nigeria*, Fourth International Conference, African Association of Agricultural Economists (AAAE).
Otto, G. and Ukpere, W. (2011) *Credit and Thrift Cooperatives in Nigeria: A potential source of capital formation and employment,* African Journal of Business Management 5(14) 5675-5680.
Tobin, J. (1958) *Estimation of relationships for limited dependent variables*, Econometrica, 26 24-36.
World Bank Institute, (2005). Introduction to Poverty Analysis. Poverty manual, All, JH Revision