



Research Article

Credit Accessibility and Poverty among Smallholder Cassava Farming Households in South West, Nigeria

A.A. Obisesan

Postgraduate student in Agricultural Economics, University of Ibadan, Nigeria

ARTICLE INFO	ABSTRACT
<p>Article No.: 112712295 DOI: 10.15580/GJAS.2013.2.112712295</p> <hr/> <p>Submitted: 27/11/2012 Accepted: 20/01/2013 Published: 20/02/2013</p> <hr/> <p>*Corresponding Author A.A. Obisesan E-mail: kemi_triumph@yahoo.com Phone: +2348076673676</p> <hr/> <p>Keywords: credit, accessibility, poverty, cassava, smallholder, Southwest, Nigeria</p>	<p>The role of credit in agricultural economy cannot be overemphasized. Its constraints hamper productivity and income of rural smallholder farmers. In this study, cross-sectional data from 150 smallholder cassava farming households were used to examine credit accessibility and poverty among cassava farmers in Ogun state, Nigeria. The data were analyzed using descriptive statistics, logistic regression model and the Foster, Greer and Thorbecke class of measures (FGT). Logistic regression model was used to examine factors influencing the farmers' credit accessibility while the FGT class of measures were used to determine the incidence, depth and severity of poverty among cassava farmers. The results revealed that majority of the farmers had access to credit with co-operatives serving as the major source of credit to the households. The results of the logistic model showed the significant determinants of credit accessibility as gender, age, main occupation, participation in off-farm activities, membership of farmers' association and crop yield. The FGT results revealed a high rate of poverty among the cassava farming households with 66.7% households being poor and the households with no credit access had higher poverty incidence.</p>

INTRODUCTION

Agriculture is a significant sector in Nigeria's economy and the economic mainstay of the majority of households in Nigeria (Amaza, 2000; Udoh, 2000). It contributes about 45% of the GDP, employs two-third of total labour force and provides livelihood for over 90% of the rural population. The sector is dominated by smallholder farmers accounting for over 90% of the total output while more than half of the farmers produce only food crops including roots and tubers such as cassava (IFAD, 2001). Smallholder farmers in South-western Nigeria depend upon root and tuber crops, especially cassava as a dietary supplement and a major source of energy, nutritional requirements and income (SARRNET, 1993).

Cassava is one of the most important crops in Nigeria, playing a dominant role in the rural economy in the southern agro-ecological zones and is increasingly gaining importance in other parts of Nigeria. It is important, not just as a food crop but even more so as a major source of income for producing households. As a cash crop, cassava generates income for the largest number of households, in comparison with other staples, contributing positively to poverty alleviation. As a food crop, cassava fits well into the farming systems of the smallholder farmers in Nigeria because it is available all year round, thus providing household food security. An estimated 70 million people obtain more than 500 Kcal per day from Cassava and more than 500 million people consume 100 Kcal per day (Kawano, 2003).

Nigeria is currently the largest producer of cassava in the world with an annual output of over 34 million tonnes of tuberous roots (FAOSTAT, 2005). This could be attributed to the cassava multiplication programmes in the country. However, cassava is majorly produced by smallholder farmers cultivating less than two hectares of land and their production is characterized by low productivity. Low agricultural productivity has been alleged to be the critical factor accounting for rural poverty (Omonona et al., 2005; Uganda, 1998). Poverty is endemic to rural areas where the main occupation is farming (World Bank, 2008). According to the NLSS Report (2011), 73.2% of the rural population in Nigeria are described poor compared to 61.8% in the urban area. The predominance of rural poverty over urban has been consistent between 1996 and 2010. Incidentally, the rural sector is the predominant sector in the nation's economy as it plays some fundamental roles such as serving as a base for food and fibre production; the major source of capital formation for the country; a principal market for domestic manufacturers; job creation at relatively low unit costs and in general, engages in primary activities that form the foundation of any economic development. Thus remains the most important growth priority of the country.

The role of credit in agricultural economy cannot be overemphasized. It has been put forward as a tool for agricultural development. Credit for rural small-holders especially in agriculture is gaining

relevance in many parts of the world in response to the needs of less privilege entrepreneurs with limited capital base in the sector.

There are studies on credit accessibility and the determinants but empirical studies on credit accessibility and rural poverty is scanty. For instance, Khalid (2003) examined the access to Formal and Quasi-Formal Credit by Smallholder Farmers and Artisanal Fishermen in Zanzibar. The study employed descriptive statistics and Logistic regression model in its analysis. The result indicated that about 26% of the respondents have accessed loans from quasi- formal institutions. Age, gender, education, income levels, and degree of awareness on credit availability are factors that influence credit accessibility by smallholder farmers and artisanal fishermen in Zanzibar. Moreover, the results of the mean significant T-tests indicate that there is significant difference between the credit users and non-users in relation to income levels and value of productive assets owned by the respondent.

Adegbite and Adeleye (2011) studied the determinants of farmers' access to microcredit in Oyo state, Nigeria. Descriptive statistics, the Z-score test of significance and Tobit regression model were used in the data analysis. Result of the Tobit regression analysis revealed that age, education, land ownership, Income, value of Assets, marital status, farming experience, existence of Credit Institutions in the area were significant to access to credit in the study area. All the significant variables except Age were positively correlated to access to credit.

Lawal *et al.* (2009) investigated the effects of social capital on credit access among cocoa farming households in Osun State, Nigeria. The result showed that mean credit amount accessible to the cocoa farming household was N70, 692±33474.3, 44.67 and 19.33% of the respondents got below and above the mean value, respectively, while 36% of respondents could not access credit. A unit increase in Social Capital would increase credit access of cocoa farming households by 0.36%. Social Capital was truly exogenous to Credit Access with no reverse causality. A unit increase in cocoa farming household size decreases ($p < 0.05$) credit access by 0.99 while unit increases in years of experience, amount of credit requested, availability of collateral and cash contribution in association increases ($p < 0.05$) credit access by 0.19, 0.0006, 2.22 and 0.07, respectively. Although, cocoa farming households have good meeting attendance, poor decision making and cash contribution in associations however, affected their credit access.

Problem Statement

Despite the fact that 80% of Nigeria's population lives in rural areas and that majority is involved in agricultural activities, there are no efforts to facilitate credit to farmers which is crucial in rapid development of this dominant section of the population. Agricultural productivity and growth are hindered by limited access to credit facilities (Odoemenem and Obinne, 2010);

only few farmers have access to rural credit. According to Enhancing Financial Innovation and Access (EFInA, 2008), 23% of the adult population in Nigeria has access to formal financial institutions, 24% to informal financial services, while 53% are financially excluded. Credit provision has been put forward as one of the principal components of rural development, which helps to attain rapid and sustainable growth of agriculture. Rural credit is a temporary substitute for personal savings, which catalyses the process of agricultural production and productivity. To boost agricultural production and productivity farmers have to use improved agricultural technologies, however the adoption of these technologies is relatively expensive and small holder farmers cannot afford to self finance it. As a result, the use of agricultural technologies is very low. Therefore, enhanced provision of rural credit would accelerate agricultural production and productivity (Briquette, 1999).

It is interesting to note that credit has been advocated as a poverty alleviation measure (Boomgard, 1989). Limited availability of credit services has undermined rural income activities due to lack of capital for investment and has prevented farmers to adopt improved farming practices. Credit is a necessary input in the various aspects of farm operations. In Nigeria, as in most developing countries, lack of credit facilities has been regarded as the major constraint farmers face when they try to improve their economic activities and/or living conditions (Agbor, 2004; Binswanger *et al.*, 1993). However, even when available, credit is difficult to access by farmers in the rural area despite the fact that it is an essential input in production (FARM, 2006).

Therefore, this study will provide useful information on the status of smallholder cassava farming households in accessing credit, the factors influencing access to credit and its contribution to poverty alleviation among the farming households. This information is vital for policy makers in taking appropriate actions toward facilitating the establishment of comprehensive and sustainable financial institutions for the development of agriculture and rural sectors and also in formulating rural credit policy. Hence, this study aims to: profile cassava farming households' access to credit and their credit sources, determine the factors influencing access to credit and estimate cassava farming households' poverty status by sources of credit in Ogun state southwest, Nigeria.

METHODOLOGY

Study Area, Sampling and Data Collection Procedure

In order to linearize the right hand side a logit, transformation was applied by taking logarithm of both sides, therefore we have:

This study was carried out in Ogun state, southwest, Nigeria. It was based on primary data collected through the use of structured questionnaire from a cross-section of cassava farming household heads who are users and non-users of credit. Data collected included demographic characteristics of the household heads; socio-economic, living standard and farm-specific variables; as well as income and expenditure variables.

A multistage sampling technique was used to select representative cassava farming households for the study. The first stage involved the selection of two zones from the four agro-ecological zones in the state. In the second stage, two Local Government Area (LGAs) each were selected from the two zones while the third stage involved random selection of four villages from each LGA. In the final stage, ten cassava farming households were randomly selected from each village. Therefore, a total of 160 cassava farming households were sampled but as a result of inappropriate completion of ten questionnaires, a total of 150 farming households were used for the study.

Analytical Techniques

Various analytical techniques such as descriptive analysis, Logit regression model and the Foster-Greer-Thorbecke (1984) class of poverty measures (FGT) were used in this study. The descriptive statistics included frequency, means, percentages, tables and standard deviation. These were used to categorize cassava farming households under different socio-economic and demographic characteristics.

The Logistic Regression Model

Following Maddala (1983), Logistic regression model was used to determine factors that influence a cassava farming households' ability to secure/access loan. Logistic regression is useful for this kind of situation where prediction of the presence or absence of an outcome based on values of a set of predictor variables is needed. This model is similar to a linear regression model but it is suited to models where the dependent variable is dichotomous.

If Y_i is the random variable (dichotomous), it can then be assumed that Y_i takes on the values 0 or 1, where 0 denotes the non-occurrence of the event in question and 1 denotes the occurrence. If X_1, \dots, X_n are characteristics to be related to occurrence of this outcome, then the logistic model specifies that the conditional probability of event (i.e., that $Y = 1$) given the values of X_1, \dots, X_n is as follows:

$$P(Y) = 1/[1 + \exp - (\alpha - \sum \beta_i X_i)] \quad (1)$$

$$\text{Logit } P(Y) = \alpha + \sum_i \beta X_i \quad (2)$$

Where,

$Y_i = 1$ if success i.e. respondent has access to credit.
 and $Y_i = 0$ if failure i.e. if respondent did not have access to credit
 α = Constant term
 X_i = independent variable
 β = logistic coefficient for independent variable

The independent variables specified as determinants of access to credit are:

X_1 = Gender (1= male, 0 otherwise), X_2 = Age (years), X_3 = Marital status (1= married, 0 otherwise), X_4 = Household size (number), X_5 = Main occupation (1= farming, 0 otherwise) X_6 = off- farm activities (1= yes, 0 otherwise), X_7 = Membership of farmers' group (1= yes, 0 otherwise), X_8 = Years of cassava farming

experience (years), X_9 = Crop yield (tonnes/ ha), X_{10} = Land area cultivated, X_{11} = Years of education.

The FGT Poverty Measure

The FGT poverty measure was used to analyze poverty level of the cassava farming households. The FGT is presented below:

$$P_\alpha = \frac{1}{n} \sum_{i=1}^q \left[\frac{Z - y}{Z} \right]^\alpha \quad (3)$$

Where, Z = the poverty line defined as 2/3 of Mean annual per capita expenditure

severity of poverty among households, that is the depth of poverty and inequality among the poor.

Y = the annual per capita expenditure – poverty indicator/welfare index per capita

q = the number of poor households in the population of size n,

α = the degree of poverty aversion; $\alpha=0$; is the Headcount index (P_0) measuring the incidence of poverty (proportion of the total population of a given group that is poor, based on poverty line). $\alpha=1$; is the poverty gap index measuring the depth of poverty, that is on average how far the poor is from the poverty line; $\alpha=2$; is the squared poverty gap measuring the

The poverty line

This is a pre-determined and well defined standard of income or value of consumption. In the study, the line was based on the expenditure of the households. Two –third of the mean per capita expenditure was used as the poverty line. The mean per capita household expenditure (MPCHE) was obtained by dividing the total of all individual household per capita expenditure by the number of households surveyed.

$$\text{Per capita expenditure (PCE)} = \frac{\text{Total expenditure}}{\text{Household size}} \quad (4)$$

$$\text{Mean per capita household expenditure (MPCHE)} = \frac{\text{Total household PCE}}{\text{Total number of households}} \quad (5)$$

RESULTS AND DISCUSSION

Socio-Economic and Demographic Characteristics of the Respondents

Table 1 and 2 showed the various characteristics of both users and non-users of credit. About 69% of the respondents had access to credit while about 31% are non-users. On the average, users are younger (40 years) than non-users (47 years) and had slightly higher years of education (8 years and 7 years

respectively). Majority of the respondents were married (70% and 77% for the users and non-users respectively) while the mean household size was about 6 people for the credit users and 5 people for non-credit users. Most of the respondents were male household heads and had contact with extension agents. The credit users had higher farming experience (18 years) than non-users (13 years) and the mean crop yield was 11.87 tonnes/ha for the users compared to 7.65 tonnes/ha for the non-users.

TABLE 1: Summary of Statistics of the Farmers

Characteristics	Credit-users =103 (68.67%)		Credit non-users n=47 (31.33%)	
	Mean	Standard deviation	Mean	Standard deviation
Age (years)	39.87	11.25	46.59	10.81
Household size	5.58	1.86	5.36	2.10
Years of education	8.33	4.79	7.16	3.89
Years of experience	18.07	11.78	12.59	8.69
Crop yield	11.87	2.66	7.65	4.27

Source: Field Study, 2011

TABLE 2: Distribution of Farmers by Socio- economic Characteristics

Characteristics		Credit users (n=103)		Credit non-user (n= 47)	
		Frequency	Percentage	Frequency	Percentage
Gender	Female	30	29.13	28	59.57
	Male	73	70.87	19	40.43
Age	≤ 30	5	4.85	12	25.53
	31-40	41	39.81	6	12.77
	41-50	26	25.24	16	34.04
	>50	31	30.10	13	27.66
Household size	0-4	22	21.36	11	23.40
	5-9	77	75.76	33	70.22
	>9	4	3.88	3	6.38
Years of education	0-6	45	43.69	26	55.32
	7-12	56	54.37	21	44.68
	13-19	2	1.94		
Marital Status	Married	72	69.90	36	76.60
	Single	31	30.10	11	23.40
Years of experience	0-10	30	29.13	24	51.06
	11-20	46	44.66	15	31.92
	>20	27	26.21	8	17.02
Extension agent contact					
	Yes	87	84.47	40	85.11
	No	16	15.53	7	14.89
Crop yield	0-5	3	2.91	8	17.02
	6-10	21	20.39	29	61.70
	11-15	79	76.70	10	21.28

Source: Field study, 2011

Classification of Respondents by Credit Sources

From Table 3, about 31% of the respondents had no access to credit, 9.33%, 24.67%, 10.67% and 16% sourced their credit from local money lenders, co-operatives, farmers' group and relatives/ friends respectively, while 3.33% of the respondents had banks as their source of credit. Only 4.67% of the respondents sourced their credit from government agencies.

Determinants of Credit Accessibility among Farming Households

Logistic regression analysis was employed to ascertain factors that influence credit accessibility. Access to credit variable (whether an individual has accessed credit or not) was regressed on age, number of years of formal education, gender, land area cultivated, household size, marital status, main occupation, participation in off-farm activities, membership of farmers' group, years of farming experience and crop

yield. The results of the Logistic regression model (Table 4) shows that among the 11 variables used in the analysis, only 7 variables significantly influence farmers' credit accessibility. They were: Gender, age, main occupation, participation in off-farm activities, membership of farmers' group, years of experience and crop yield.

From Table 4, there was a negative but significant relationship between credit access and age. This finding suggested that older people have low chances to access credit. This can be adduced to risk averse nature of older farmers. Gender is also significant but had a positive coefficient, implying that women had low access to credit compared to men. The odds in favour of access to credit use increases by a factor of 23.2452 for male headed households. Having farming as the main occupation reduced the odds in favour of access to credit significantly (5%) by 70%. This could be attributed to high level of risks and uncertainties involved in farming. Participation in off-farm activities and crop yield were significant at 5% and both increase the odds in favour of credit access

by a factor of 1.4538 and 1.3184 respectively. The odds of access to credit increased with years of experience in farming and crop yield significantly at 10% by a factor of 0.9556 and 1.3184 respectively.

TABLE 3: Credit Sources of Respondents

Credit Sources	Frequency	Percentage
No credit	47	31.33
Local money lenders	14	9.33
Co-operatives	37	24.67
Banks	5	3.33
Government agencies	7	4.67
Farmers' group	16	10.67
Relatives and friends	24	16.00

Source: Field Survey, 2011

TABLE 4: Results of Logit Analysis on Credit Accessibility

Explanatory variables	Coefficients	Odds ratio	Standard error
Gender	0.6471***	23.2452	0.1120
Age	-0.0244**	1.1017	0.0124
Marital Status	-0.4415	0.1397	0.1898
Household size	-0.0418	0.8558	0.0362
Years of education	0.0017	0.9819	0.0174
Main occupation	-0.0812**	0.7047	0.0506
Off-farm activities	0.0868**	1.4538	0.1345
Farmers' group membership	0.5607***	11.1932	0.1266
Years of farming experience	0.0103*	0.9556	0.0107
Land area cultivated	0.0597	0.7353	0.1723
Crop yield	0.0689*	1.3184	0.0289
Constant	5.0793**		1.9754
Observation	150		
Pseudo R ²	0.4941		
Log likelihood	-47.18		

Source: Field Study, 2011

***, **, * represents 1%, 5% and 10% significant level respectively

Household Poverty Status

Household Monthly Expenditure

The summary statistics of the households' monthly expenditure profile on food and non-food items is as shown in Table 5. Household expenditure was used in place of income because of easy measurement

(Shaffer, 1998; Omonona, 2001). From the table, food which is a basic necessity represents about 55% of the total mean per capita expenditure. Clothing is next in priority, followed by transportation while health and medicare accounted for the least percentage of household expenditure. The mean per capita household expenditure was ₦4428 (Nigerian Naira) while the poverty line was ₦2952.

TABLE 5: Household Monthly Expenditure Profile among farming households

Item	Mean monthly Expenditure	% of total expenditure
Food	13560.25	55.4
Clothing & footwear	1664.44	6.8
Health and medicare	832.22	3.4
Education	1125.94	4.6
Fuel and Lightning	1517.57	6.2
Remittances	1517.57	6.2
Transportation	1639.96	6.7
Rent	1199.37	4.9
Others	1419.67	5.8
Total expenditure	24476.99	100
Mean per capita household expenditure (MPCHHE)	4428	
Poverty line (2/3 MPCHHE)	2952	

Source: Field Study, 2011

TABLE 6: Poverty status of Households by Sources of credit

Credit Sources	Poverty estimates		
	P ₀	P ₁	P ₂
Local money lenders	0.6923	0.2645	0.0895
Co-operatives	0.5724	0.1418	0.0154
Banks	0.6843	0.1966	0.0328
Government agencies	0.6666	0.1945	0.0235
Farmers' group	0.5763	0.1524	0.0106
Relatives and friends	0.5828	0.1753	0.0204
Non-users	0.7447	0.2978	0.0456
All	0.6667	0.1775	0.0211

Source: Field Survey, 2011

Poverty Status of Households by Sources of Credit

Table 6 shows the poverty status of the respondents based on their credit sources. The result revealed that 66.7% of all the households were poor. This indicates high rate of poverty among cassava farmers in the state. Furthermore, 69.2%, 57.2%, 68.4%, 66.7%, 57.6% and 61.3% of the households that sourced their credit from Local money lenders, Co-operatives, Banks, Government agencies, Farmers' group, relatives and friends were poor. However, households with no access to credit had highest poverty incidence with 74.5% described poor. Furthermore, the depth and severity of poverty was higher among those with money lenders as their source of credit.

CONCLUSIONS AND RECOMMENDATION

This study centred on credit accessibility and poverty among cassava farming households. Empirical evidence from this study has revealed households accessibility to credit, the various available credit sources as well as the factors influencing access to credit. More so, this study has successfully shown the expenditure profile of the households and their poverty status. There is need for farmers to take full advantage of credit facilities to improve their productivity and welfare. Policy makers should target resources to the poor and the government should enhance credit support schemes for the farmers.

Based on the findings of this study, the following recommendations are suggested in order to

improve credit access and welfare of cassava farming households in the study area:

- ❖ Rural credit policy should be formulated in order to mobilize savings and maximise the availability of credit to the population in rural areas.
- ❖ Policy makers and bankers should focus on providing loans to farmers with low cost of credit.
- ❖ Gender differences with respect to access to credit facilities should be critically checked. Extending credit to women will not only accelerate production in agricultural sector but also improve rural livelihood and reduce poverty. Women should be encouraged to form their own credit and saving groups and take new viable economic forms of income generation.
- ❖ The government in collaboration with various Non-governmental organisations (NGOs) should consider the possibility of establishing a specialised credit institution to cater for specific credit and saving needs of the small holder farmers.
- ❖ Factors that significantly influence credit accessibility such as membership of farmers' association and participation in off-farm activities should be encouraged among the farming household.

REFERENCES

- Agbor RA (2004). An Impact Assessment of Cameroon Gatsby Trust Micro-credit Scheme in the Mile Four District, Cameroon; Report of International Project Management for NGOs, Participants Learning, December, 2004, Sweden.
- Amaza PS (2000). Resource use efficiency in food crop production in Gombe state, Nigeria. Unpublished PhD thesis, Department of Agricultural Economics, University of Ibadan.
- Binswanger HP, Khandker SR and Rosenzweig M (1993). "How Infrastructures and Financial Institutions affect agricultural Output and Investments in India", *Journal of Development and Economics*, 4((3):337-366.
- Boomgard JJ (1989). *Taking Stock of A.I.D Micro-Enterprise Portfolios: Synthesis Report*, Washington DC: Development Alternatives, Inc. and Robert R. Nathan Associates, Inc.
- Briquette (1999). Better practices in Agricultural lending, FAO publication.
- EFInA (Enhancing Financial Innovations and Access) (2008). Access to financial services in Nigeria: Key findings. <<http://www.efina.org.ng/Key_Findings.pdf>>
- FAOSTAT database (2005).
- Foundation for World Agricultural and Rural Life (FARM) Reviews (2006). "Working Group Micro-credit: Proposed Terms of Reference".
- Foster J, Greer J and Thorbecke E (1984). A class of decomposable poverty measures. *Econometrica* 52: 761–766.
- International Fund for Agricultural Development (IFAD) (2002). Assessment of Rural Poverty: Eastern and Southern Africa. IFAD, Rome, 122 p.
- Maddala GS (1983). Limited Dependent and qualitative Variables in Econometrics. Cambridge University Press. New York.
- National Bureau of Statistics (2011). Nigeria Poverty Profile 2010.
- Odoemenem IU and Obinne CPO (2010). Assessing the factors influencing the utilization of improved cereal crop production technologies by small scale farmers in Nigeria.<<<http://www.indjst.org/archive/vol.3.issue.2/innocent-17.pdf>>>
- Omonona BT (2001). Poverty and its correlates among rural farming households in Kogi state, Nigeria. Unpublished PhD Thesis, Department of Agricultural Economics, University of Ibadan.
- Udoh EJ (2000). Land management and resource-use efficiency among farmers in South-Eastern Nigeria. Unpublished PhD thesis in the Department of Agricultural Economics, University of Ibadan.
- World Bank (2007). World development report 2008: Agriculture for development. The World Bank, Washington, DC.