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## Influence of cooperative credit use on arable crops productivity in Ogun state, Nigeria

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### Abstract

The study examined the influence of cooperative credit use on arable crops production in Yewa Division of Ogun State, Nigeria. Primary data were collected through a multistage process from 79 (38 cooperative and 41 non-cooperative) arable crop farmers in the study area. Data were analysed using descriptive, inferential statistics methods. The findings revealed that cooperative credit is considered as the basic ingredient for each and every economic activity including agriculture. Results of the analysis showed that majority (60.6%) of the farmers are less than 50 years for cooperative farmers while majority (64.5%) are less than 50 years for non-cooperative farmers. The mean age of the respondents was about 45 years and 40 years respectively. This implies both farmers are in their active and productive age, this result also revealed that Cooperative credit beneficiaries farmers are in their active age and can perform better. The probability of accessibility to credit and farm productivity was highest for farm size (0.795) and least for farm input (-0.826) implying that increasing farm size to access credit was the most desirable. Also, in the same category is the co-efficient of variable Regular payment of monthly dues ( $X_1$ ) which is significant at 1% level. This had a direct bearing on policy formulation that farm size and regular payment of monthly cooperative dues are required as criteria for accessibility of cooperative credit. Net Farm Income, cooperative credit beneficiaries farmers had N243,098.72 while the non cooperative credit beneficiaries arable crop farmers had N151,409.10, returns on investment (RORI), profitability index (PI), return on variable cost (RRVC) and operation ratio (OR) were 1.40, 0.58, 297.81% and 0.29 respectively for cooperative credit beneficiaries and it indicated that for every one naira sales by cooperative credit beneficiary 58kobo is earned as profit (PI) and that an income of N1.40kobo is earned on every naira invested (RORI) and 1.21, 0.55, 258.0% and 0.35 respectively for non-cooperative credit beneficiaries, this imply that for every one naira spent 55kobo is earned as profit (PI) and that an income of N1.21kobo is earned on every one naira invested (RORI). In addition the study indicated that the credit acquired by the respondents had significant effects on their output and income. The study concludes that credit acquisition by the farmers had a significant effect on the productivity of arable crop. Recommend that the farmers should be adequately motivated with needed credit facilities so as to enhance their agricultural production.

**Keywords:** arable crop production, budgetary, cooperative credit, profitability

### Introduction

Credit accessibility is a crucial factor in the development of the agricultural sector. Agricultural producers rely on credit facilities to raise the capital required to initiate and sustain production activities. The role of credit in agricultural production is crucial because inputs such as seeds and fertilisers are purchased at the beginning of the production season, but returns are realised only at the end of the season (Masuku, 2009) [5]. The provision of credit has been regarded as an important tool for raising the incomes of rural populations, mainly by mobilizing resources to more productive uses. Cooperative credit plays an important role in enhancing agricultural production most especially in developing country like Nigeria. Credit availability to agriculture is particularly justified when farmers have very low savings capacity, poorly developed rural financial markets and availability of appropriate farm technologies whose adoption is constrained by shortage of funds. These conditions

hold in Nigerian agriculture.

Muhammad, Munir, Kalbe (2003) [6]. opined that agricultural growth depends on increased use of agricultural inputs, technological change and technical efficiency. Muhammad *et al.* (2003) [6]. argued that technological change is the result of research and development efforts, while technical efficiency with which new technology is adopted and used more rationally is affected by the flow of information, better infrastructure, and availability of funds and farmers' managerial capabilities. The optimal use of inputs requires funds at the disposal of farmers. These funds could come either from farmers' own savings or through borrowings. In less developed countries like Nigeria where savings are negligible especially among the smallholder farmers, agricultural cooperative credit becomes an essential input along with modern technology for higher productivity. The basic aims of cooperative are to uplift the standard of living of their members through provision of goods and

services. The benefits derived therefore from agricultural cooperative societies are numerous. Through their membership networks, agricultural cooperatives serve as agents, medium and target of change in agriculture and rural development by spreading the teachings of agricultural extension and home economics services thereby teaching members improved farming and home practices resulting in raising income of members (Ojolo, 1994) <sup>[8]</sup>. Agricultural cooperatives also increase the productive efficiency of members. This they achieve through sharing of machinery or irrigation facilities, bulk purchase of farm inputs, group farming, arrangement for produce inspection and transportation, storage and sale of members produce (Adisa, 1996) <sup>[1]</sup>. In this realisation, Nigerian governments, supported by multi-lateral and bi-lateral aid agencies, have devoted considerable financial resources to supplying cheap credit facilities to the farmers and other rural entrepreneurs in a myriad of institutional settings (Nwaru, 2004) <sup>[7]</sup>. On the other hand, there are informal or non-institutional sources of credit services to the rural borrowers. These include kinship associations, age grades, social clubs, friends and relatives, cooperative thrift and savings; etc. which offer credit services in a wide array of unorganised terms (Nwaru, 2004) <sup>[7]</sup>. Unfortunately, these rural credit structures have not been able to achieve the desired aim of effectively and efficiently facilitating the inflow of financial services into the rural economy to enable rural entrepreneurs, including the farmers to employ efficient production techniques designed to raise their physical output and incomes (Nwaru, 2004) <sup>[7]</sup>.

### **Problem Statement**

The population expansion together with a poor distribution of food is among the world's greatest problem today. In Nigeria, production of food has not increased at a rate that can meet the increasing population. In developed countries, growth of population in relation to farm output is rather stable but in a developing country like Nigeria, there is no compensation for population increase by the total farm output. The importance of cooperative credit to arable crop production and fostering of widespread provision of food cannot be over-emphasized. The arable crop production is not playing the role of effectively supplementing the food content in the average consumer's diet in Nigeria. These problems centre on inadequate finance which leads to low production and many still use traditional method of crop production. Arable crop in certain areas does not mean supply actually exceeded demand. Other problems include high cost of input, diseases and marketing problems. This situation has forced many small scale farmers to close down and those still managing to survive are producing at very low with serious inputs' limitations. Credit has long been identified as a major input in the development of the agricultural sector (Balogun, 1990) <sup>[2]</sup>. Capital in form of finance is needed to modernize agriculture because new technologies have to be purchased before they can be used on the farms. Farmers also need money for consumption and payment for labour during the gestation period of their enterprises. In spite of the serious need for capital, the amount of it available to most farmers is a quantum compared to the alternative uses for the capital.

Inadequate capital stems from small – scale of operations of most farmers as a result of which they have little surplus to generate income. This study thus set to examine the influence of cooperative credit use on arable crops production.

### **Methodology**

#### **The Study Area**

The study was carried out in Yewa division of Ogun State, Nigeria. Yewa division has five Local Government Areas. The division is bounded to the West by the Republic of Benin with which it shares a long stretch of international boundary. It is bounded in the East by Oyo State, Abeokuta-North, Ifo Local Government Areas and in the South by Lagos State. The economic activities of the people of Yewa division vary from farming to trading and civil service with farming being the most dominant activity. The climatic condition and physical environment have been generally supportive to farming as reflected in the variety and quantity of cash and arable crops grown in the area.

#### **Sampling Technique**

The data for the study were essentially from primary source with the use of structured questionnaire in a multistage process. In the first stage, two (2) Local Government Areas were chosen randomly out of the five Local Government Areas in the Yewa Division. The second stage involved the selection of five (5) towns from the two Local Government Areas selected. The third stage involved the selection of five (5) cooperative and six (6) non-cooperative arable crop producers from each of the town selected in stage two, but data from 79 respondents (38 cooperative and 41 non-cooperative arable crop producers) were used for the study. Data were collected on the households' socio-economic characteristics as well as their production activities.

#### **Methods of Data Analysis**

The data collected were subjected to descriptive analysis, logit and budgetary analysis.

#### **Methods of Data Analysis**

The data collected were subjected to descriptive and econometric analysis.

#### **Descriptive Statistics**

Descriptive statistics was used to describe the socio-economic characteristics of arable crop farmers. These include the use of average (mean), frequency distribution and percentage; and Descriptive statistics was also used to describe various way arable crop farmers used the credit acquired. These include the use of frequency distribution and percentage.

#### **Logit Regression Model**

For the logit model, it is assumed that an individual is faced with two alternatives, arable crop farmers acquire credit from the Cooperative Credit Societies or not. Therefore, logit model was employed to determine the characteristics that influence the probability that enable arable crop farmer acquire credit. The logit regression model is characterized by binary dependent variable with mutually exclusive outcomes. The

dependent variable is the credit status of the respondents which is one (1), if he / she obtain credit and zero (0) if otherwise. Since the dependent variable is an ordinal nature, an ordinal logit model, a variant of the ordered probit (Zavoina and McElvey, 1975) [11], was used for the analysis of the dichotomous access to credit.

For the ordinal logit model we let,

$$Y_i^* = \beta' x_i + \varepsilon_i \tag{1}$$

Where  $Y_i^*$  is the underlying latent variable that indexes the credit access that arable crop farmer experience,  $x_i$  is a vector of explanatory variables,  $\beta$  is a column vector of parameters to be estimated and  $\varepsilon_i$  is the stochastic error term. The probability for each of the observed ordinal response which in our case has only two categories (1,0) for credit access, no credit access is given as;

$$P(Y=1) = P(Y^* \leq 1) = P(\beta' x_i + \varepsilon_i \leq 1) = F(-\beta' x_i)$$

$$P(Y=0) = F(\delta_0 - \beta' x) - F(-\beta' x) \tag{2}$$

$$Y_i = \alpha + \beta_{11}X_{11} + \dots + \beta_{18}X_{18} + \varepsilon_i \tag{3}$$

Where:

$Y_i$  (= 1 if the arable crop farmer is a credit beneficiary, 0 = non-beneficiary)

The explanatory variables are:

$X_{1i}$  = Regular payment of monthly dues (Yes = 1, No = 0)

$X_{2i}$  = Age of the household heads (years.)

$X_{3i}$  = Gender (Male =1, Female = 0)

$X_{4i}$  = Credit experience (years)

$X_{5i}$  = Loan default (%)

$X_{6i}$  = Interest rate (%)

$X_{7i}$  = Number of loan applicants received (number)

$X_{8i}$  = Income (N)

$X_{9i}$  = Farming experience (years)

$X_{10i}$  = Farm size (hectares)

$X_{11i}$  = Household size (number)

$X_{12i}$  = Educational attainment of the household head years spent in formal school

$X_{13}$  = Labour cost (N)

$X_{14i}$  = Farm input (N)

### Budgetary Analysis

The budgetary technique was used to examine the cost and return structure of cooperative credit beneficiary and non-cooperative credit beneficiary arable crop farmers.

$$GM = \sum_{i=1}^n P_i Q_i - \sum_{j=1}^m R_j X_j \tag{4}$$

Where:

GM = Farm Gross Margin (Naira)

$P_i$  = Unit price of output for crop i (Naira)

$Q_i$  = Quantity of output for crop i (Kg)

$R_j$  = Unit price of the variable input j (Naira)

$X_j$  = Quantity of the variable input j

n = Total number of crops.

m = Total number of the variable inputs used in the farm enterprise

Thus, Gross Margin (GM) = Total Revenue less Total Variable Cost. It is defined as the difference between the Gross Farm Income (GI) and the Total Variable Cost (TVC) as in Olukosi and Erhabor (2005). Gross margin is used to determine Net Farm Income (NFI), also used as a guide to the selection of enterprises by comprising their margin and also used as a budgeting tool to compare the profitability of one enterprise with another. It is highly applicable to subsistence system of farming involving small fixed capital; and it is easy to compute and interpret

To calculate the net farm income, total fixed costs were computed. Total variable costs are those costs incurred within a short period and they vary with the level of production. The variables costs include cost of land preparation, maize seeds, seed yam, cocoyam tubers, and cassava cuttings, weeding, fertilizers, herbicides, harvesting, rent charges on tractor services and transportation. The fixed cost of production include depreciation cost on farm tools and equipment such as digger, rake, watering can, hoes, cutlasses; rent on land, interest on loan, taxes and insurance.

Straight line method of depreciation was used to calculate the depreciation cost of farm tools and equipment.

$$D_t = \frac{P-L}{N} \tag{5}$$

Where:

$D_t$  = Annual Depreciation (N)

P = Original Cost of Asset (N)

L = Salvage / Scrap Value (N)

N = Economic life expectancy of the Farm Equipment/tool (years)

$$\text{Thus, } GM = TR - TVC$$

$$\Pi = GM - TFC \tag{6}$$

Where:

$\Pi$  = Net Farm Income

GM = Gross Margin

TR = Total Revenue

TVC = Total Variable Cost

$$a. \mu = TR - TC \tag{7}$$

$$b. TC = TVC + TFC \tag{8}$$

$$c. GM = TR - TVC \tag{9}$$

$$d. \text{Profitability Index or Return on Sale} = NI/TR \tag{10}$$

$$e. \text{The Rate of Return on Investment (\%)} = RRI = (NI/TC) \times 100 \tag{11}$$

$$f. \text{The Rate of Return on Variable Cost (\%)} = RRVC = (TR - TFC)/TVC \times 100 \tag{12}$$

$$g. \text{Operating Ratio} = TVC/TR \tag{13}$$

Where:

$\mu$  = Profit

GM = Gross Margin

TVC = Total Variable Cost  
 PI = Profitability Index  
 TC = Total Cost  
 TR = Total Return  
 TFC = Total Fixed Cost  
 NI = Net Farm Income

**Results and Discussion**

**Socio – Economic Characteristics of Arable Crop Farmers**

The summary of the socio-economic characteristics of arable crop farmers is presented in Table 1. In Nigeria, Socio – economic characteristics are important in securing and using credit. The variables discussed include age, gender, marital status among others, as these variables are set to have direct or indirect influence on the performance and decision-making activities of the farmers. Majority (60.6%) of the farmers are less than 50 years for cooperative farmers while majority (64.5%) are less than 50 years for non-cooperative farmers. The mean age of the respondents was about 45 years and 40 years respectively. This implies both farmers are in their active and productive age, this result also revealed that Cooperative credit beneficiaries farmers are in their active age and can perform better, this justifies the finding of Rathman *et al* (2002) who opined that the age bracket is economically active age and as such will respond positively to any intervention aimed at improving their productivity.. Also, majority (81.6%) and (65.8%) of both cooperative and non-cooperative arable farmers are male respectively, cooperative had higher male than their non-cooperative counterparts. Majority (81.6%) cooperative farmers are married and majority (65.8%) of both respondents are married. This indicates most farmers are responsible and showed that cooperative farmers are more responsible than non-cooperative farmers. Majority (42.1%) of the cooperative

arable crop farmers have household size within 4 – 6 while majority (36.6%) non-cooperative farmers had household size within 1 – 3. This implies that cooperative farmers do well in their production output and spent lesser money on labour based on the number of household members of the family that assist in arable crop production activities. Majority (36.8%) of the cooperative had secondary school education compare to majority (34.1%) of non-cooperative farmers who had no formal education. This implies that cooperative farmers are more educated than their non-cooperative farmers’ counterparts and this enable them to get credit that would help them in production output. Majority (31.5%) of cooperative arable crop farmers had farming income within N300.001 – N400,000 compare to their non-cooperative counterpart that majority (58.6%) had farming income within N100.001 – N200,000. This implies that cooperative farmers had higher income due to credit availability to their farm production compare to their non-cooperative counterparts that had lower income. Majority (41.9%) of the cooperative farmers had credit experience above 14 years. This really reflected in their production output as using of credit get them maximum arable crop output. Majority (39.6%) of the cooperative farmers had farm experience within 31 – 40 years while majority (36.8%) of the non-cooperative farmers had farming experience of less than equal 20 years, it corroborated with the findings of (Olarinde *et al* 2004) who stated that farming, like any other business, also require experience and management skill, which are associated with age. It shows that cooperative farmers had more farming experience than their non-cooperative counterpart. Majority (36.8%) of the cooperative farmers had farm size within 4.01 – 6.0 hectares as against their counterpart whose majority (48.8%) had within 01 – 2.0 hectares. This implies that credit increases farm size and aid production output.

**Table 1:** Distribution of Age, Gender and Marital Status of Arable Crop Farmers

Variables	Cooperative Credit Beneficiaries		Non – Cooperative Credit Beneficiaries		Pooled Data	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Age Group (Years)						
Less than 30	5	13.2	9	21.9	14	17.7
31 - 40	8	21.1	11	26.8	19	24.1
41 – 50	10	26.3	8	19.5	18	22.7
51 – 60	12	31.6	10	24.3	22	27.8
Above 60	3	7.8	3	7.5	6	7.7
Total	38	100	41	100	79	100
Mean Standard deviation	45 9.83		40			
X <sup>2</sup> cal = 4.108, df =4, p< 0.05 = 0.392 Comment: NS						
Gender (Sex)						
Male	31	81.6	27	65.8	58	73.4
Female	7	18.4	14	34.2	21	26.6
Total	38	100	41	100	79	100
X <sup>2</sup> cal = 4.609, df = 1, p< 0.05 = 0.032 Comment: NS						
Marital Status	2	5.3	-	-	2	2.5
Single	31	81.6	27	65.8	58	73.5
Married	2	5.3	9	22.0	11	13.9
Separated Widow	3	7.8	5	12.2	8	10.1
Total	38	100	41	100	79	100
X <sup>2</sup> cal = 11.531, df = 3, p< 0.05 = 0.009 Comment: S						
Household Size						

1 – 3	14	36.8	15	36.6	29	36.7
4 – 6	16	42.1	11	26.8	27	34.2
7 – 9	6	15.8	8	19.5	14	17.7
Above 10	2	5.3	7	17.1	9	11.4
Total	38	100	41	100	79	100
Mean	8		7			
X <sup>2</sup> cal = 4.694, df = 3, p ≤ 0.05 = 0.196 Comment: S						
Education (Years)						
No Formal Education	5	13.2	14	34.1	19	24.1
Adult Literacy	10	26.3	4	9.8	14	17.7
Primary School	7	18.4	10	24.4	17	21.5
Secondary School	14	36.8	7	17.1	21	26.6
Tertiary	2	5.3	6	14.6	8	10.1
Total	38	100	41	100	79	100
X <sup>2</sup> cal = 12.453, df = 7, p ≤ 0.05 = 0.087; Comment: S						
Farming Income (N)						
≤ 100,000	5	13.2	10	24.4	10	19
100,001 – 200,000	5	13.2	24	58.6	29	36.7
200,001 – 300,000	5	13.2	5	12.2	15	12.7
300,001 – 400,000	12	31.5	1	2.4	13	16.4
400,001 – 500,000	5	13.2	1	2.4	6	7.6
Above 500,000	6	15.7	-	-	6	7.6
Total	38	100	41	100	79	100
Mean	N344,512		N156,097			
X <sup>2</sup> cal = 51.841, df = 12, p ≤ 0.05 = 0.000; Comment: S						
Cooperative Membership Credit Experience	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Less than 3	2	5.3	-	-	2	5.3
4 – 6	5	13.2	-	-	5	13.2
7 – 9	5	13.2	-	-	5	13.2
10 – 13	10	26.4	-	-	10	26.4
14 Above	16	41.9	-	-	16	41.9
Total	38	100	-	-	38	100
Mean	12					
X <sup>2</sup> cal = 45.095, df = 11, p < 0.05 = 0.000; Comment: S						
Farm Experience (Years)	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
≤ 20	4	10.5	15	36.6	19	24.0
21 – 25	2	5.3	10	24.4	12	15.2
26 – 30	5	13.2	11	26.8	16	20.3
31 – 40	15	39.6	5	12.2	20	25.3
Above 40	12	31.4	-	-	12	15.2
Total	38	100	41	100	79	100
Mean	31		24			
X <sup>2</sup> cal = 55.096, df = 16, p ≤ 0.05 = 0.001; Comment: S						
Farm Size (Hectare)						
01 – 2.0	9	23.7	20	48.8	29	36.7
2.01 – 4.0	11	29.0	11	26.8	22	27.8
4.01 – 6.0	14	36.8	10	24.4	24	30.4
6.01 – 8.0	3	7.9	-	-	3	3.8
8.01 – 10.0	1	2.6	-	-	1	1.3
Total	38	100	41	100	79	100
Mean	3.7		2			
X <sup>2</sup> cal = 12.670, df = 3, p ≤ 0.05 = 0.005 Comment: S						

Source: Author’s Computation

### Determinant of Cooperative Credit Acquisition Among Arable Crop Farmers

The Logit regression model was used to determine the factor

enhance arable credit accessibility. The findings shows that six (6) variables among fourteen (14) regressed have significant influence on the arable crop farmers access to

credit. The chi - square ( $\sigma^2$ ) value was 73.760, with a p - value of less than 0.01 and log likelihood function - 98.038. Hence, sigma square was statistically significant, thus indicating that the model displays a good fit. The variables that had significant co-efficient are Regular payment of monthly dues ( $X_1$ ), Gender ( $X_3$ ), Income ( $X_8$ ), Experience ( $X_9$ ) and Farm input ( $X_{14}$ ). It should be noted that a positive sign on a parameter indicated that higher values of the variables tend to increase the likelihood of credit accessibility and impact on agricultural productivity. Similarly, a negative value of a co-efficient implied that higher values of the variables would reduce the probability of credit accessibility

and impact on the farm productivity.

The probability of accessibility to credit and farm productivity was highest for farm size (0.795) and least for farm input (-0.826) implying that increasing farm size to access credit was the most desirable. Also, in the same category is the co-efficient of variable Regular payment of monthly dues ( $X_1$ ) which is significant at 1% level. This had a direct bearing on policy formulation that farm size and regular payment of monthly cooperative dues are required as criteria for accessibility of cooperative credit. Hence, payment of dues should attract topmost importance on the priority list of cooperative members.

**Table 2:** Logit Model Explaining the Determinants of Cooperative Credit Acquisition of Arable Crop Farmers

Variables	Maximum Probability Coefficients	Standard Error	Marginal Effects
Constant	1.217 (2.148)	0.567	-0.915
Regular Monthly dues( $X_1$ )	0.167 (3.018) ***	0.554	-0.157
Age( $X_2$ )	-0.216 (-0.893)	0.242	- 0.925
Gender( $X_3$ )	-0.201 (-2.139) **	0.939	0.242
Credit Experience ( $X_4$ )	0.622 (0.560)	0.679	0.172
Loan Default( $X_5$ )	0.661 (0.973)	0.679	-0.454
Interest Rate (%) ( $X_6$ )	0.373 (0.549)	0.664	-0.928
Loan Applicants ( $X_7$ )	-0.826 (-1.245)	0.945	-0.538
Income ( $X_8$ )	-0.232 (-2.451) ***	0.219	-0.477
Farm Experience ( $X_9$ )	-0.130 (-5.967) ***	0.217	-0.178
Farm Size ( $X_{10}$ )	0.795 (3.663)	0.116	0.687
Household Size ( $X_{11}$ )	-0.415 (-1.816)	0.539	0.671
Education ( $X_{12}$ )	0.101 (0.187)	0.972	0.222
Labour ( $X_{13}$ )	0.299 (0.302)	0.686	-0.106
Farm Input ( $X_{14}$ )	-0.101 (-0.017) ***	0.602	0.310
Chi - square value ( $\sigma^2$ ) = 73.760***, P < 0.01 (significant at 1%), Log likelihood Value = -98.038			

Source: Author's Computation

\*\*\* Significant at 1%; \*\*Significant at 5%; \* Significant at 1%; t - value are in parenthesis

### Cost and Return Structure of Arable Crop Farming

The result of cost and return on cooperative credit beneficiaries and non-beneficiaries arable crop farmers is presented in Table 3. The total variables cost per hectare was estimated at N122,894.61 for cooperative credit beneficiaries and N95,816.66 for non - cooperative credit beneficiaries, and accounted for 70.65 percent and 76.80 percent of total cost of credit beneficiaries and non-cooperative credit beneficiaries respectively which is the highest proportion of the total cost. The total fixed cost per hectare was estimated at N51,066.94 for cooperative credit beneficiary and N28,950.68 for non-cooperative credit beneficiary and accounted for 29.35 percent for cooperative credit beneficiary and 23.20 percent non-cooperative credit beneficiaries respectively.

This showed that variable cost constituted the larger proportion of cost of production for both categories of respondents. In addition, total revenue (TR), gross margin (GM) and net farm income (NFI) per hectare were estimated at N417,060.27, N294,165.66 and N243,098.72 respectively for cooperative credit beneficiaries and N276,176.44, N180,359.78, and N151,409.10 respectively for non-cooperative credit beneficiaries. The result show that returns on investment (RORI), profitability index (PI), return on variable cost (RRVC) and operation ratio (OR) were 1.40, 0.58, 297.81% and 0.29 respectively for cooperative credit

beneficiaries and it indicated that for every one naira sales 58kobo is earned as profit (PI) and that an income of N1.40kobo is earned on every naira invested (RORI) and 1.21, 0.55, 258.0% and 0.35 respectively for non-cooperative credit beneficiaries, this imply that for every one naira spent 55kobo is earned as profit (PI) and that an income of N1.21kobo is earned on every one naira invested (RORI). The implication of this is that cooperative credit beneficiaries are more profitable than their non-cooperative credit beneficiaries. The result also revealed that in the area of cost, labour cost takes the larger percentage of cost and this imply that the sampled arable crop farmers in the study area are labour intensive and this correlated with (Chukwuji, 2006) who observed that labour mostly constituted about 57% of the total cost, leaving only about 43% to be shared by other variable inputs and fixed costs. These imply that the cooperative credit beneficiaries farmers are resourcefully efficient than their counterpart producing without sufficient input. In terms of margin between total revenue and total fixed cost, cooperative credit beneficiaries earned more per hectare of land cultivated. This study also corroborate to the study of Essossinam & Nadege (2019) [4], that stated that having access to the full amount of credit increases soybean production by 1.35% and farmers' revenue by 1.32%, compared to farmers without having access to the full amount of credit.

**Table 3:** Estimate of Cost and Returns on Arable Crop Production

Description Beneficiaries Non – beneficiaries				
% of Total Cost Revenue (N)	% of Total Cost			
Value of Cassava (N)	210,771.9		149,422.37	
Value of Maize (N)	117,008.19		79,856.69	
Value of Yam (N)	54,099.97		36,095.13	
Value of Cocoyam (N)	35,180.21		10,802.25	
Total Revenue (N)	417,060.27		276,176.44	
Variable Cost Items				
Cost of Tractor Services(N)	19,430.82	11.17	11,108.41	8.90
Cost of Planting Materials(N)	22,722.03	13.06	17,408.45	14.00
Cost of Fertilizer (N)	8,406.10	4.83	6,681.44	5.36
Cost of Herbicide (N)	4,866.55	2.81	2,113.87	1.70
Transportation Cost (N)	7,733.61	4.45	5,405.39	4.33
Labour Cost (N)	59,735.50	34.33	53,099.10	42.51
Total Variable Cost (N)	122,894.61	70.65	95,816.66	76.80
Gross Margin (N)	294,165.66		180,359.78	
Fixed Cost Items				
Interest on Loan(N)	8,481.26	4.87	-----	-----
Rent on Land (N)	29,411.01	16.91	19,465.29	15.60
Depreciation (N)	13,174.67	7.57	9,485.39	7.60
Total Fixed Cost (N)	51,066.94	29.35	28,950.68	23.20
Total Cost (N)	173,961.55	100	124,767.34	100.00
Net Farm Income (N)	243,098.72		151,409.10	
Profitability Indices:				
Rate of Returns on Investment (%)	1.40		1.21	
Profitability Index or Return on Sale	0.58		0.55	
Rate of Return on Variable Cost (%)	297.81%		258.0%	
Operating Ratio	0.29		0.35	

Source: Author's Computation

### Conclusion and Recommendation

The mean age of the respondents was about 45 years and 40 years respectively. This implies both farmers are in their active and productive age, this result also revealed that Cooperative credit beneficiaries farmers are in their active age and can perform better. The probability of accessibility to credit and farm productivity was highest for farm size (0.795) and least for farm input (-0.826) implying that increasing farm size to access credit was the most desirable. Net Farm Income, cooperative credit beneficiaries farmers had N243,098.72 while the non cooperative credit beneficiaries arable crop farmers had N151,409.10, returns on investment (RORI), profitability index (PI), return on variable cost (RRVC) and operation ratio (OR) were 1.40, 0.58, 297.81% and 0.29 respectively for cooperative credit beneficiaries and it indicated that for every one naira sales by cooperative credit beneficiary 58kobo is earned as profit (PI) and that an income of N1.40kobo is earned on every naira invested (RORI) and 1.21, 0.55, 258.0% and 0.35 respectively for non-cooperative credit beneficiaries, this imply that for every one naira spent 55kobo is earned as profit (PI) and that an income of N1.21kobo is earned on every one naira invested (RORI). In addition the study indicated that the credit acquired by the respondents had significant effects on their output and income. The study concludes that credit acquisition by the farmers had a significant effect on the productivity of arable crop. Recommend that the farmers should be adequately motivated

with needed credit facilities so as to enhance their agricultural production.

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