

## **FARMERS' COOPERATIVE AND AGRICULTURAL PRODUCTIVITY IN OGUN STATE, NIGERIA**

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### **Abstract.**

This study was on effects of farmers' cooperative society on agricultural productivity in Ogun State, Nigeria. Two-stage sampling technique was used to select 120 respondents. Descriptive statistics and probit model analysis were used to analyzed data generated using structured questionnaire. The analysis revealed that the mean age of the respondents was 45years, mostly males (70.83%), many (34.17%) of the respondents were in their active age of 40-50. Majority of the respondents were married (80.83%), with mean household size of 4 persons and nearly all respondents had formal education. Farming experience was 12years averagely. The result of probit analysis revealed that age and educational status were the important and significant variables that influence the probability of being a member of cooperative society. The results revealed that cooperative is a veritable tool for improving farmer's productivity as members have best advantage of new technologies, easy access to inputs, better bargaining power for their products and resolution of conflict on land related matters which help to boost their production. The study recommends training of leaders for proper management of funds, loan monitoring to prevent default, extension of credit facilities by government to members to boost their production and agricultural cooperative should create awareness to rural farmers as majority of the rural farmers are unaware of these societies in their communities.

**Keywords:** Cooperative, Agricultural Productivity, Probit, Effect, Analysis

### **Introduction**

Cooperative societies have been described as an effective instrument for improving the productivity as well as the income of farmers and non-farmers (Anigbogu et al., 2017). Cooperatives can contribute to increased bargaining power, production scales, crop diversification and stabilization, adding value to agricultural products, expanding markets and capitalizing producers (Osmar de Paula and Alcido, 2021).

Agro-industrial cooperative organizations have been recognized as important actors for

economic development given their ability to increase the gains of local economies, promote regional development and the well-being of population (Castilla Polo et al., 2017) as cited by (Osmar de Paula and Alcido, 2021)

Subba et al (2011) stated that co-operation signifies protection of the weak, provision of equal justice to all in the society and promotes societal welfare. According to them “each for all and all for each is the motto of co-operation”.

The need to regain agricultural sustainability, agricultural cooperative banks, agricultural banks and other developments programmes were initiated and enforced (Nleblem and Raji, 2019). Agricultural cooperative societies as noted by Nleblem (2018) and cited by Nleblem and Raji (2019) are the only form of business that addresses, fully, all economic, democratic and social dimensions of poverty reduction simultaneously.

Agricultural cooperatives do not only help the farmers to obtain latest skills to tap from the available environmental resources but, also, help them to have access to production inputs (Nuredin and Wan Lee, 2015)

The Nigeria agricultural production has not been able to bridge the gap between the demand and supply of food. Thus, the economy has remained import driven rather than self-sustaining (Anigbogu, et al., 2014). Yet, the farmers can step-up food production by forming themselves into cooperative. But the low membership strength of most of the societies and their meagre resources have led to loss of farmers’ the opportunity of pooling enough resources together to enjoy the benefit of large scale production and other benefits accruable to members of cooperatives. Cooperative growth and development in Nigeria has not been impressive and membership has continued to nose dive, thus, inhibiting agricultural growth. The gap established in this work is to find out if agricultural cooperatives can help to increase agricultural productivity of the farmers as the farmer's current level of production is low.

Given that agricultural systems in Sub-Saharan are typically fragmented into a myriad of small or micro farms over vast and remote rural areas, the role of agricultural cooperatives has become increasingly important ((Wanyama et al., 2009). Historically, agricultural cooperatives have played an important role, all over the world, in providing market access, credit and information to producers. In particular, agricultural cooperative in the USA and Western Europe have played an important economic role in providing competitive returns for independent farmers (Chaddad et al, 2005).

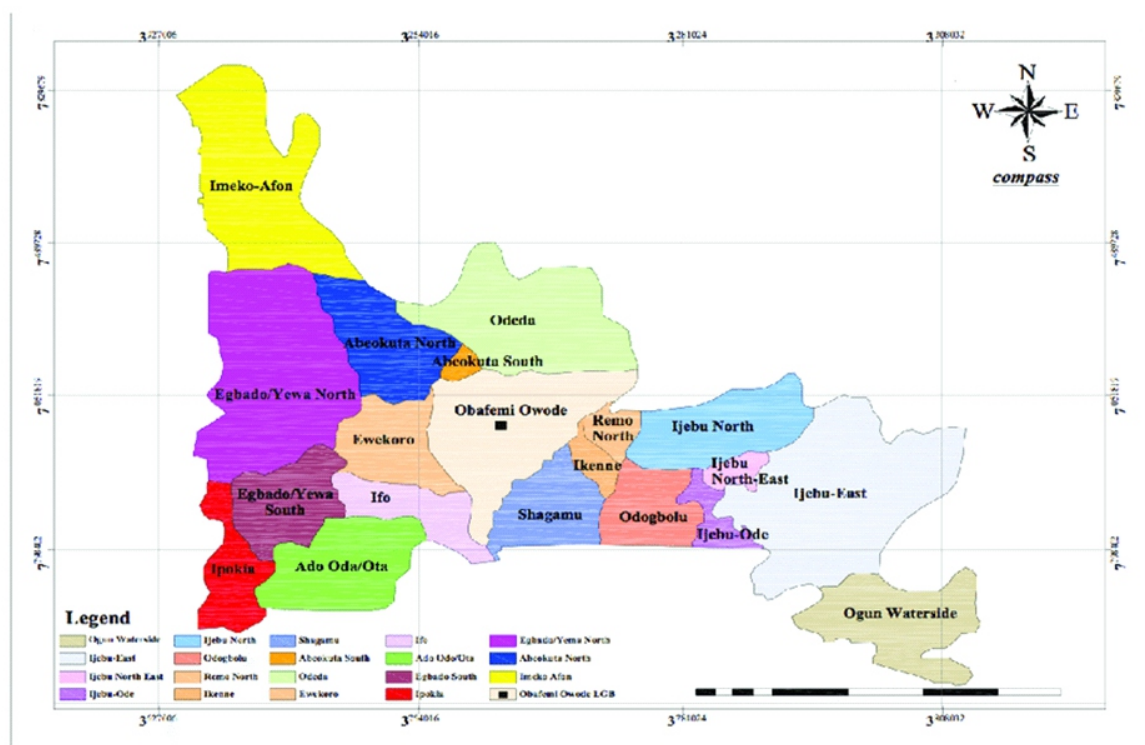
Works, like those of Anigbogu et al. (2015), focused on socioeconomic factors influencing

agricultural production among cooperative farmers in Anambra State, Nigeria. Alufolai and Ahmodu (2005) focused on cooperative produce marketing societies in Oyo, Ogun and Ondo States of Nigeria, Abebaw and Haile (2013) assessed impact of co-operatives on agricultural technology adoption in Ethiopia, which explains the need for this work as there seems to be vacuum in the area of cooperatives and agricultural productivity. The objectives of the study were to: (i) describe the socio-economic characteristics of the respondents, (ii) explain the perceived effects of cooperatives on agricultural productivity and (iii) determine the factors influencing member's participation in cooperative. It was hypothesized that socio-economic factors of farmers do not influence their participation in cooperative.

### **Methodology**

The study was carried out in Ogun State, Nigeria. Ogun State, otherwise called the Gateway State, is one of the 36 states that make up the Federal Republic of Nigeria. It covers a land area of about 16,409.26km which is approximately 1.81% of Nigeria land mass of about 923,768 square kilometers (Akanni; 2000), with 20 local government areas and having population of 5,185,400 comprising 49.71% male and 50.29% female (Ogun State Regional Plan, 2019). Ogun State is located in South Western Nigeria between latitude 6°N and 8°N and longitudes 3°E and 5°E. The state is bounded in the west by the Republic of Benin, to the South by Lagos State and the Atlantic Ocean, to the East by Ondo State and in the North by Oyo State. Abeokuta is the capital and largest city in the state.

The state is within the tropical humid climate zone of Nigeria which generally characterized, by high rainfall and high relative humidity. Agriculture the mainstay of the economy provides the major single occupation for the people of the state especially those in the rural areas. Arable crop like maize, yam, cassava, rice, cocoyam, groundnut, melon, banana plantain, oranges, pineapple, sugar cane, and kolanut are produced in the state. In the riverine areas, people engage in fish farming.



**Fig 1 : Map of Ogun State Showing the Study Area**

A multi-stage sampling method was used in selecting the respondents. In the first stage one local was purposively selected from each of the agricultural zone in Ogun State Nigeria due to the high relative members of Cooperative farmers. The selected LGA were Yewa South, Ado - Odo, and Abeokuta North. In stage 2, two autonomous farming communities were randomly selected from each of the LGA, to make up six communities and from the six communities twenty respondents each were selected proportionately to sum of one hundred and twenty respondents for the study. The proportionate selection was due to the homogeneity in the characteristics of the respondents. The study used primary data which were collected through a set of well- structured questionnaire to elicit information from the respondents. Objective' one and two were analyzed using descriptive statistics such as mean, percentage and frequency distribution. Objective three was analyzed using probit model.

**Model specification**

$$Z_i = \ln \frac{r_i}{1 - p_i} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_n X_n + \varepsilon_i$$

Where  $Z_i$  = probability of participation in cooperative which is either 0 or 1

$\beta_0$  = constant

$\beta_s$  = Represent coefficients

$\varepsilon_i$  = Error terms

$X_1$  = Sex (male=1, female=0)

$X_2$  = Age (years)

$X_3$  = Marital Status (single=0, otherwise=1)

$X_4$  = Educational Status (formal education=1, non-formal=0)

$X_5$  = Household Size (number)

$X_6$  = Farm size (hectares)

$X_7$  = Farming Experience (years)

$X_8$  = Access to Credit (access=1, otherwise=0)

$X_9$  = Contact with Extension Agent (number of contact(s))

$X_{10}$  = Access to Farm Input (access=1, otherwise=0)

**Results and Discussion**

***Socioeconomic characteristics of respondents***

The results of the description of the socio-economic characteristics of the respondents are presented in Table 1. The result shows that 70.83% of the respondents in the study area were males while 29.17% were females. This implies that more males are involved in cooperative societies; the reason could be that in Africa culture, male folks don't have restrictions like their female counterpart. The result agrees with that of Anigbogbu, et al. (2017), who found that males were dominant in cooperative activities than the females in Anambra state Nigeria with 67.6% for males and 32.4% for females. Abebaw and Haile (2013) discovered male dominance in co-operatives activities in Ethiopia, Musa and Hiwot (2017) have, also, noted male dominance in cooperatives societies.

The results in Table 1 show that most of the cooperatives farmers fall within the age bracket of 40-49years which constituted the highest percentage (34.17%). This was followed

by 22.50% for respondents of between 30 and 39 years, 20.83% were from 50-59 years, those above 60 years were 11.67% and 20-29 years were 10.83%. The study revealed the mean age of respondents to be 45 years indicating that most of the farmers are still in their productive and active capacity. Farming is a rigorous activity that requires energetic individuals. This agrees with the findings of Anigbogu, et al. (2017) that the cooperative farmers are still in their active age in Anambra State, Nigeria. Musa and Hiwot (2017) noted that cooperative members in Ethiopia were in their active and productive age.

Table 1, also, revealed that majority of the respondents were married (80.83%), the singles were 12.50% while 6.67% were divorced. High proportion of the respondents that are married suggests that married people are more probably responsible to participate in cooperatives than the others as marriage comes with added responsibilities hence the need for the married to pull their resources together to assist each other. This result is in line with that of Oluwasanya *et al.* (2020).

Table 1 further reveals that 31.67% of the respondents had no formal education, 33.33% of the respondents had primary school education and 16.67% had secondary school education while 18.33% respondents attained tertiary education. This, also, indicates that the respondents in the study area have one form of education or the other and can adopt innovation and they have understanding of risk involved in cooperative activities. This finding agrees with the findings of Anigbogu et al. (2017) who noted a high level of education among co-operative farmers.

The result on household size in Table 1 revealed that the respondents had a mean household size of 4 persons; specifically, 22.69% have 1-2 household size, 49.58% have household size of 3-4 persons, while 27.73% of the respondents have household size of above five persons. This shows that most of the farmers were married. The result is in line with Musa and Hiwot, (2017) findings, who reported large household size for cooperative members in Ethiopia. This result implied that households' large members are an indication of availability of labour for agricultural activities.

The distribution of the respondents according to their farm size as depicted in Table 1 shows that 74.17% of the respondents have 1-3 hectares of land under cultivation. Those with 4-7 hectares of land were 24.17% and those with >7 hectares constitute 1.67%. The distribution shows that majority (74.17%) of the respondents cultivated below 3 hectares of land and as such they are mostly small scaled farmers. This buttress the assertion by Mgbenka and Mbah

(2016) that the agricultural sector has been left largely in the hands of poor and subsistence farmers. These are farmers whose average holding is about 1-3 hectares who cannot benefit from economic of scale hence resort to cooperative organization.

Many of the farmers (43.33.00%) as shown in Table 1 have farming experience of between 6-16years while about 32.5% have farming experience of between 17-27years. 16.67% of the respondents have been farming for less than 5years. Indeed, experience goes along with skill acquisition, which is fundamental to efficiency and effectiveness in any job operation. Musa and Hiwot (2017) have noted that members of cooperatives in Ethiopia were well experienced in farming. The mean years of farming experience is 12years which implies that the farmers are well experienced and have gained enough knowledge about farming and its technique which will help in production.

Table1 revealed that 40.83% of respondents had annual farm income of 51,000-100,000, 20.00% of respondents had annual farm income of 101,000-150,000, 17.50% of respondents had annual farm income of 151,000-200,000, while 21.6% of respondents had annual farm income of 201000 and above. The income generated by respondent played vital role in developing cooperative society. This result disagrees with the finding of Nuredin and Wan Lee. (2015),

This implies that the farmers have sufficient assets to liquidate in case the farm needs financial stability.

#### ***Perceived effects of Agricultural Cooperative on Farmers' Productivity***

The effects of Agricultural Cooperatives as perceived by the respondents are presented in Table 2. The results showed that solving of the problem of land segregation ranked first with a mean score of 2.45 in the study area. According to the respondents they were able to solve the problem relating to land dispute as member actually come together where there are issues and this is resolved. This finding is in line with the findings of Woldu et al. (2013) that agricultural cooperative is considered a foundation that can help small holders to overcome some constraints.

Marketing of product at best advantage ranked second with a mean score of 2.33 in the study area. According to the respondents, they were able to market their products at best advantage which enhanced development of favourable sales and marketing policy, ease access to goods exportation, encouraged packaging of agricultural product. This finding is in line with

**Table 1 Distribution of Respondents Based on Their Socio-economic Characteristics in the Study Area n=120**

Variables	Frequency	Percentage (%)	Mean
Sex			
Male	35	29.17	
Female	85	70.93	
Age (Years)			45
20-29	13	10.83	
30-39	27	22.50	
40-49	41	34.17	
50-59	25	20.83	
>60	14	11.67	
Marital Status			
Single	15	12.50	
Married	97	80.83	
Divorced	8	6.67	
Educational Status			
No-Formal Education	38	31.67	
Primary	40	33.33	
Secondary	20	16.67	
Tertiary	22	18.33	
House Hold Size(No)			4
1-2	27	22.69	
3-4	59	49.58	
>5	34	27.73	
Farm Size(Ha)			3
1-3	89	74.17	
4-7	29	24.16	
>7	2	1.67	
Farming Exp.(Years)			12
?5	20	16.67	
6-16	52	43.33	
17-27	39	32.50	
28-38	8	6.67	
>38	1	.83	
Annual Farm Income (naira)			
51,000-100,000.00	49	40.83	
101,000.00-150,000.00	24	20.00	
151,000.00-200,000.00	21	17.5	
>201,000.00	26	21.67	

Source: Author's Computation



the work of Osmar de Paula and Alcido (2021) who noted that cooperatives in Brazil contribute to increased bargaining power and production scales of members.

Easy access to inputs for new business ranked third with the mean score of 2.06. According to the respondents they were able to acquire inputs for the new business through being a member of cooperative society. Nuredin and Wan Lee (2015) have noted that agricultural cooperatives enables farmers have access to production inputs.

Safe from storage problems of products ranked fourth with the mean score of 2.05. According to the respondents they were saved from storage problem of products because cooperative society provide subsidize storage facilities to their members. Castilla Polo et al. (2017) cited by Osmar de Paula and Alcido (2021) have noted that cooperative societies help to improve the economy well-being of the population.

Best advantage of new technology ranked fifth with a mean score of .97 in the study area. According to the respondents they were taught by extension agents on how to use and operate modern facilities which enhanced their production.

**Table 2: Distribution of Respondents According to the Effects of Agricultural Cooperative on Farmers Productivity**

Variables	Mean	Std. Deviation	Min	Max	Rank
Problem of land Segregation have been solved	2.453782	1.293713	1	5	1
I can market my product At the best advantage	2.333333	1.349344	1	5	2
I can easily acquire Inputs for my new business	2.067797	0.9933868	0	5	3
I am saved from Storage problem of product	2.058824	1.083733	1	5	4
I have best advantage of new technology	1.966667	1.129686	1	5	5

**Source: Author's Computation**

***Factors that influence membership participation in Agricultural Cooperative***

The result of probit analysis of factors influencing member's participation in cooperative is as shown in Table 4. From the result the Chi<sup>2</sup> value was 25.82 was significant implying that the socioeconomic variables influenced membership participation in agricultural cooperative. Based on the over-all significant of Chi-Square, the hypothesis that socio-economic characteristics of the members do not have significant effect on their participation in cooperative is hereby rejected.

From the result, two variables, age and educational status, were the important and significant

factors that influenced the probability of being a member of cooperative society.

The age(0.0328745)affected positively participation of cooperative member and is significant at 5% level. This implies that any increase in age will lead to a corresponding increase in the probability of membership participation in agricultural cooperatives. This is expected probably because; the older may seem to be more credible in group formations than the younger ones ho tend to be more aggressive, affirming that age of cooperators has implication on productivity of members. Abebaw and Haile (2013) have noted a significant and positive relationship between age and co-operative membership in Ethiopia.

The educational status (0.2350881) affected, positively, participation of cooperative members and is significant at 10% level. This implies that any increase in education status of respondents will lead to corresponding increase in the probability of membership participation in agricultural cooperative. The more members have ability to read and write the more they can have access to share others experiences of cooperation and as a result, improves the probability of their participation This is line with the findings of Ojiagu, et al(2015).Anigbogu et al. (2017) also noted education as a significant variable influencing participation in co-operative activities in Anambra state, Nigeria.

**Table 4: Probit Analysis Result of Factors that Influence Membership Participation in Agricultural Cooperative**

Variables	Coefficient	Std. Error	Z	P>/z/	(95%Conf. interval)
Sex	-0.513108	0.3079415	-0.17	0.868	-0.654865
Age	0.0328745	0.166407	1.98	0.048?	0.0002592
Marital Status	0.2821642	0.3355193	0.84	0.400	-0.3754415
Education Status	0.2350881	0.1242058	1.89	0.058*	-0.0083508
Household size	0.884904	0.116873	0.73	0.468	-0.1502672
Farm Size	0.1119755	0.116874	0.96	0.338	-0.1170934
Farming Experience	-0.155839	0.0217115.	-0.72	0.473	-0.0581377
Farm Income	0.1145293	0.1360207	0.84	0.400	-0.1520664
Constant	-2.144432	0.6270931	-3.42	0.001	-3.373512
LR chi <sup>2</sup> (8) = 25.82					
Prob> chi <sup>2</sup> =0.0011					
Log Likelihood= -61.963361 PseudoR <sup>2</sup> = 0.1724					

**Source: Author's Computation\*\***

\* Indicates coefficient significant at 5% & 10% level of probability

### **Conclusion and Recommendations**

The study on effect of agricultural cooperative on farmer's productivity in Ogun State, Nigeria, found that majority (70.83%) of respondents in the study area were male in their productive age, with considerable level of education and many years of farming experience. The study also found that age and educational status were the importance significant variables that influence membership of cooperative.

It can be concluded that cooperative, though, with myriads of problems is a veritable tool for improving farmer's productivity as members have best advantage of new technologies, easy access to inputs, better bargaining power for their products and resolution of conflict on land related matters which help to boost their production. The study recommended that government should support the members with credit to boost their production, education of members to acquire necessary skills on credit related issues is important, the use of guarantors of high repute to safeguard loans given out is also advocated and leaders of the cooperatives should be made to pass the integrity to certify their characters.

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