Cooperative Societies and Small Scale Cassava Farmers in Orhionmwon Local Government Area of Edo State

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Abstract

The study analyzed cooperative societies and small-scale cassava farmers in Orhionmwon Local Government Area of Edo State. Primary data were utilized using a well-structured questionnaire which was administered to 135 respondents. Descriptive statistics, multiple regression, chow test, costs and returns as well as a 5-point likert scale were used to analyze the data. The result showed that the linear model had the best fit with R^2 value of 51.9% before and 95.3% after joining cooperative societies. Age, loans obtained, household size, educational level, farm size, farming experience, marital status and cutting stem significantly influenced output before and after joining cooperative societies. The t-test result showed that there was significant difference of farmers' income before and after joining cooperative societies. The chow test revealed that there was a significant difference in socioeconomic factors of small scale farmers before and after joining cooperative societies. Cassava production was profitable in the study area as indicated by the rate of returns on investment of 86.2%.

Keywords: Cooperative societies, small-scale, farmers, cassava, credit

Introduction

In Nigeria, agriculture is one of the major sectors of the economy and a major contributor to Nigeria's Gross Domestic Product (GDP) (Rahji and Fakayode, 2009). An estimated 76 percent of Nigeria's population lives in the rural areas, and above 90 percent of rural dwellers are engaged in agricultural production (United Nations Children Fund, 2008). The roles of the agricultural sector, according to the Nigerian Agricultural policy document (Federal Department Agriculture/Federal Ministry of Agriculture and Rural Development, 2001), include the provision of food for the growing population, provision of foreign exchange earnings, employment of a significant labor force and provision of income for the farming households. The challenges involved in the development of agriculture in Nigeria have resulted in the evolution of intervention programs and social organizations. Prominent among the social organizations are cooperative societies.

By definition, a cooperative society refers to an association of persons who have voluntarily come together to achieve a common objective through the formation of a democratically-controlled organization, making equitable contribution to the capital required, and accepting a

share of the risks and benefits of the undertaking (World Bank, 1989). According to the international co-operative Alliance (ICA, 2010) a cooperative is an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly-owned and organized business or enterprise.

Historically, cooperatives as business forms developed in the late 18th century in England and France as a reaction to and substitute for actual and perceived hardships and disruptions brought with the industrial revolution and subsequent factorization of labour (James, 2006).

Agricultural development efforts have identified cooperatives in Nigeria as a vehicle for the development of agriculture because, according to Kehinde *et al.* (2009), it enables farmers to solve agricultural problems such as inadequate access to loans, and high level of illiteracy which still remain major agricultural development problems. Some scholars have tried to reveal the impact of cooperative societies on agriculture. In a study conducted by Igwe *et al*. (2009) on the determinants of women's access to credit in Abia state, Nigeria, it was reported that farmers who were members of cooperative societies had more access to credit than non-cooperative farmers. In a similar study in Abia state, Ibezim *et al*. (2010) stated that there was a significant difference in the incomes, and that outputs of the cooperative farmers were found to be higher than those of the non-cooperative farmers. Findings by Agbo (2009) in Enugu state in Nigeria revealed that about 60.5% of the respondents who belonged to cooperatives got various sums of money as credit through their cooperatives. Specifically, the author stated that 14.52% of the respondents reported that they bought farm inputs at subsidized prices while 25% were assisted by the cooperatives to sell their farm products. Adeyemo (1994) reported that cooperative societies performed better in terms of gross margin than individual farmers who were non-members. This according to Adeyemo (1994) was due largely to the involvement of the government through the provision of financial and technical assistance to cooperative farmers. Holloway *et al.* (2000) studied milk marketing of small-scale farmers in the East African highlands, and concluded that cooperative societies that act as marketing institutions are potential catalysts for reducing transaction costs, stimulating entry into the market and promoting growth in rural communities.

Nigeria is the world largest producer of cassava with other top producers being Indonesia, Thailand, the Democratic Republic of Congo and Angola. As a staple food, cassava has certain inherent characteristics which make it attractive especially to smallholder farmers in the country. First, the crop is capable of thriving on soils where other crops, most especially grains, failed. Secondly, cassava is regarded as a famine reserve crop which requires relatively low amounts of inputs (Nweke, 2004; Enete *et al*., 2004; Amos, 2013). Thirdly, the crop can withstand stress such as drought as it can stay in the ground for several months. Fourthly, cassava is available all year round, thus providing households with food security. Lastly, although cassava is cheap to cultivate, it can generate good income for peasant farmers.

The organization of cassava cooperative farmers has in recent years become one of the most important pre-conditions for effective mobilization of production resources as well as accelerates farmer's progress. Fayese (2009) however emphasized that one of the most effective vehicles for organizing modernized cassava production is through cooperative societies. Chambo (2009) however pointed out that cooperative activities explain the best methods by which peasant farmers can take part in economic advancement and gain valuable

experience of democratic procedure and business management. Suffice it to say that Nigeria's agricultural production is dominated by small-scale farmers who live mostly in rural settings where they operate more or less at subsistence level.

Cooperatives, as strategy for economic development, have been used by people of different ideological persuasions since the movement started in Rochadale-England in 1844. Apart from credit facilities, the question is: do cooperative farmers have access to other farm inputs than non-cooperative farmers do? Providing an answer to the above question formed the basis for this study, and it is believed that the findings will add to existing information on cooperative societies. Similar studies have been done on cooperative societies in Nigeria, but little or no study on performance of cooperative societies exist to fill knowledge gap especially in the study area, hence the necessity for this research.

The Specific objectives of the study were to:

i. describe the socio-economic characteristics of the small-scale cassava farmers in cooperative societies,

ii. determine and compare the influence of socio-economic characteristics of the small scale cassava farmers on their annual incomes before and after joining the cooperative societies,

iii. examine the profitability level of small scale cassava farmers that belong to cooperative societies,

iv. describe the benefits derived from membership of cooperatives, and

v. identify the constraints faced by cooperative societies in performing effectively.

Research Hypothesis

H_o: there is no significant difference in income of the small-scale cassava farmers before and after joining the cooperative societies in the study area.

Research Methodology

The Study Area

The study was carried out in Orhionmwon Local government Area of Edo state, Nigeria. The state which is located in the southern part of Nigeria, and created on 27th August, 1991, has a total land area of 17,802km^2(6,873square miles) and a population size of 2,159,848 persons(1991 census). It lies on a latitude of 4^0N and $4^0$30'N and longitude of 6^0E and $6^0$5'E respectively. It is located in the rain forest zone, has an annual rainfall of 1500-3000mm spread over about 200 days in the year.

The main occupation of the people is farming, although many are also employed as civil servants, blacksmiths and traders. The state is mainly inhabited by the Bini, Esan, Esako, Ora, Igbanke, and Owan tribes. The major crops grown by the people include cassava, yam, maize, vegetables, cocoa, rubber, oil palm, pineapple and plantain. The state comprises of eighteen local governments areas out of which Orhionmwon local government area was purposively

chosen because of the major crop grown and the abundance of cooperative societies that are functional and non-functional.

Sampling Technique and Sampling Size

Orhionmwon Local Government Area comprises of six districts, and almost all the wards are predominantly rural in nature. A multi-stage sampling procedure was used for the study. In stage 1, three districts were purposely selected because they had quite a number of cooperative societies. In stage 2 three villages was randomly selected from each of the districts to give a total of nine villages. In the third stage, fifteen small-scale cooperative farmers were randomly selected from the nine villages making a total of 135 respondents for the study. A list of registered cooperative societies was obtained from the Edo state Ministry of Commerce and Industry, Benin city.

Data Collection and Data Analysis

The study used primary data gathered through a well-structured questionnaire that was administered to the selected cooperatives societies' members, and through personal interview. Descriptive statistics, multiple regression, chow test, and costs and returns analysis were used to process the data from the study. The multiple regression model is explicitly specified as follows:

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + ---+ e \text{ ---------- (1)}$$

Where:

Y = income generated by farmer before/after joining co-operative (₦)
X_1 = loan amount (₦)
X_2 = farm size (hectare)
X_3 = cutting stems (₦)
X_4 = age (years)
X_5 = educational level (years)
X_6 = household size (years)
X_7 = farming experience (years)
X_8 = marital status
a = constant
b = regression coefficient
e = error term

Four functional forms of the regression model were tried, namely linear, exponential, semi-log, and double-log. Output of the form with the highest value of coefficient of multiple determinations (R^2), highest number of significant variables and F-statistic value was selected as the lead equation.

The Chow-statistic was used to compare the parameters of regression outputs before and after joining the cooperative society; that is, whether the independent variables have different effects on the cassava farmers' incomes before and after joining the cooperative society.

$$\text{The Chow-test} = \frac{\{SABC-(SAC+SBC)/\ (K)}{(SAC+SBC)/\ NAC+\ NBC-2K)} \text{ ---------- (2)}$$

Where:

SABC = Sum of squared residuals of the regression output before and after joining the cooperative society

SAC = Sum of squared residuals of the regression output after joining the cooperative societies

SBC = Sum of squared residuals of the regression output before joining the cooperative societies

NAC = Number of observations after joining the cooperative societies

NBC = Number of observations before joining the cooperative societies

K = Total number of parameters

Costs and Returns Analysis

The Net Farm Income (NFI) is the difference between the Gross Income (GI) and total (fixed and variable) cost of production. The model for estimating the NFI is represented by the following equation:

NFI = GI – TVC – TFC---------- (3)

Where:

NFI = Net Farm Income (₦)

GI = Gross Income (₦)

TVC = Total Variable Cost (₦)

TFC = Total Fixed Cost (₦)

So, in order to conclude if the enterprise was profitable or not, the profitability index was used. It was stated as Profitability Index (PI) = Net Farm Income (NFI) per unit of Gross Revenue (GR). That is;

$$PI = \frac{NFI}{GR} \text{ ---------- (4)}$$

This was expected to show the level of return per naira gross income. For a farm to be profitable, the PI must be greater than zero. If PI is negative, it implies that the farm is running at a loss.

The following profitability measures were calculated:
Rate of Returns on Investment (%)

$$RRI = \frac{NFI}{TC} \times \frac{100}{1} \text{ ---------- (5)}$$

Where: TC = total cost, hence (TVC + TFC)

This showed the ratio of the accounting profit to the investment in the farm, expressed as a percentage. The RRI is expected to be greater than the cost of capital for the investment to be worthwhile. The RRI is also expected to be greater than or equal to the interest rate on fixed deposit.

Capital Turnover (CTO): = TR/TC ---------- (6)

Where: TR= Total Revenue

It describes roughly how much naira in revenue the farm can generate for each naira invested over a given period. This ratio should be greater than 1 for the investment to be profitable.

Results and Discussion

Sex of Respondents

Table 1 presents the sex distribution of the respondents. The result showed that 94 (69.6%) of the respondents were male while 41 (30%) were female which indicates that male were more than the females in cooperative societies in the study area.

Table 1: Distribution of Respondents According to Gender

Gender	Frequency	Percentage	% Cumulative Frequency	Mode
Male	94	69.6	69.6	
Female	41	30.4	100.	Male
Total	135	100		

Source: Survey Data, 2016.

Age Distribution of Respondents

Table 2 shows the age distribution of the respondents. The result of the survey showed that 25 (18.5%) were 30years old or below while 16 (11.9%) were above the age of 60. Respondents aged 41 – 50 were 38 (28.1%) while those in age bracket 51 - 60 constituted about 8 (5.9%). Majority of the member (48) were 31 - 40 years, and constituted about 35.6% of the respondents. Many of the members (73 or 54.1%) were therefore young, being 21 - 40 years.

Table 2: Distribution of Respondents According to Age

Age range	Frequency	Percentage	% Cumulative Frequency	Mode
21 – 30	25	18.5	18.5	
31- 40	48	35.6	54.1	
41-50	38	28.1	82.2	31 – 40 years
51- 60	8	5.9	88.1	
>60	16	11.9	100.0	
Total	135	100		

Source: Survey Data, 2016

Marital Status of Respondents

Table 3 indicates that most (93) (68.9%) of the respondents were married, which means that they were family people and consequently matured people having a sense of responsibility. About 17 (12.6%) were single, 14 (10.4%) were divorced while widows/widowers were 11 (8.1%).

Level of Education of Respondents

The respondent level of education is shown in Table 4. Table 4 reveals that 49 (36.3%) have no formal education, majority of farmer have primary education being 54 (40.0%) and 32 (23.7)

had secondary education. This shows a relatively high educational level among the respondents in the study area.

Table 3: Distribution of Respondents by Marital Status

Marital Status	Frequency	Percentage	% Cumulative Frequency	Mode
Single	17	12.6	12.6	
Married	93	68.9	81.5	Married
Widow/Widower	11	8.1	89.6	
Divorced	14	10.4	100.0	
Total	135	100		

Source: Survey Data, 2016

Table 4: Distribution of Respondents by Educational Status

Level of Educational	Frequency	Percentage	% Cumulative Frequency	Mode
No formal	49	36.3	36.3	
Primary	54	40.0	76.3	Primary Education
Secondary	32	23.7	100.0	
Total	135	100		

Source: Survey Data; 2016

Household Size of Respondents

Table 5 shows the household size distribution of the respondents. The study revealed that about 76.2% of the respondents had 4 – 9 persons in their households. They therefore generally had large families.

Table 5: Distribution of Respondents by Household Size

Household size	Frequency	Percentage	% Cumulative Frequency	Mode
1 – 3	18	13.3	28.1	
4 – 6	65	48.1	76.3	4 – 6 persons
7 – 9	38	28.1	89.6	
10 – 12	14	10.4	100.0	
Total	135	100		

Source: Survey Data, 2016

Farming Experience of Respondents

The distribution of the farming experience of the respondent is shown in Table 6. From the table, 37 (27.4%) of the respondents had 1-5 years farming experience, while 22 (16.3%) had 6-10 years farming experience; 36 (26.7%) had been farming cassava for 11-15 years, 34 (25.2%) for 6-20 years and 6 (4.4%) had farming experience of 20 years and above. This result suggests that the respondents are new farmers that joined the cooperative..

Hectares Owned Before Joining Cooperatives

Table 7 shows the number of hectares owned by the respondents before joining cooperatives. The result shows that 36 (26.7%) had less than one hectares, 77 (57.1%) had 1 - 3 hectares, 20

(14.8%) had 4 - 5 hectares and 2 (1.5%) had above 5 hectares. Modal hectarage was 1-3 hectares.

Table 6: Farming Experience of Respondents

Experience (years)	Frequency	Percentage	% Cumulative Frequency	Mode
1 – 5	37	27.4	27.4	
6 – 10	22	16.3	43.7	1- 5 years
11 – 15	36	26.7	70.4	
16 – 20	34	25.2	95.6	
20 and above	135	100.0	100.0	

Source: Survey Data, 2016

Table 7: Distribution of Hectares Owned by Respondents before Joining Cooperatives

Hectares	Frequency	Percentage	% Cumulative Frequency	Mode
Less than 1	36	26.7	26.7	
1-3	77	57.1	57.1	1-3 ha
4-5	20	14.8	14.8	
Above 5	2	1.5	1.5	
Total	135	100	100	

Source: Survey Data, 2016

Hectares Owned After Joining Cooperative

Table 8 shows the number of hectares owned by the respondent after joining cooperative. The table shows that 16 (11.9%) had less than one hectares, 23 (17.0) had 1 - 3 hectares, 71 (52.6%) had 4 - 5 hectares and 25 (18.5%) had above 6 hectares.

Table 8: Distribution of Hectares Cultivated by Respondents after Joining Cooperative

Hectares	Frequency	Percentage	% Cumulative Frequency	Mode
Less than one	16	11.9	11.4	
1 – 3	23	17.0	47.4	4 – 5 ha
4 – 5	71	52.6	83.0	
6 above	25	18.5	35.0	
Total	135	100		

Source: Survey Data, 2016

Income Level before Joining Cooperatives

Table 9 depicts income levels of respondents before joining cooperatives. From the table, 19 (14.1%) had less than ₦15000 income level, 45 (33.3%) had ₦15000 - ₦25000 income level, 45 (33.3%) had ₦25000 - ₦35000 income level, and 26 (19.3%) had ₦35000 and above as income level.

Income Level after Joining Cooperatives

Table 10 shows income levels of respondents after joining cooperatives. It shows that there was a change in the income level of respondent after joining cooperatives with 66 (48.9%)

Table 9: Income Level of Respondent before Joining Cooperatives

Income level	Frequency	Percentage	% Cumulative Frequency	Mode
Less than 15000	19	14.1	14.1	
15000 - 25000	45	33.3	47.4	15000 – 25000
25000 - 35000	45	33.3	80.7	25000 – 35000
35000 and above	26	19.3	100.0	
Total	135	100		

Source: Survey Data, 2016

having an income level of ₦35000 and above, 12 (8.9%) had less than ₦15000, 26 (19.3%) had ₦15000 - ₦25000 income level and 31 (23.0%) had ₦25000 - ₦35000 as income level.

Table 10: Income Level after Joining Cooperatives

Income level	Frequency	Percentage	% Cumulative Frequency	Mode
Less than 15000	12	8.9	8.9	
15000 - 25000	26	19.3	28.1	
25000 - 35000	31	23.0	51.1	
35000 and above	66	48.9	100.0	>35000
Total	135	100		

Source: Survey Data, 2016

Loans Obtained for Farming Activities

Table 11 shows the loan obtained for farming activities by the respondent. It is seen from the table that 91 (67.4%) had 1 - ₦20000 as loan, 6 (4.4%) had ₦20000 - ₦30000, 15 (11.1%) had ₦30000 - ₦40000, 20 (14.8%) had ₦40000 - ₦50000 and 3 (2.2%) had ₦50000 and above as loan for farming activities.

Table 11: Loan Obtained for Farming Activities

Loan range	Frequency	Percentage	% Cumulative Frequency	Mode
1-20000	91	67.4	67.4	
20000-30000	6	4.4	71.9	
30000-40000	15	11.1	83.0	₦1 - ₦20000
40000-50000	20	14.8	97.8	
50000 and above	3	2.2	100.0	
Total	135	100		

Source: Survey Data, 2016

Regression Analysis on Respondents before Joining Cooperatives

The linear function performed the semi-log, double log and exponential function on the basis of R^2 and the number of significant variables (Table 12). The t-test indicated that six of the variables were significant at 1%, 5% and 10%. These variables were loans obtained, household size, educational level, farm size, farming experience and marital status. The result shows that loans obtained and household size had a negative relationship while educational level, farm size, farming experience and marital status had a positive relationship on the respondents

before joining cooperatives. The coefficient of multiple determinations, R – square, was 0.519 which shows that 51.90 % of the variation was explained by the independent variables.

Loans obtained and household size had negative but highly significant ($p<0.01$) linear coefficients of -0.111 and -2110.79 respectively, implying that as the amount of loans obtained by, and household size of the respondents increased prior to joining cooperative societies, output of cassava of the farmers decreased and vice versa.

However, linear coefficients for level of education (3662.21), farm size (2064.10), farming experience (2618.13) and marital status (3677.84) were all positive and significant at 5% level of probability. This means that an increase in educational level, hectares farmed or marriage (through increase in labour availability) led to a corresponding increase in the output of farmers in the study area prior to joining cooperatives.

Table 12: Regression analysis on respondent before joining cooperative

Variable	Linear	Double log	Semi log	Exponential
Constant (X_0)	8948.62 (1.63)	9.40 (14.02)	161.27 (0.01)	9.80 (67.62)
Loan obtained (X_1)	-0.111 (-1.99)*	-0.02 (-2.32)**	-731.94 (-2.54)**	$-2.57x10^{-06}$ (-1.74)*
Household size (X_2)	-2110.79 (-4.65)***	-0.19 (-3.74)***	7018.94 (3.84)***	-0.06 (-4.75)***
Cutting stem (X_3)	-0.12 (-0.55)	-0.07 (-1.73)*	-3888.81 (-2.57)**	-1.36E-07 (-0.02)
Age (X_4)	127.80 (0.81)	0.35 (1.81)*	14692.03 (2.02)**	0.0024 (0.58)
Educational level (X_5)	3662.21 (2.13)**	0.17 (1.99)*	6563.15 (2.09)**	0.0839 (1.85)*
Farm size (X_6)	2064.10 (2.95)**	0.09 (1.25)	3805.72 (1.36)	0.0559 (3.02)***
Farming experience (X_7)	2618.13 (2.30)**	0.24 (3.42)***	8628.53 (3.24)***	0.0838 (2.79)**
Marital status (X_8)	3677.84 (2.18)**	0.0403 (0.38)	5617.17 (1.42)	0.0350 (0.79)
R^2	0.5190	0.4611	0.5118	0.4850
R^2 Adjusted	0.4885	0.4269	0.4808	0.4523
F- ratio	0.0000	0.0000	0.0000	0.0000

Source: Survey Data; 2016 *Level of significance * = 10%** = 5% *** = 1%*

Regression Analysis of Respondents after Joining Cooperatives

Table 13 shows the linear, double log, semi-log and exponential models of the regression analysis after the respondents joined cooperative societies. The linear model was chosen because it had the best fit. The coefficient of multiple determinations (R^2) of 0.9526 showed that the model explained as much as 95.3% of the variation in the dependent variable (output of cassava).

Linear coefficients derived for loans obtained (0.8207; $p<0.1$), cutting stem (97.9927; $p<0.01$) and educational level (25383.99) were positive. This implies that as the levels of these independent variables increased, cassava output of the respondents after they joined cooperatives increased.

The linear coefficient of household size (-24964.9) was, however, negative and significant at 1% level of probability. This implies that increase in the household size led to a decrease in the output of the respondents after joining cooperatives.

The Chow-test performed on the data using Equation (2) gave a value of 3.307.

Table 13: Regression Analysis of Respondent after Joining Cooperative

Variables	Linear	Double log	Semi log	Exponential
Constant (X_0)	1591504 (-3.01)	2.5726 (1.90)	-5156574 (-6.00)	10.2729 (38.08)
Loan obtained(X_1)	0.8207 (1.53)*	0.0023 (0.15)	20185.69 (2.04)**	-1.43E-07 (-0.05)
Household size (X_2)	-24964.9 (-5.72)***	-0.5571 (-5.57)***	163590.5 (-2.58)**	-0.1245 (-5.58)***
Cutting stem (X_3)	97.9927 (46.28)***	0.4358 (5.28)***	375704.4 (7.18)***	0.000086 (7.95)***
Age (X_4)	4885.34 (3.22)***	1.7558 (4.46)***	804119.8 (3.22)***	0.02939 (3.79)***
Education level (X_5)	25383.99 (1.53)*	0.52997 (3.11)***	148443.6 (1.37)	0.1577 (1.86)*
Farm size (X_6)	-6671.03 (-0.99)	-0.3186 (-2.10)**	-75393.63 (-0.78)	-0.0482 (-1.46)
Farming experience (X_7)	-2045.22 (-0.19)	0.1163 (0.80)	-60064 (-0.66)	0.0457 (0.87)
Marital status (X_8)	-5097.89 (-0.31)	-0.1493 (-0.69)	-254876.9 (1.87)*	0.02896 (0.35)
R^2	0.9526	0.4724	0.3853	0.5732
R^2 Adjusted	0.9496	0.4389	0.3463	0.5461
F ratio	0.0000	0.0000	0.0000	0.0000

Source: Survey Data; 2016*,**,*** are level of significance at 10%, 5% and 1% respectively.

From the calculation, there was a significant difference in the socioeconomic factors of small scale cassava farmers before and after joining cooperative society in the study area since F–calculated (3.307) is greater than tabulated (1.94) at 5% level of significance.

Costs and Returns of the Cassava Co-operators

The result of the costs and returns analysis (Table 14) showed that the total income was ₦ 202,990,900, total farm expenses was ₦ 28,033,700 and the net farm profit was ₦ 174,495,200. This showed that cassava production was profitable.

Profitability Index (PI)

Using Equation (4), the profitability index (PI) computes as PI = $\frac{NFI}{GR}$

Where:

PI = Profitability Index

NFI = Net Farm Income

GR = Gross Revenue

GR = Revenue – Total Variable Cost

NFI = Revenue – total Fixed Cost + Total Variable Cost

PI = $\frac{174957200}{178069700}$

PI = 0.98

A PI value of 0.98 indicates that for every naira spent, 98 kobo is realized as profit by the cooperative cassava farmers. PI of 0.98 is likely to improve cassava production by increasing the profit of cassava farmers.

Rate of Returns on Investment (%)

The rate of return on investment was estimated at 86.2% using Equation (5). Hence, every naira invested on cassava production per hectare by the respondents generated an average of 86.2%

net income to the farmer. This implies that to maximize profit accruing from cassava farmers, there has to be a concerted effort directed at increasing use of the inputs.

The capital turnover (CTO) per hectare, computed as shown in Equation (6) was greater than one (7.24), implying that for every naira invested per hectare, about ₦7.24 kobo returned to cooperative cassava farmers as revenue.

Table 14: Costs and Returns of the Cassava Co-operators

Variables	Amount (₦)	Mean
Variable Cost		
Cost of land clearing	4532500	37770.8
Cost of cassava cutting	3020200	25168.3
Cost of planting	719200	59933.3
Cost of weeding	8880200	74001.7
Cost of fertilizer application	3093700	25780.8
Cost of harvesting	1855900	155575.0
Fixed Cost		
Cost of land use	3112500	40953.9
Total Farm Expenses	28033700	
Total Farming Income	202990900	
Net Profit	174957200	
Gross Revenue	178069700	

Source: Survey Data; 2016

T-Test Result for Income before and after Joining Cooperative Societies

The result of the t-test (Table 15) performed to compare the incomes of cassava farmers before and after joining cooperative societies showed that farmers earned significantly ($p<0.01$) more income (₦153,730) than they earned (₦32,696) before joining cooperatives.

Table 15: T-test Income Analysis Before and After Joining Cooperative Societies

Variable	Number	Mean	Standard deviation	Standard error	t-statistic	Pr > t
Income after	135	153730	356012	30640.607	4.004	0.000
Income before	135	32696	18123.267	1559.802		

Benefits Derived from Joining Cooperative Societies

When members were asked of the benefits derived from their membership of cooperative societies (Table 16), 98% of them indicated that they benefited through access to loans, marketing of their produce, cheap and accessible farm inputs, easy access to land and training, as responses for these variables were above the cut-off point of 3. In addition, the result shows that the mean score of 2.36 for manufacturing of commodities, and 1.80 for investing were below the cut-off point of 3 indicating that cooperative were not involved in the manufacturing of members commodities, and members paid little attention to investing.

Constraints to Performance of Cooperative Cassava Farmers

Table 17 presents the major constraints faced by the cassava cooperative farmers. The result showed different opinions of farmers to different problems faced in the study area. Insufficient

capital, poor management, illiteracy and inadequate farm land were the common constraints of the farmers. Production of most food crops in the study area were more or less on small-scale due to inability of the farmers to obtain loans. Money from the cooperatives were insufficient to enable them procure adequate inputs for their farm investments. With respect to scarcity and high cost of inputs, farmers in the area were placed in a very difficult situation due to inadequate supply of agro-chemicals and fertilizers which were not easily obtained by farmers due to high costs and poor accessibility of the inputs.

Table 16: Benefits Derived from Joining Cooperative Societies

Benefits	SA	A	UD	D	SD	N	Total sum	Mean score	Remark
Giving of loans	230	288	30	10	0	135	558	4.13	Benefited
Marketing	150	284	84	8	0	135	526	3.90	Benefited
Investing	120	208	153	8	2	135	256	1.80	Did not benefit
Easy access inputs	220	224	90	6	0	135	540	4.00	Benefited
Easy access to land	170	200	138	6	0	135	514	3.80	Benefited
Training	195	172	114	20	2	135	503	3.72	Benefited
Cheap farm inputs	190	224	84	14	4	135	516	3.82	Benefited
Manufacturing	40	96	147	26	36	135	319	2.36	Did not benefit

Source: Survey Data; 2016

Table 17: Distribution of Respondents by Constraints faced by Cooperative Cassava Farmers

Constraints	Frequency	Percentage (%)
Insufficient capital	91	66.9
Poor management	91	66.9
Dishonesty and corruption	65	47.8
Illiteracy	99	72.8
Bureaucratic	32	23.5
Lack of Clear policy	92	67.6
Inadequate infrastructure	79	58.1
External control	48	35.3
Government attitudes	83	61.0
Lack of awareness	53	39.0
Unqualified management	65	47.8
Inadequate farm land	65	47.8
Inadequate inputs	63	46.3
Low access to credit	48	35.3
Thefts	68	50.0

Source: Survey Data; 2016

Conclusion

It could be concluded from the study that cooperative societies are very useful tools in production of cassava but their potentials have not been tapped adequately. Cooperative farmers have been hindered by lack of finance, poor awareness of cooperative societies, poor management, illiteracy and government attitude. Despite these problems cooperatives have performed creditably well in most areas such as marketing, finance, employment generation and getting cheap inputs which can be improved if the necessary facilities are put in place. It

is recommended that cassava farmers in the study area should be encouraged to join thrift credit cooperatives for easy access to loans, in order to improve their production capacity.

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