

Gender analysis of agricultural financing in cocoa-based farming system in Oyo and Osun States of South Western Nigeria

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ABSTRACT

This paper aimed to study the gender differentials in agricultural financing in cocoa-based farming systems in Southwestern Nigeria. A multi stage sampling procedure was employed to select 200 cocoa farmers for the study. Data were analyzed using descriptive statistics and logit regression model. The results revealed that cooperative societies are dominant sources of finance for both male and female cocoa farmers. The findings also revealed that male cocoa farmers have more sources of finance than their female counterparts in the study area. The determinant of access to finance for both male and female cocoa farmers was age; specific to male cocoa farmers were average income, household size and membership in cooperative societies while level of education and possession of collateral were specific to female cocoa farmers. It was concluded that policy strategies aimed at improving access to finance must consider education and ownership of certain resources among female cocoa farmers and formation of cooperative societies among male cocoa farmers.

Keywords: Gender; Agricultural financing; Cocoa; Farming system; Humidtropics; Oyo Osun State.

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Introduction

Cocoa-based farming system is the practice in which cocoa trees meant for the production of cocoa beans are the dominant component of the agro-forestry and usually inter-planted with other food crops e.g. cassava, maize and fruits. In Nigeria, cocoa (*Theobroma Cacao*) is a well-adapted agro-forestry plantation crop grown in hot, rainy climates of Southwestern Nigeria inclusive of Ekiti, Ogun, Ondo, Osun, and Oyo (Cadoni, 2013; Oluwasola *et al.*, 2015; Olaiya, 2016). Cocoa has played significant role in

Nigeria economy, especially in providing jobs and income to farmers, raw materials for the industry and foreign exchange for the country (Alamu, 2013). The contribution of cocoa to these producing States is appreciably substantial, hereby boosting the economies of these States (Eze, 2018).

Despite its contribution, cocoa growth witnessed a downward trend after the 1971 cropping season, and kept on declining till date (FAO, 2016). Several authors (Akinagbe, 2015; Olaiya, 2016; Afolayan, 2017) have

ascribed this downward trend of cocoa production to myriad of problems such as the dominance of smallholders in the cocoa production sector such as low yield, ageing of cocoa trees, old age of farmers, constant use of farmlands, less emphasis on cocoa production, inadequate cocoa input subsidy programmes, poor financing and small cocoa farms.

Among these factors, poor financing is viewed as the most important and the most talked about problem of cocoa production (Mathew & Uchechukwu, 2014; Mgbakor *et al.*, 2014). Poor agricultural financing refers to low financial capability of farmers and limited access to external fund which results to low financial resource for agricultural production. Poor agricultural financing is a major impediment to cocoa production in recent times which arises from problems of the risky nature of cocoa production and lack of collateral to secure external fund (Adekoya, 2014; Ijioma & Osondu, 2015 and Ajayi & Obademi, 2018). The poor cocoa financing has been attributed to a number of socio-economic and institutional factors inclusive of gender stratification in access to finance (Akpan *et al.*, 2013; Sheahan & Barret, 2014; Perez *et al.*, 2015).

Though several studies (Adebayo & Adeola, 2008; Ammani, 2012 and Ololade & Olagunju, 2013) have been conducted on access to finance among farmers in Nigeria, majority of the studies are not gender sensitive. Gender inequality is a problem which has characterized the agricultural financing (Jost *et al.*, 2015; Huyer *et al.*, 2015). Both men and women contribute significantly to agricultural production yet, their access to agricultural resources like credit differs (United Nations, 2015). Women are more constrained than their men counterparts in terms of access to credits (Tall *et al.*, 2014, Twyman *et al.*, 2014; UN Women *et al.*, 2015). This could

be linked to varying factors such as their low socioeconomic status, therefore rendering them unable to make important decisions over use of productive resources leading to little or no benefits accruing from farm production. Considering the cultural setting and the nature of environment where agricultural activities are practiced in some communities in Nigeria, women find it more difficult than men to gain access to valuable resources such as credit that would enhance their production capacity.

In view of this, the 'Humidtropics' (a CGIAR Research Program) that is led by International Institute of Tropical Agriculture (IITA) aimed at development of transformative innovation strategies for gender equity by improving the targeting and design of innovations to take account of salient gender norms in accessing finance by cocoa farmers is being implemented. Gender is core in systems research and a central theme in Humidtropics program, focusing on the reduction in gender disparities in access to inputs, services and technologies, a reduction in the drudgery of women's labour and an increase in productivity in men and women-managed farms. In order to achieve this, understanding the gender variations in the agricultural financing becomes imperative. Thus, this paper aimed to study the gender differentials in agricultural financing in cocoa-based farming systems in Southwestern Nigeria. Specifically, profile the sources of finance available to male and female cocoa farmers and determine factors that affect access to finance by male and female cocoa farmers.

Materials and Methods

Area of study

The study area was Southwestern Nigeria with a geographical area covering between latitude 60° North and 40° South and longitude 40° West and 60° East. It covers a land area of

approximately 114,271 km² which represents about 12% of the total land area in the country. It comprises six States which include: Lagos, Ogun, Oyo, Osun, Ondo and Ekiti states. The climate of Southwestern Nigeria is tropical in nature and it is characterized by wet and dry seasons. The temperature ranges between 21°C and 34°C while the annual rainfall ranges between 1500 mm and 3000 mm. The vegetation in Southwestern Nigeria is rain forest in the south and guinea savannah in upper north. The climate in the region favours the cultivation of crops like maize, yam, cassava, millet, rice and plantain. The dominant tree crops are cocoa, palm tree, Kola nut, coffee and cashew. Commercial banks, merchants, Agricultural banks, microfinance banks, cooperative societies are commonly used financial institutions by the farmers in this area. This study was carried out on Innovation platform site of Humidtropics project. The Humidtropics research project has four field sites located in Oyo and Osun States. These field sites host innovation platforms in special local governments areas in each State.

Sampling Procedure and Sample Size

A multi-stage sampling procedure was used to select respondents for the study. The first stage was a simple random selection of cocoa producing states in South-western Nigeria (Oyo and Osun States). The second stage was a purposive sampling of four field sites namely Akindele, Lagbedu and Iwara, Osunwoyin in Oyo and Osun States respectively due to the on-going humid tropics project in these States and historical cocoa production significance. At the third stage, 50 cocoa farmers registered with the State Agricultural Development Programme (ADP) who were also members of the Innovation Platform (IP) in the on-going humid tropics programme were randomly

selected from each of the four field sites using simple random technique, making a total of 200 cocoa farmers comprising of 148 male farmers and 52 female farmers.

Analytical Technique

Data were analysed using descriptive statistics and Logit regression model. Descriptive statistics such as frequency distribution and percentages were used to describe the sources of finance available to cocoa farmers

Logit regression model

Logit regression model was used to determine the factors that affect access to finance by male and female cocoa farmers in the study area. The choice of the logit model was based on the fact that the dependent variable is dichotomous. Following Gujarati (1998), the model was employed to estimate the factors that affect access to finance by male and female cocoa farmers in the study area.

The model is implicitly specified as follows:

$$\text{Ln}Y = \text{Ln} \left(\frac{P_i}{1 - P_i} \right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \mu_i \quad [1]$$

Where Y = is a binary variable defined as 1 for access to credit and 0 for otherwise.

P_i = Probability to access credit

$1 - P_i$ = Probability of no access to credit

Ln = Natural logarithm function

β_0 = Constant

$\beta_1 - \beta_n$ = Logistic regression coefficients

$X_1 - X_n$ = explanatory variables defined below as

X_1 = Age of respondent (Years)

X_2 = Formal educational level of respondent (Year)

X_3 = Respondent's farm size (Hectares)

- X_4 = Respondent's farm income (₦)
 X_5 = Household size (Actual)
 X_6 = Interest rate (%)
 X_7 = Membership of organization (1 if yes, 0 if otherwise)
 X_8 = Possession of collateral (1 if yes, 0 if otherwise)
 μ = Error term

The inclusion of these variables in the model was based on a prior expectation on the variable used. These explanatory variables are expected to influence the access to finance.

Results and Discussions

Source of finance available to cocoa farmers by gender

The source of agricultural financing, either in cash or kind, available to cocoa farmers in the study area ranged from family and friends, cooperative thrift associations or cooperative societies, produce buyers or merchants, to commercial banks, microfinance banks, agricultural banks, merchants (Table 1).

TABLE 1
Source of Finance Available to Cocoa Farmers by Gender

<i>Source of finance</i>	<i>Pooled (n=200) Frequency (%)</i>	<i>Male (n=148) Frequency (%)</i>	<i>Female (n=52) Frequency (%)</i>
Cooperative societies	85(42.5)	58(29)	27(13.5)
Commercial banks	14(7)	10(5)	4(2)
Microfinance banks	10(5)	6(3)	4(2)
Agricultural banks	13(6.5)	9(4.5)	4(2)
Merchant	61(30.5)	52(26)	9(4.5)
Friends and family	17(8.5)	13(6.5)	4(2)

Source: Field survey, 2017

According to Table 1, larger proportion of male cocoa farmers (29%) sourced for finance from cooperative societies than their female counterparts (13.5%). This is in line with Jeiyol *et al.* (2013) that male cocoa farmers had access to finance from cooperative societies than their female counterparts. Similarly, majority of male cocoa farmers (5%) sourced for finance from commercial banks than their female counterpart (2%). Larger proportion of male cocoa farmers (26%) than their female counterpart (4.5%) sourced for finance from merchants (produce buyers). They sourced for finance from merchant when they are out of season to produce cocoa and pay the merchants

back with cocoa produce equivalent to that amount borrowed at harvest. Furthermore, more male cocoa farmers (6.5%) than female cocoa farmers (2%) accessed finance from other sources like friends and family members. The study revealed that cooperative societies is the major source of finance for both male and female cocoa farmers. This finding is in line with Agbo *et al.* (2015) who found that a larger percentage of farmers accessed finance from the cooperative society they belong. The study also revealed that male cocoa farmers have more sources of credit than their female counterparts in the study area. This could be attributed to socio cultural believes and norms

as well as lack of collateral on the part of female farmers (Bamire *et al.*, 2012).

Factors Affecting Access to Finance by Gender

The factors that affect the access to credit by male and female cocoa farmers are shown in

Table 2. The significance of the diagnostic statistics (chi-squared and log-likelihood values) showed a good fit of the model.

TABLE 2
Factors affecting access to finance by male and female cocoa farmers

<i>Variable</i>	<i>Male</i>	<i>Marginal</i>	<i>Female</i>	<i>Marginal</i>
	<i>Coefficients</i>	<i>Effects</i>	<i>Coefficients</i>	<i>Effects</i>
Age	-0.0002* (0.100)	-0.0005* (0.100)	-1.663** (0.051)	-0.413** (0.051)
Education	0.075 (0.658)	0.019 (0.658)	0.011* (0.104)	0.002* (0.101)
Average income	-0.002* (0.105)	0.0004* (0.105)	-0.002 (0.390)	-0.001 (0.390)
Marital status	-0.038 (0.501)	0.009 (0.501)	-0.035 (0.689)	-0.008 (0.689)
Farm size	-0.172 (0.358)	0.043 (0.358)	0.458 (0.412)	0.113 (0.411)
Farm experience	0.213 (0.304)	0.053 (0.304)	0.584 (0.160)	0.145 (0.160)
Household size	0.549* (0.060)	0.137* (0.060)	0.044 (0.939)	0.011 (0.939)
Interest rate	0.096 (0.461)	0.024 (0.461)	0.058 (0.824)	0.014 (0.824)
Possession of collateral	-0.736 (0.145)	-0.178 (0.125)	1.934 (0.231)	0.372** (0.056)
Membership of organization	1.132*** (0.005)	0.271*** (0.002)	-0.300 (0.744)	0.074 (0.741)
Constant	1.839 (0.307)	7.841 (0.151)		
<i>Number of observations</i>	148	52		
Likelihood Ratio $\chi^2(10) =$	18.20	16.63		
Prob > $\chi^2 =$	0.0517	0.0030		
Log likelihood =	-129.4888	-113.565		

NB; * Significant at 10%; ** Significant at 5%; *** Significant at 1%. Figures in parentheses are the p-value

Source: Field survey, 2017

From Table 2, age significantly influenced access to finance for the entire sample. The age of male and female cocoa farmers negatively and significantly influenced the likelihood of access to finance. This implies that a year increase in the age of male and female cocoa

farmers would reduce the probability of access to finance by 0.05% and 41.3%, respectively. This implies that older cocoa farmers demand for lesser amount of credit compared to young ones in the study area. This confirms the findings of Ayodele *et al.* (2016)

A gender analysis of the factors driving the access to finance showed some variations. For male farmers, average income, household size and membership of farmers' organization significantly influenced access to finance. The average annual income of cocoa farmers negatively and significantly influenced the probability of access to finance by male cocoa farmers. This implies that an increase in income of cocoa farmers decreases the likelihood of access to finance from financial institutions by 0.04%. This is in line with the findings of Ijioma and Osondu (2015) that increase in income will reduce the need for external financing of farm activities. Household size positively and significantly influenced the probability of accessing finance. This suggests that an increase in household size of male cocoa farmers increases the likelihood of accessing finance by 13.7%. This suggests that the higher the number of household member the higher the demand for credit from external sources. This is in line with Oboh and Ekpebu (2011) who reported that household size increases the likelihood of accessing finance. Membership of organizations positively and significantly influences the likelihood of accessing finance from financial institutions. This suggests that an increase in membership of farmers' organization increases access to finance by 0.2%. This implies that being a member of organization increases farmers chances of getting credit all things being equal. This is in line with Isitor *et al.* (2014) who reported that belonging to membership of organizations increases the likelihood of accessing finance.

On the other hand, education and possession of collateral significantly influenced access to finance by female cocoa farmers. Education of female cocoa farmers positively and significantly ($p < 0.1$) influenced their

likelihood of accessing finance. This implies that a unit increase in the years of education of female cocoa farmers increases the likelihood of access to finance by 0.2%. This is because at certain educational levels, a farmer is able to make informed decisions concerning the demand for credit. This finding tally with Ibrahim *et al.* (2012). The possession of collateral positively and significantly ($p < 0.1$) influenced their likelihood of accessing finance of female cocoa farmers. The result suggests that an increase in possession of collaterals by female cocoa farmers increases the probability of accessing finance by 37.2%. This finding tally with Adekoya (2014).

Conclusion and Recommendation

Cocoa is one of the major crops vastly produced in the study area with main gender variations in the source of agricultural financing and factors affecting access to credit in the study area. However, male cocoa farmers had more access to finance than their female counterpart which may be attributed to lack of collateral on the part of female farmers. However, while age was the major factor that affects access to finance by male and female cocoa farmers, average income, level of education, and household size were major factors that affect access to finance by male cocoa farmers. Level of education and possession of collateral were the major factors for female cocoa farmers in the study area. This suggests that while strategies targeted at promoting the access to finance among male farmers should consider average income, level of education, and household size, strategies among female should consider level of education and possession of collateral. Following the findings of the study, it is recommended that youth should be encouraged to go into cocoa production as

age of farmers affect their access to finance as financial institutions pays more attention to younger farmers than the older farmers and Government should ensure promotion of education and ownership of certain resource among female cocoa farmers. Also, gender sensitive agricultural support systems and policies which will favour female farmers in accessing, use and control of agricultural resources so as to increase their outputs should be put in place. Finally, the socio-economic factors should be considered when providing financial services to male and female farmers and the formal institutions should simplify the procedures required for providing financial services to the male and female farmers.

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