

# Effects of Social Capital Dimensions on Income of Cocoa Farming Households in Osun State

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## Abstract

*Cocoa's contribution to the economic development of Nigeria is enormous. However, in recent years, income of cocoa farming households has reduced tremendously due to a number of factors. Participation in social groups could increase the households' income through its benefits, social capital dimensions. Therefore, the study investigated the effects of social capital dimensions on the income of cocoa farming households in Osun State. Multistage sampling procedure was used to select 100 respondents for the study. Data were analyzed using descriptive statistics, social capital indices, farm budgetary techniques and OLS regression model. The results of the study showed 49 years for age, 16 years for year of experience, 6 persons for household size and 6 hectares for farm size. The results also revealed that six dimensions of social capital namely cash contribution, labour contribution, decision-making, meeting attendance, heterogeneity and density of membership were available to the households. The estimated costs and return to cocoa farming households per hectare of land on the average were ₦243,671 and ₦540,306.4 per annum, while return per naira outlay was ₦2.217 and the benefit cost ratio was ₦2.71. OLS estimates showed that age, farming experience, and social capital dimensions such as decision making and meeting attendance significantly influenced the income of cocoa farming households. The study concluded that social capital dimensions are among important variables influencing the income of cocoa farming households. The study therefore recommends that members of cocoa farming households or household head should be encouraged to be members of farmers' organization and also actively participate in the decision-making process of the organization. This can be achieved through regular meeting attendance.*

**Keywords:** Cocoa, Farming households, Social capital, Income, Osun State

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## Introduction

Cocoa's contribution to the economic development of Nigeria cannot be over emphasized (Amao *et al.*, 2015). Its role in the provision of foreign exchange and development of economies cannot be overstated, as it remained for a long time the main machine for the earnings (Nkamleu, *et al.*, 2010; Adeniyi and Ogunsola, 2014). Also, it generates revenue to cocoa producing States, Osun State Inclusive (Amao *et al.*, 2015; and Oluyole and Sanusi, 2009). Additionally, it is of significant economic importance to about 200,000 farming households depending on cocoa for their main source of income (NCDC, 2008). However, cocoa production in Nigeria has witnessed a downward trend in recent years and this has subsequently affected the income of cocoa producing households (Nwachukwu

*et al.*, 2010). This can be ascribed to a number of complex factors including pest and diseases infestation, low yield, ageing of farmers and cocoa farmers among others (Adeniyi and Ogunsola, 2014). Among these factors is the lack of access to credit is far more pronounced among cocoa farmers. Access to credit facilities by cocoa farmers can serve as a substitute to personal savings and affect their investment in cocoa enterprise.

Cocoa farmers incur a lot of expenditure during the cocoa husbandry process and get returns when the cocoa is harvested and commercialized. In the absence of personal saving, farmers obtain credit to finance the husbandry process. However, majority of the cocoa farmers rarely have access to credit which has made it impossible for them to invest in cocoa enterprise. Several credit programmes initiated

by the government to enable farmers' access to credit are not successful due to a number of factors including lack of collaterals to obtain the loan from financial institutions among others. Consequently, cocoa farming households have organized themselves into social groups in order to meet their financial and social needs (Ogunleye *et al.*, 2017). A number of farmers come together to form social groups within their village with unifying interest of improving their farming operations. The unifying interest suggests like-mindedness to work for and even help each other absorb variability in personal income and other economic shock (Emerole *et al.*, 2013). Also, Iyanda *et al.* (2014) established that membership in these social groups generates social capital which is defined as networks of social interactions among individuals to facilitate access to financial resources.

Network of social interaction generates social collateral which is personal interaction among members, facilitating the poor's access to credit and improving welfare of farmers through collective purchases. Social collateral may also indirectly affect farm income by influencing households' propensity to adopting new farming practices and technologies via the supply of information through these networks (Liverpool and Winter-Nelson 2010).

However, more empirical studies (Oloniniyi, 2012; Agboola *et al.*, 2016; Komolafe and Adeoti, 2018; Olurotimi *et al.*, 2018; Ogunleye, 2019; Adepoju 2019) have so far focused on relationship between social capital and economic issues such as poverty, access to micro credit and adoption. Recent literature has little empirical evidence on the relationship between social capital dimensions and income of cocoa farmers. Following this, the study assessed the effect of social capital dimensions on income of cocoa farming households in Osun State. Specifically, the study described the socio-economic characteristics of the farming households, examined the various dimensions of social capital available to farming households, determined cost and returns to cocoa production and determined the effect of social capital dimensions on the income of cocoa farming households.

**Research methodology**

The study was conducted in Osun State, Nigeria. Osun State lies on latitude 7°30' N of the equator and longitude 4°30' E of the Greenwich meridian and on a land area of about 9,251 km<sup>2</sup> (Fig. 1). The provisional 2006 population census result put the population of Osun State at 3,423,535 (NPC, 2006). The State has 2

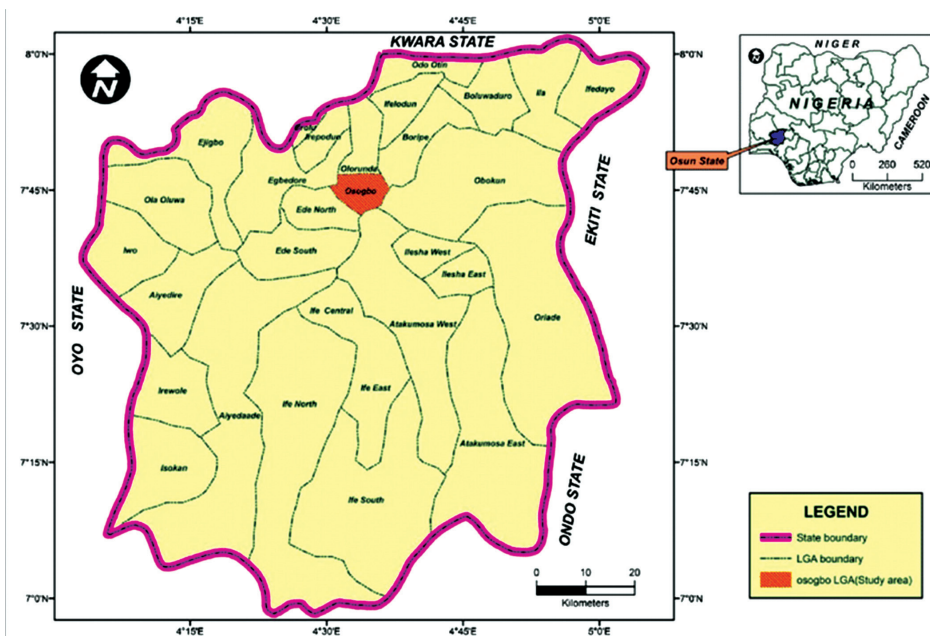


Figure 1: Map of Osun State

distinct climatic seasons, namely the dry and wet seasons. The natural vegetation comprises moist evergreen and semi-evergreen forest and secondary forest, with mean annual rainfall ranging between 1400 to 2000 mm while mean annual temperature ranges between 25°C to 27°C thereby providing a conducive climate for growing most tropical crops. The crops grown in the State include cocoa, palm tree, walnut, palm kernel, citrus, mango and arable crops include cassava, yam, potatoes, cocoyam, maize, sugar cane, vegetables, tomatoes, pepper, and okra. Sheep, goat and poultry rearing are also predominant in addition to cassava farming in the study area. The majority of the inhabitants are predominantly smallholder farmers who depend on agriculture for their livelihood. Osun State is one of the major cocoa-producing State in Nigeria (Amao *et al.*, 2015).

Multi-stage sampling procedure was used to select respondents for the study. At the first stage, two major cocoa producing Local Government Areas (LGA's) in Osun State were purposively selected (Ayedade and Ife North) based on the concentration of the cocoa farmers in the areas. The second stage involved a simple random selection of 10 communities from each Local Government Areas (LGA's). The third and last stage involved a simple random selection of 5 cocoa farming households that are members of association from each community. In all, a total of 100 respondents were interviewed.

**Analytical framework**

Descriptive statistics, social capital indices, farm budgetary techniques and OLS regression model were used to analyze the data collected.

**Social capital indices**

The social capital dimensions were constructed using social capital indices following Balogun *et al.* (2017). Density of membership was measured by the number of farmer's membership in existing associations and rescaled to 100. Decision making index was measured by asking household members to evaluate subjectively whether they were "very active" "active" or "not very active" "passive" "very passive" or not participating in the group's decision making. The summation was calculated

from their subjective responses on their rating in participation in decision making in three important associations to them and rescaled to 100. Heterogeneity index was measured by rating the internal homogeneity of the group according to twelve criteria: neighborhood, kin group, same occupation, same economic status, same religion, same political, same gender, same age, same education level, cultural practices, belief and trust. The score of the three associations were averaged by dividing by maximum score 72 to obtain the index and rescaled to 100. Meeting attendance index was measured by summing up of attendance of the household members at meeting in relation to the number of scheduled meetings of the associations and rescaled to 100. Cash contribution index was achieved by summation of the total cash contributed to the various associations, which the farmers belong and dividing the amount by the maximum contribution in the dataset and rescaled to 100. Labour Contribution index was measured by summation of man- hour's days worked by farmer's household members. This is also rescaled to 100 using the same method of cash contribution

**Farm budgetary techniques**

Farm budgetary techniques was used to estimate the cost and returns to cocoa farming households. The various types of inputs used and their costs were identified.

The budgetary analysis was calculated using the formulas below:

$$TC=TFC+TVC \dots\dots\dots(1)$$

$$TR=P \times Q \dots\dots\dots(2)$$

The gross profit ( $\pi$ ) is computed as:

$$\text{Profit } (\pi) = TR - TC \dots\dots\dots(3)$$

$$NI = GM - TFC \dots\dots\dots(4)$$

Profitability and efficiency ratio

The following ratios were carried out to compute the level of profitability among the respondents  
 $ROI$  (rate of return on investment) =  $GM / TVC$  .....(5)

$$\text{Operating expenses ratio} = \frac{\text{Total variable cost}}{\text{Gross revenue}} \dots\dots\dots(6)$$

$$\text{Benefit cost ratio} = \frac{TR}{TC} \dots\dots\dots(7)$$

### Ordinary Least Square (OLS) regression model

OLS model was used to analyze the effect of social capital dimensions on income of cocoa farming households. In relating social capital dimensions to cocoa farmers' income, the conventional model of household economic behaviour under constrained utility maximization was adopted. This relates farmers' income directly to the exogenous variables describing the social and economic environment in which the farmers make decision.

In this study, OLS model was adopted to model the exogenous relationship between cocoa farmers' income and social capital variables

The model is presented as shown in equation 8;  

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \dots + \beta_{15} X_{15} \quad \dots\dots(8)$$

Y= Income of cocoa farmers (Naira)

The explanatory variables include  $X_1$  = Gender of household head (1=Male; 0=Female);  $X_2$  = Age of household head (Years);  $X_3$  = Household size (numbers);  $X_4$  = Formal education (Years);  $X_5$  = Marital status (1=married; 0=otherwise);  $X_6$  = Farming experience (Years);  $X_7$  = Farm size (Hectare);  $X_8$  = Interest rate on loan (%);  $X_9$  = Time lag (Weeks);  $X_{10}$  = Density of membership(% or);  $X_{11}$  = Meeting attendance(%);  $X_{12}$  = Labour contribution (%);  $X_{13}$  = Decision making (%);  $X_{14}$  = Cash contribution(%);  $X_{15}$  = Heterogeneity (%).

### Results and discussion

#### Socio-economic characteristics of the cocoa farming households

The socio-economic characteristics of the respondents were presented in Table 1. The average age of cocoa farmers in the study area was 49.2 ( $\pm 8.53$ ). This implies that cocoa farmers were still young, active and vibrant. This agrees with Adeniyi and Ogunsola (2014). About 68.69% of the respondents were married. This implies that married farmers are involved in cocoa production and have enough responsibilities that could ensure their commitment to cocoa farming. On the average, the household size in the study area was 6.19( $\pm 3.54$ ) persons and years of farming

**Table 1: Socio-economic characteristics of the cocoa farming households**

Variables	Values
Age	49.20 ( $\pm 8.53$ )
Gender (% Male)	76
Married (%)	68.69
Formal Education	94.00
Years of farming experience	16.48( $\pm 6.73$ )
Farm size (ha)	4.21( $\pm 3.43$ )
Household size (#)	6.19( $\pm 3.54$ )

*Source:* Field Survey, 2018; Figures in parenthesis represent the standard deviation

experience was 16.48( $\pm 6.73$ ). This agrees with Oloninyi (2012). The household is relatively large which could also indicate a large supply of labour to the family enterprise and they also have many years of farming experience. About 94% of the respondents had formal education in the study area. This implies that majority of the cocoa farmers had at least one form of education or the other. This agrees with Adeniyi and Ogunsola (2014). The average farm size was 6.21( $\pm 3.43$ ). This implies that the farmers are small-scale farm holders. About 76% of the respondents were male. This indicates that cocoa production is dominated by male farmers.

#### Dimensions of social capital

The summary statistics of dimensions of social capital were presented in Table 2. The membership density has a mean of 58.4 which indicate that cocoa farmers membership in association is at least 58 out of 100 associations. The meeting of cocoa farmers has a mean of 79.4

**Table 2: Social capital dimensions of cocoa farming households in Osun State**

Variable	Mean	Std. Dev.	Min	Max
Density index	58.40	22.01	33	100
Meeting index	79.48	21.77	33.33	100
Decision index	66.79	26.63	33.33	100
Cash index	54.84	43.41	25.63	100
Labour index	47.93	25.67	18.07	100
Heterogeneity index	51.91	16.77	22.61	100

*Source:* Field Survey, 2018

which implies that generally, cocoa farmers do attend most of the statutory meetings as schedule. The participation in decision making was 66.79 which implies that majority of the cocoa farmers were actively involved in decision making within the social group they belong to. This is similar to the result of Agboola *et al.*, (2016). The cash contribution has a mean of 54.8 which is relatively low, meaning that cash commitment to associations by the cocoa farmers is low. The labour contribution has a mean of 47.93 which is relatively low, meaning that labour commitment to associations by the cocoa farmers is low. The heterogeneity is 51.91 which is low and thus suggest homogeneous characteristics such as same ethnicity, same religion, same occupation among the cocoa farmers.

#### Cost and returns to cocoa farming households

The estimated costs and return of cocoa farming households per hectare of land on the average were ₦ 243,671 and ₦ 540,306.4 per annum (Table 3). Among the cost components,

**Table 3: Analysis of average cost and returns of the cocoa farming households in Osun state**

Items	Mean value	% of total cost
<b>Revenue</b>		
Cocoa per kg	1102.134	
Price per kg	600	
Total revenue	661280.2	
<b>Variable cost</b>		
Labour cost (₦)	129215.3	53
Transport cost (₦)	12420.16	5
Agro cost (₦)	48945.76	20
Total Variable cost (TVC)	190581.2	78
<b>Fixed cost</b>		
Depreciation cost (₦)	53089.78	22
Total cost (TC)	243671	100
Net income (NI)	540306.4	
Return per Naira outlay	2.21736	
Operating expense (%)	0.2882	
Benefit cost ratio	2.713824	

Source: Field survey, 2018

cost of labour had the largest share of the total cost (53%), followed by cost of agrochemical (20%), while transportation cost (5%) was the least whereas the total revenue on the average was ₦ 661280.2, while profit margin is ₦ 563,396.149. The profit margin percentage was 85.20%, while return per naira outlay was ₦ 2.217. This implies that every ₦ 1 invested in cocoa enterprise gives a return of ₦ 2.217 to the enterprise and the operating cash expenses ratio was 28.82%, which connotes that 28.82% of the total revenue was used to cover the operating expenses. The benefit cost ratio was ₦ 2.71. This implies that ₦ 1 spent on cost yielded ₦ 2.71 return to the farmer. The business of cocoa enterprise is viable and profitable. This result agrees with Popoola *et al.* (2015) that cocoa production in Nigeria is a profitable enterprise.

#### Effect of social capital dimensions on income of cocoa farming households

The result of the effect of social capital dimensions on the income of cocoa farming households were presented in Table 4. The R-square was 0.895 (Table 4). This suggests that 89.5% of the variability in the income of the respondents is jointly explained by variations in the independent variables specified in the model. Table 4 revealed that age, farming experience, decision making and meeting attendance were significant factors affecting the income of cocoa farmers. The coefficient of farming experience was positive and significant. This implies that for every unit increase in farming experience, the income of cocoa farmers increases by 0.042 units. This could be attributed to the fact that the household heads over time, get familiar with improved production practices to improve their output and consequently increases their farm income.

The significant social capital dimensions were decision making and meeting attendance. The coefficient of decision making was positive and significant. This implies that for every unit increase in decision making, the income of cocoa farmers increases by 1.639 units. This is because the knowledge, the household heads gained from addressing association's matters are of great benefit to their farm operations which increases their farm income. The

**Table 4: Effect of social capital on income of cocoa farming households**

Variable	Coefficient	Std. Error	T-stat
Age	-0.023***	0.006	-2.59
Marital Status	-0.016	0.013	-1.21
Household Size	-0.002	0.002	-0.08
Gender	-0.014	0.011	-1.33
Education	0.009	0.007	0.13
Farming Experience	0.042***	0.009	2.44
Farm size	-0.011	0.002	-0.73
Time lag	0.450	0.020	1.07
Interest rate	-0.003	0.006	-0.50
Meeting index	2.200**	0.009	2.37
Cash index	-8.269	3.947	-0.02
Decision index	1.639***	0.055	3.07
Density of membership	0.007	0.001	-0.46
Heterogeneity index	0.005	0.009	0.54
Labour	0.084	0.057	1.49
cons	0.454**	0.059	2.36
R <sup>2</sup>	0.895		
Adjusted R <sup>2</sup>	0.871		

(\*\*\*, \*\*) = significant at 1% and 5%

Source: Field survey, 2018

coefficient of meeting attendance was positive and significant. This implies that for every unit increase in meeting attendance, the income of cocoa farmers increases by 2.230 units. This can be ascribed to the fact that household heads regularly attended group meetings, thus have access to better farming skills, resource and information increasing in their farm income.

On the other hand, the coefficients of age had negative signs and was significant. This implies that for every unit increase in this variable, there is a reduction in the income of cocoa farmers by 0.023 units. This implies that as the farming household heads grow older, they tend to lose the ability or access to adopt new practices or technologies and ability to do farm work. This negatively affects the household income.

### Conclusion

The study assessed the effect of social capital dimensions on the income of cocoa farming households in Osun State. The study concluded

that majority of the cocoa farmers were in their productive and active age, smallholder and they had many years of farming experience. The study concluded that investment in cocoa production is profitable. OLS estimates revealed that age, farming experience, decision making and meeting attendance significantly influenced the income of cocoa farming households. The study concluded that social capital is an important variable affecting the income of cocoa farming households. The study therefore recommends that farmers should be encouraged to be members of farmers' organization and also actively participate in the decision-making process of the organization. This can be achieved through regular meeting attendance.

### References

- Adeniyi, O.R. and Ogunisola, G.O. (2014). Cocoa Production and related socio-economic and climate factors: A case study of Ayedire local government area of Osun state, Nigeria, published by Science

- and Education Centre of North America Agricultural Science, 2(4):1-13.
- Adepoju, A.A. (2019). Effect of Social capital on poverty alleviation among fish farming households in Oyo State, Nigeria. *Asian Journal of Agricultural Economics and Sociology*, 30(1):1-14.
- Agboola, W.L., Yusuf, S.A. and. Oloniniyi, M.T. (2016). Effect of Social Capital and Access to Microcredit on Productivity of Arable Crop Farmers in Kwara State, Nigeria. *IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)*, 9(2):9-16.
- Ajani, O.I.Y. and Tijani, G.A. (2009). The role of Social Capital in Access to Micro Credit in Ekiti State, Nigeria. *Pakistan Journal of Social Sciences* 6(3), 125-132.
- Amao, O.D., Oni, O. and Adeoye, I. (2015). Competitiveness of cocoa-based farming household in Nigeria. *Journal of Development and Agricultural Economics* 7(2): 80-84
- Balogun, O.L., Yusuf, S.A. and Oloniniyi, M.T. (2017). Effects of Social Network on Production Output of Maize Farmers in Kwara State, Nigeria. *Global Advanced Research Journal of Agricultural Science* 8(3): 031-038.
- Iyanda, J.O. Afolami, C.A., Obayelu, A.E., Ladebo, O.J. (2014). Social Capital and Access to Credit among Cassava Farming Households in Ogun State, Nigeria *Journal of Agriculture and Environmental Sciences* 3(2): 175-196.
- Komolafe, J.O. (2018). Influence of Social Capital on the use of Improved maize Seed among farmers in Southwestern Nigeria. *International journal of Agriculture and forestry*, 8(3): 129-138.
- Lawal, J.O. Omonona, B.T., Ajani O.I.Y, Oni, O.A. (2009). "Effects of Social Capital on Credit Access Among Cocoa Farming Households in Osun State, Nigeria. *Agricultural Journal* 4(4): 184-191
- Liverpool, S.L.O. and Winter-Nelson, A. (2010). Poverty status and the impact of social networks on smallholder technology adoption in rural Ethiopia. IFPRI Discussion Paper 970. Washington D.C.: IFPRI.
- Nkamleu, G.B, Nyemeck, J., Gockowski, J. (2010), Technology Gap and Efficiency in Cocoa Production in West and Central Africa: Implications for Cocoa Sector Development, Working Papers Series N° 104, African Development Bank, Tunis, Tunisia
- Nkang, M. Ajah, E.A., Aban, S.O. and Edet, E. O. (2007). Investment in Cocoa Production in Nigeria: a Cost and Return Analysis of three Cocoa Production Management Systems in the Cross River State Cocoa Belt. *AFR. J. FOOD AGRIC. NUTRI. DEV.* 9 (2), 713- 727
- NPopC (2006). National Population Census commission estimates.
- Oduwole, O.O. (2004). Adoption of improved agronomic practices by cocoa farmers in Nigeria: A multi-variate Tobit analysis. Ph.D Thesis (Unpublished), Federal University of Technology Akure, Nigeria.
- Ogunleye A.S. (2019). Effects of Social Capital on Adoption of Improved Technology and Productivity of Cassava Among Farmers Cooperative Societies in Osun State. *Science Research*. 7(6): 93-99.
- Olurotimi, P.O, Bamire, A.S. and, Ogunleye, A.S. (2018). Effect of Social Capital on Technical Efficiency of Cassava Production in Oyo State, Nigeria. *African Journal of Rural Development*, 3(1): 695-704.
- Oloniniyi, M.T. (2012). Effects of social capital and access to micro credit on productivity among arable crop farmers in kwara state, master thesis, University of Ibadan, Ibadan, Nigeria, 2012.
- Oni, O.A, Salman, K.K, and Idowu, B.O. (2011). Social capital dimensions and food security among farming households in Ogun State, Nigeria. *Journal of American science* 7(8): 188-197.
- Popoola O.A, Ogunsola, G.O. and Salman K.K. (2015). Technical Efficiency of Cocoa Production in Southwest Nigeria. *International Journal of Agricultural and Food Research*, 4(4): 1-14.