

## COOPERATIVE MEMBERSHIP AND SMALLHOLDER FARMERS INCOME IN OGUN STATE, NIGERIA

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### ABSTRACT

Cooperative societies have been found to benefit their members economically and socially, which raises farm income and improve productivity of smallholder farmers. This research focused on the effects of cooperative societies' membership on smallholder farmers' income. The study proffered solutions to diverse research questions on assessing the income generating activities of smallholder farmers and assessment of the effects of Farmers' Cooperative on income of members. Primary data were collected using a structured questionnaire from one hundred and thirty (130) farmers selected using a multi-stage sampling technique. Descriptive statistics of frequency counts, means and percentages, and multiple regression were used to analyze the data. Most of the respondents (72.3%) were male, 80.0% had no formal education, 53.1% were between 51 and 65 years, 81.5% were married, 57.7% had family size between 1 and 5 persons while 93.8% had a farm size of less than 4 ha. Cooperative members earned a mean total income at ₦252,400, compared to ₦168,389.7 for non-members and ₦141,000 for former members. The regression analysis underscores the significant and positive impact of cooperative membership on household income ( $\beta = 0.31$ ,  $p < 0.05$ ), signifying higher earnings for cooperative-affiliated households. Farm size cultivated and household size were highly significant. The study confirmed that strengthening cooperative systems is a viable pathway for enhancing agricultural productivity and rural livelihoods. The findings underscore the need for adept cooperative management practices to address challenges and optimize the socioeconomic benefits for participating households.

**Keywords:** cooperative societies; earnings; livelihood; productivity.

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### INTRODUCTION

About 70% of the labour force receive their income directly from the agriculture sector, which generated about 40.07% of the GDP in 2010 and 22% in 2014 during the pre- and post-debasing periods (NBS, 2014). Many attempts were made to improve the

situation but they failed to achieve the objectives they were intended to achieve (Toluwase and Apata, 2013). Agricultural banks, agricultural cooperative banks and other development projects were established and implemented in an attempt to restore agricultural sustainability. The government

has attempted to address the issue of low agricultural output by launching a campaign to inform and encourage smallholder farm owners to join or establish cooperative organizations (Ezeokafor *et al.* (2019).

One of the organizational structures for carrying a lawful business in a market economy such as Nigeria is a cooperative society. Cooperative groups are a potent instrument for raising the income and productivity of both farmers and non-farmers (Anigbogu *et al.* 2017). Mohammed and Lee (2015) define a cooperative society as an autonomous group of individuals who freely assist each other's economic, social and cultural needs and goals through a democratically controlled enterprise, as stated by the International Cooperative Alliance. Another way of defining a cooperative society is as an independent company that its members own, run and promote to meet their needs. By uniting farmers around the country, Nigerian cooperative societies have been seen as a strategic tool for increasing agricultural output.

Agriculture was the main driver of formation of cooperative societies in Nigeria. High input costs, large marketing margins against farmers, low prices for farm products, farmers' lack of bargaining power, and high transportation costs all contributed to the development of contemporary rural cooperative societies in the country (Ezeokafor *et al.* 2019). Agbasi *et al.* (2019) stated that in order to achieve similar outcomes, farmers in poor countries have been encouraged to form cooperative societies. The impact of cooperative organizations on agricultural productivity in most developed economies was taken into account when making this decision. Cooperative societies can also assist with increased bargaining

power, scaling up production, stabilizing and diversifying crops, enhancing the value of agricultural goods, expanding markets, and funding producers. Cooperative societies have been found to benefit their members economically and socially, which encourages smallholder farmers to engage in commercialization and raises farm income and productivity. For most small-scale farmers, this could be crucial to their survival (Osmar and Alcido, 2021).

It might also be argued that the productivity and output of farmers are still substantially low, which deters young people from entering the industry. Numerous market inefficiencies pose challenges to agricultural reform in low-income countries like Nigeria. These include under-finance, poor socioeconomic and production characteristics of farmers, inconsistent government policies, inadequate infrastructure, low agricultural investment, low technology, information inefficiencies (such as the spread of knowledge about new crop varieties and technologies), underdeveloped land property rights, a poorly developed agricultural system, and inefficient resource use. These inefficiencies lead to low production, high cost of food items, low income, inflation, underdevelopment and poverty (Drewnowski, 2022).

Poverty, limited farm holdings and incapacity to raise output and revenue above subsistence levels are some of the main traits of Nigerian farmers. These traits, among others, have been found to be among the things that hinder Nigeria's ability to produce food. Cooperative societies are seen to be commercial organizations that should support social innovation and entrepreneurship in order to give their members the business skills they need to overcome poverty and become resilient to it. Nigerian average farmers are known

for their low productivity, which leads to low income and minimal capital investment and their small agricultural holdings, which are usually less than 2 hectares (Agbasi *et al.*, 2019).

Based on this, the study investigated how household income in Yewa North Local Government Area of Ogun State is impacted by Farmers' Cooperative Membership. The following research questions were addressed by this study: What socioeconomic traits do farmers possess? What kinds of activities do farmers involved in for increased income? What effect does the Farmers' Cooperative have on members' income?

## RESEARCH METHODOLOGY

The area of study is Yewa North (formerly Egbado North), a Local Government Area in the west of Ogun State, Nigeria bordering the Republic of Benin. Its headquarters is in the town of Aiyetoro (or Ayetoro) at 7° 14'00"N 3°02'00"E in the North-east of the Area. It has a land area of 2,087 km<sup>2</sup>. It has an expanse of land with a size of 200,213.5 hectares of cultivable land this makes it the largest LGA in Ogun State in terms of land size. The area is known for its fertile land making it suitable for agriculture. The area cultivates various crops including cashew, cocoa, oil palm, cassava, maize, rice, yam, melon, cocoyam, potato, cowpea, sugarcane and vegetables. The population was projected to be about 312,700 at the 2022 census. The inhabitants are mainly Yoruba, speaking various dialects. Farming and trading are the major occupations of the people of Yewa North LGA. Two-stage sampling procedure was used to select 130 respondents for the study. Stage one involved simple random selection of five (5) villages in the Local Government Area, and twenty-six (26)

smallholder farmers were chosen systematically from the study area in the second stage, for a total of 130 respondents. The questionnaires retrieved revealed that fifty (50) respondents were members of farmers cooperatives; twelve (12) were former members while sixty-eight (68) were non-members of farmers cooperatives.

## Data analysis

The socioeconomic features and income-generating activities of farmers, both members and non-members, were described using descriptive statistics including frequency distribution, percentages and mean. Regression analysis was used to evaluate how the membership status affected their income. The regression model was estimated in accordance with Zou and Wang (2022):

$$\ln Y_i = \alpha + \beta D_i + \gamma_2 \ln G_i + \rho_j X_{ij} + \varepsilon_i$$

Where:

$\ln Y$  is the logarithm of household income in the last production season;

$D$  is a dummy variable with a value of 1 if the household joined one or more farmer cooperatives and 0 otherwise;

$\ln G$  is the logarithms of the farm size (Ha);

The vector of control variables  $X$  contained the following:  $X_1$  = age (years),  $X_2$  = years of formal education,  $X_3$  represent the farmers' sex (1 for male and 0 for female),  $X_4$  = marital status (1 for married and 0 otherwise),  $X_5$  = leadership status in the community (1 for leaders and 0 otherwise),  $X_6$  = health status (1 = affirmative and 0 otherwise),  $X_7$  = household size (number of people),  $X_8$  = years of farming experience (years),  $X_9$  = credit availability (1 for yes and 0 otherwise),  $X_{10}$  = non-agricultural production or business (1 for yes, 0 otherwise) and  $X_{11}$  = en-

gement in off-farm activities by migrant status (1 for yes, 0 otherwise),  $\alpha$  is a constant,  $\epsilon$  is the error term, and  $\beta$ ,  $\gamma_1$ ,  $\gamma_2$ , and  $\varrho$  are the coefficients of related variables.

## RESULTS AND DISCUSSION

### *Socio-economic characteristics of the farmers*

84.0% of the members, 61.8% of non-members and 83.3% of former members of farmers' cooperatives, respectively were all males (Table 1), suggesting that farming and farmers' cooperatives are primarily dominated by men in the study area. This outcome may be attributed to the patriarchal nature of resource access, which is largely structured along male-dominated sociocultural norms. In many rural settings, men have greater control over productive resources such as land, credit, and decision-making power, which limits women's participation in cooperative activities (Nduka *et al.*, 2020). In Ethiopian cooperative activities, Degnet and Mekbib (2013) also found that men predominated. Male domination in cooperative societies has also been highlighted by Musa and Hiwot (2017) in Eastern Ethiopia.

6.9% of the farmers were between the ages of 20 and 35, with 14.0% cooperative members, 27.9% non-members, and 25.0% former members, 22.3% of the population were between the ages of 36 and 50. The results suggested that the majority of farmers were between the ages of 51 and 65 years. This is most likely explained by the fact that farmers in their middle years are more eager and willing to put in more efforts than the older farmers, and may have more experience than the younger ones. They are also capable of making decisions on various farming-related tasks.

The majority (81.5%) of the farmers were married, out of which 96.0% were members, 75.0% were previously members and 72.1% were not members of farmers' cooperative societies (Table 1). Since married farmers are believed to handle money more responsibly, credit providers may take them into consideration.

Overall, 80.0% of the respondents had one form of formal education, out of which 40.0% had completed primary school, 22.3% had secondary education and 10.0% had vocational/technical education (Table 1). Education is crucial for effective and efficient farm management, as it enhances farmers' ability to adopt improved practices, increase productivity and improve their economic outcomes, as reported by Adeyonu *et al.* (2021).

57.7% of the respondents had a household size of 1-5 members while 38.5% had between 6 and 10 members (Table 1), suggesting that the majority of farmers have large sized households which is most likely caused by migration to a different state or district for better living condition and higher income.

93.8% of the respondents owned between 1 and 4.0 ha, suggesting that most farmers in the research region were small-scale producers due to their comparatively modest farm holdings. This may be explained by the small-scale agricultural methods used, as well as the fact that practically all farming operations, including application of pesticides, involve the use of manual equipment. This supports the findings of Tijjani *et al.* (2018), who found that more than half of Nigerian farmers had less than four hectares of land.

**Table 1: Distribution by the Socio-economic Characteristics of the Farmers**

|                                    | Members |          | Non-members |         | Former member |          | Total |          |
|------------------------------------|---------|----------|-------------|---------|---------------|----------|-------|----------|
|                                    | Freq.   | Per-cent | Freq.       | Percent | Freq.         | Per-cent | Freq. | Per-cent |
| Sex                                |         |          |             |         |               |          |       |          |
| Male                               | 42      | 84.0     | 42          | 61.8    | 10            | 83.3     | 94    | 72.3     |
| Female                             | 8       | 16.0     | 26          | 38.2    | 2             | 16.7     | 36    | 27.7     |
| Age                                |         |          |             |         |               |          |       |          |
| 20-35                              | 0       | 0.0      | 8           | 11.8    | 1             | 8.3      | 9     | 6.9      |
| 36-50                              | 7       | 14.0     | 19          | 27.9    | 3             | 25.0     | 29    | 22.3     |
| 51-65                              | 33      | 66.0     | 31          | 45.6    | 5             | 41.7     | 69    | 53.1     |
| 66-80                              | 10      | 20.0     | 10          | 14.7    | 3             | 25.0     | 23    | 17.7     |
| Marital Status                     |         |          |             |         |               |          |       |          |
| Single                             | 0       | 0.0      | 7           | 10.3    | 1             | 8.3      | 8     | 6.2      |
| Married                            | 48      | 96.0     | 49          | 72.1    | 9             | 75.0     | 106   | 81.5     |
| Divorced                           | 1       | 2.0      | 9           | 13.2    | 1             | 8.3      | 11    | 8.5      |
| Widowed                            | 1       | 2.0      | 0           | 0.0     | 1             | 8.3      | 2     | 1.5      |
| Separated                          | 0       | 0.0      | 3           | 4.4     | 0             | 0.0      | 3     | 2.3      |
| Religion                           |         |          |             |         |               |          |       |          |
| Christianity                       | 25      | 50.0     | 31          | 45.6    | 5             | 41.7     | 61    | 46.9     |
| Islam                              | 21      | 42.0     | 24          | 35.3    | 6             | 50.0     | 51    | 39.2     |
| Others                             | 4       | 8.0      | 13          | 19.1    | 1             | 8.3      | 18    | 13.8     |
| Household Size                     |         |          |             |         |               |          |       |          |
| 1-5                                | 28      | 56.0     | 45          | 66.2    | 2             | 16.7     | 75    | 57.7     |
| 6-10                               | 21      | 42.0     | 19          | 27.9    | 10            | 83.3     | 50    | 38.5     |
| 11-15                              | 1       | 2.0      | 4           | 5.9     | 0             | 0.0      | 5     | 3.8      |
| Level of Education                 |         |          |             |         |               |          |       |          |
| No formal education                | 9       | 18.0     | 13          | 19.1    | 4             | 33.3     | 26    | 20.0     |
| Primary                            | 21      | 42.0     | 28          | 41.2    | 3             | 25.0     | 52    | 40.0     |
| Secondary                          | 15      | 30.0     | 11          | 16.2    | 3             | 25.0     | 29    | 22.3     |
| Vocational and technical education | 3       | 6.0      | 9           | 13.2    | 1             | 8.3      | 13    | 10.0     |
| BSC/HND                            | 0       | 0.0      | 7           | 10.3    | 1             | 8.3      | 8     | 6.2      |
| NCE/OND                            | 1       | 2.0      | 0           | 0.0     | 0             | 0.0      | 1     | 0.8      |
| Post graduate                      | 1       | 2.0      | 0           | 0.0     | 0             | 0.0      | 1     | 0.8      |
| Leadership Status                  |         |          |             |         |               |          |       |          |
| Yes                                | 21      | 42.0     | 16          | 23.5    | 4             | 33.3     | 41    | 31.5     |
| No                                 | 29      | 58.0     | 52          | 76.5    | 8             | 66.7     | 89    | 68.5     |
| Health Status                      |         |          |             |         |               |          |       |          |
| Poor                               | 2       | 4.0      | 2           | 2.9     | 0             | 0.0      | 4     | 3.1      |
| Neutral                            | 14      | 28.0     | 15          | 22.1    | 6             | 50.0     | 35    | 26.9     |
| Good                               | 15      | 30.0     | 24          | 35.3    | 2             | 16.7     | 41    | 31.5     |
| Very good                          | 19      | 38.0     | 27          | 39.7    | 4             | 33.3     | 50    | 38.5     |
| Participation in Off-Farm Income   |         |          |             |         |               |          |       |          |
| Yes                                | 37      | 74.0     | 46          | 67.6    | 6             | 50.0     | 89    | 68.5     |
| No                                 | 13      | 26.0     | 22          | 32.4    | 6             | 50.0     | 41    | 31.5     |
| Participation in Non-Farm Income   |         |          |             |         |               |          |       |          |
| Yes                                | 37      | 74.0     | 49          | 72.1    | 11            | 91.7     | 97    | 74.6     |
| No                                 | 13      | 26.0     | 19          | 27.9    | 1             | 8.3      | 33    | 25.4     |
| Size of Farmland(Ha)               |         |          |             |         |               |          |       |          |
| 0.0-4.0                            | 48      | 96.0     | 64          | 94.1    | 10            | 83.3     | 122   | 93.8     |
| 4.1-8.0                            | 1       | 2.0      | 4           | 5.9     | 0             | 0.0      | 5     | 3.8      |
| 8.1-12.0                           | 1       | 2.0      | 0           | 0.0     | 2             | 16.7     | 3     | 2.3      |

**Source:** Field Survey, 2023

***Respondents' Income-generating Activities***

The findings indicate that farmers who were members of cooperative societies earned higher average income (₦1,902,000.00) compared to non-members (₦1,480,000.00) and past members (₦885,833.30). This suggests that cooperative society membership plays a significant role in enhancing farmers' income levels. This result is consistent with the findings of Adeyonu *et al.* (2021), who reported that participation in farmer organizations significantly improves household income and economic welfare through better access to inputs, credit and markets.

The higher non-farm and off-farm income observed among cooperative society members aligns with the study by Abdulai and

Huffman (2014), which found that farmers engaged in cooperative or group-based systems are more likely to diversify into non-farm income activities due to improved access to information and financial resources. The findings corroborate the work of Bernard and Spielman (2009), who observed that cooperative society membership enhances market participation and income generation among smallholder farmers by reducing transaction costs and improving bargaining power.

Overall, these studies support the assertion that cooperative society membership not only increases farm income but also promotes income diversification through non-farm and off-farm activities, thereby improving the overall livelihood of farmers.

**Table 2: Distribution of Farmers by their Income Generating Activities**

| Cooperative Membership Status | Average Farm Production Income<br>(₦) | Average Non-Farm Income<br>(₦) | Average Off-Farm Income<br>(₦) | Average Monthly Household Income<br>(₦) | Estimated Total Income<br>(₦) |
|-------------------------------|---------------------------------------|--------------------------------|--------------------------------|-----------------------------------------|-------------------------------|
| Members                       | 1,902,000.00                          | 621,200.00                     | 639,400.00                     | 315,400.00                              | 3,478,000.00                  |
| Non-Members                   | 1,480,000.00                          | 354,000.00                     | 252,500.00                     | 229,470.60                              | 2,315,970.60                  |
| Former Member                 | 885,833.30                            | 498,833.30                     | 314,583.30                     | 174,166.70                              | 1,873,416.60                  |
| Total                         | 4,267,833.30                          | 1,474,033.30                   | 1,206,483.30                   | 719,037.30                              | 7,667,387.20                  |

**Source:** Field Survey, 2023

***Assessment of the Effect of Farmers' Cooperative on Income***

The model used was statistically robust, with a high  $R^2$  of 0.9824 and adjusted  $R^2$  of 0.9804, indicating that approximately 98% of the variation in farmers' income is explained by the included variables (Table 3). The overall model was highly significant ( $F = 501.69$ ;  $p < 0.01$ ), confirming the joint significance of the explanatory variables.

Cooperative Membership ( $\beta = 0.313101$ ,  $t = 2.13$ ,  $p < 0.05$ ) had a significant positive

effect. This implied that Cooperative society membership enhances access to credit, inputs, and markets, thereby improving productivity and income. This aligns with the reports of Adeyonu *et al.* (2021) and Bernard and Spielman (2009), who found that participation in cooperative societies improves income and market access.

Farm Size ( $\beta = 0.77357$ ,  $t = 3.11$ ,  $p < 0.01$ ) was positive and significant, indicating that larger farm holdings significantly increase income. This implied that increased scale of

production leads to higher output and income. This supports findings by Abdulai and Huffman (2014).

Age ( $\beta = 0.054753$ ,  $t = 7.18$ ,  $p < 0.01$ ) was positive and significant (Table 3), suggesting that older farmers earn higher income, likely due to accumulated experience. Experience plays a critical role in farm decision-making and efficiency.

Years of Formal Education ( $\beta = 0.022623$ ,  $t = 2.06$ ,  $p < 0.05$ ) was positive and significant, indicating that more educated farmers earn higher income. This implies that education enhances adoption of innovations and better farm management. This agrees with Adeyonu *et al.* (2021).

Sex ( $\beta = 0.087689$ ,  $t = 0.54$ ,  $p > 0.10$ ) was not significant, indicating no meaningful difference in income based on gender in this context. Marital Status ( $\beta = 0.197116$ ,  $t$

$= 1.05$ ,  $p > 0.10$ ) was not significant, suggesting it does not influence income significantly.

Leadership Status ( $\beta = -0.32283$ ,  $t = -2.13$ ,  $p < 0.05$ ) was negative and significant, implying that holding leadership roles may reduce income due to time diversion from productive farm activities. Health Status ( $\beta = 0.334686$ ,  $t = 5.32$ ,  $p < 0.01$ ) was positive and highly significant at 1% level, indicating that healthier farmers earn more income. Good health improves labour productivity and farm efficiency. Household Size ( $\beta = 0.088505$ ,  $t = 2.94$ ,  $p < 0.01$ ) was positive and significant, suggesting that larger households contribute more labour. This implies that family labour reduces production costs and increases income.

Years of Farming Experience ( $\beta = -0.02261$ ,  $t = -2.70$ ,  $p < 0.01$ ) was negative and significant (Table 3) which may indicate diminish-

**Table 3: Assessment of the effect of Farmers' Cooperative membership on income of members**

| Variables                               | Co-Efficient | Standard Error | T-Value |
|-----------------------------------------|--------------|----------------|---------|
| Cooperative Membership                  | 0.313101**   | 0.146901       | 2.13    |
| Farm size                               | 0.77357***   | 0.248595       | 3.11    |
| Age                                     | 0.054753***  | 0.007623       | 7.18    |
| Years of formal education               | 0.022623**   | 0.010975       | 2.06    |
| Sex                                     | 0.087689     | 0.162143       | 0.54    |
| Marital status                          | 0.197116     | 0.187214       | 1.05    |
| Leadership status                       | -0.32283**   | 0.151757       | -2.13   |
| Health status                           | 0.334686***  | 0.062905       | 5.32    |
| Household Size                          | 0.088505***  | 0.030082       | 2.94    |
| Years of Farming Experience             | -0.02261***  | 0.008383       | -2.7    |
| Credit Amount Used                      | -2.36E-07    | 1.37E-07       | -1.72   |
| Non-agricultural production or business | 0.145324     | 0.151592       | 0.96    |
| Off-agricultural production or business | 0.126737     | 0.146274       | 0.87    |
| R-squared                               | 0.9824       |                |         |
| Adj R-Squared                           | 0.9804       |                |         |
| F(13,117)                               | 501.69       |                |         |
| Prob>F                                  | 0            |                |         |
| Root MSE                                | 0.7135       |                |         |

Source: Field Survey, 2023

\*\*\*, \*\*, \* significant at  $p \leq 0.001$ ;  $p \leq 0.01$ ;  $p \leq 0.05$ , respectively

ing returns to experience or resistance to innovation among older farmers. Credit Amount Used ( $\beta = -2.36\text{E-}07$ ,  $t = -1.72$ ,  $p < 0.10$ ) was negative and significant, indicating improper use or high cost of credit that may reduce net income.

The results show that cooperative society membership, farm size, education, health status, and household size are key drivers of farmers' income, while leadership roles and inefficient credit use may reduce income. The findings reinforce the importance of strengthening cooperative societies as a policy tool for improving rural livelihoods.

## CONCLUSION

Cooperative societies play a crucial role in improving the welfare of farmers. Cooperative membership is male-dominated, with most members being middle-aged and married, indicating an active and economically engaged farming population. Educational attainment was generally low, with primary education being the most common level. Farm-related activities constituted the major source of livelihood across all categories of farmers, with cooperative members earning higher average income compared to non-members and past members. Participation in cooperative societies enhances access to productive resources and income opportunities.

Cooperative membership, farm size, age, years of formal education, health status, and household size had a positive and significant influence on farmers' income, while sex, marital status, and non-/off-farm activities were not significant determinants. Of importance are institutional participation, human capital development, and resource endowment in improving farmers' income. Overall, the study confirms that strengthen-

ing cooperative systems is a viable pathway for enhancing agricultural productivity and rural livelihoods.

## RECOMMENDATIONS

Based on the significant findings of the study, the following recommendations are proposed:

Since Cooperative societies' membership significantly increases farmers' income, State and Local Governments should strengthen and support cooperative societies through improved funding, capacity building and institutional backing. This will enhance members' access to credit, inputs, and markets.

Given the positive and significant effect of farm size on income, policies aimed at improving farmers' access to land such as land redistribution and tenure security should be promoted to enable farmers to expand their scale of production.

As years of formal education significantly influence income, government and development agencies should invest in farmer education, adult literacy programs, and extension training. Training should focus on modern farming techniques, innovation adoption, and agribusiness management.

Considering the significant role of health status in determining income, there is a need to improve access to affordable healthcare services in rural areas to ensure that farmers remain productive and efficient.

Since household size positively affects income (likely through family labour contribution), programs that enhance labour productivity, such as mechanization support and labour-saving technologies, should be encouraged.



Although credit showed weak significance, its negative relationship suggests possible misuse or high repayment burden. Therefore, financial institutions and cooperatives should provide guidance on proper utilization of credit and offer low-interest, farmer-friendly loan schemes.

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