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Determinants of access to agricultural credit among crop farmers in a farming community of Nasarawa State, Nigeria

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Farmers' limited access to agricultural credit facilities is one of the major factors responsible for the declining agricultural productivity in Nigeria. Hence, this study aims to identify determinants of access to agricultural credit among smallholder farmers in Doma Local Government Area (LGA) of Nasarawa State, Nigeria. The data were obtained from 125 farmers by administered structured questionnaire in 2008 production season through a two stage random sampling technique. Descriptive statistics and stepwise linear regression model were used to analyze the data. The study observed that education, distance to source of credit and types of credit source were significant factors affecting farmers' accessibility to agricultural credit in the study area. Hence, government policy that intends to improve the accessibility to agricultural credit facilities should create enabling environment to ease farmers' access to education and credit facilities.

Key words: Agricultural credit, farming community, Nasarawa State.

INTRODUCTION

Agricultural growth in Nigeria is increasingly recognized to be central to sustainable economic development. The sector plays a very significant role in addressing food insecurity, poverty alleviation and human development challenges. However, in more recent years, there has been a marked deterioration in the productivity of Nigeria's agriculture (Amaza and Maurice, 2005). Many reasons have been advanced for the declining agricultural productivity in Nigeria. One of the factors attributed to the declining productivity of the sector is farmers' limited access to credit facilities (Nwaru, 2004; Manyong et al., 2005). According to Alfred (2005), acquisition and utilization of credit for agricultural purposes promote productivity and consequently improved food security status of a community. Increase productivity depends on adoption and technical efficiency of improved farming technologies (Obwona, 2002). In an effort to increase adoption rate among farmer, their purchasing power to acquire modern agricultural technologies should be improved. Most of the Nigerian farmers are smallholder trapped in vicious cycle of poverty. It has been argued that when agricultural credits are made accessible to farmers it will go a long way in breaking this cycle of poverty and liberating the farmers to improve their adoption of modern farm technologies which could enhance productivity and farmers' income. Adebayo and Adeola (2008) observed that agricultural credit enhances productivity and promotes standard of living by breaking vicious cycle of poverty of the resource poor farmers. Similarly, Nwaru et al. (2006) observed that

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credit facilitates adoption of innovations leading to increased farm productivity and income, encourages capital formation and improves marketing efficiency. There are two major sources of agricultural credit (that is, formal and informal sources). In the formal credit, institutions provide intermediation between depositors and lenders charge relatively low rates of interest that usually are government subsidized. In informal credit markets money is lent by private individuals. The informal sources of credit to smallholder farmers as identified in the study area were family/friends, money lenders, produce buyers and farmers' cooperatives, while the formal sources of credit were Nigerian Agricultural Co-operative and Rural Development Bank (NACRDB) and commercial bank. The Nigeria Agricultural and Co-operative Bank Limited was established in 1972. The NACRDB evolved recently from the merger of the Nigerian Agricultural and Co-operative Bank with the People's Bank. The bank's broad mandate encompasses savings mobilization and the timely delivery of affordable credit to meet the funding requests of the teeming Nigerian population in the agricultural sector of the National economy. But this has not been the case with smallholder farmers as the problem of accessibility hinders them from reaching formal financial institutions for production loans (Etonihu, 2010). This study was, therefore, conducted primarily to identify determinants of access to agricultural credit to provide information for effective policy intervention that will improve farmers' purchasing power to acquire modern agricultural technologies.

MATERIALS AND METHODS

The study was conducted in Doma Local Government Area (LGA), located in the southern zone of Nasarawa State in Nigeria. The LGA lies between latitude 0.9°33' north of the equator and longitude 0.9°32' east with distinct wet (March to October) and dry (November to February) seasons (Akwe, 2008). The population of the LGA is 138,991 with annual population growth rate of 3.2% (NPC, 2006). The projected population figure for 2010 of the LGA is 156,783. The average annual rainfall is approximately 1500 mm with the mean daily maximum and minimum temperature of 36.8 and 22.7°C, respectively (Akwe, 2008). The economic activity in the area is largely agrarian with majority of the people being engaged in cultivating crops such as yam, sesame, rice, cassava, sorghum, millet, cowpea and groundnut.

A two stage random sampling technique was used to obtain a sample of 125 crop farmers for the study. In the first stage, six (6) wards were selected randomly out of 10 wards in Doma LGA. In the second stage, 10% of the sampling frames of the total smallholder crop farmers were randomly selected in each of the selected wards. Thus, a total of 125 crop farmers constitute the working population for the survey. Primary data were collected based on 2008/2009 cropping season from the sampled farmers using structured questionnaire and interview schedule. The information collected from the crop farmers include: socio-economic characteristics of the farmers, types of agricultural credit available to them, credit needed and credit obtained by the farmers.

Descriptive statistics (frequency and percentage) and stepwise linear regression were used to analyze the data. In deciding the best set of explanatory variables for a regression model, researchers often follow the method of stepwise regression (Gujarati, 2007). In this method, one proceeds by introducing the explanatory variables one at a time (Stepwise forward regression).

The stepwise regression model in this study involved nine linear regression equations based on the number of independent variables in the model. The change in coefficient of multiple determinations (R^2-change) as a result of stepwise inclusion of factors was used to measure the proportion of variation in the accessibility to credit as induced by each factor included in the model.

The regression model in its general form is expressed as:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, U) \quad (1)$$

Where, Y = Rate of accessibility to credit, which is measured in percentage as:

$$Y = \frac{Amount\ of\ credit\ obtained}{Amount\ of\ credit\ applied} \times 100 \quad (2)$$

X_1 = Education (years); X_2 = Marital status measured as dummy (married= 1, single = 0); X_3 = Farming experience (years); X_4 = Farm size (hectare); X_5 = Household size (actual number); X_6 = Income per annum from crop production (₦); X_7 = types of credit source measured as dummy formal = 1 and informal = 0; X_8 = Distance to source of credit (km); X_9 = Experience in cooperatives (number of years spent in cooperative); U = Error term

RESULTS AND DISCUSSION

Descriptive statistics of the socio-economic characteristics of the farmers

The summary statistics of the variables obtained from the farmers are reported in Table 1. The study observed that 36% of the farmers fell within the age range of 41 to 50 years as an indication of majority being in the active and productive age group with a mean age is 46 years. Only 14% of the farmers were above 60 years of age. Only 10% of them were not married. The study also indicated that 67% of the farmers had over 10 years of farming experience and had farm size within the range of 2 to 4 ha with a mean of 2.13 ha implying that the farmers were smallholders with a mean farming experience of 14 years. The household size of the farmers for over 88% of them ranged from 6 to 20. The average household size was 13 persons implying that there was large source of family labour and high food demand in most of the farm households. The active mean age and years of experience can influence adoption of improved production practices, which invariably requires credit.

Determinants of access to agricultural credit among the farmers

Stepwise linear regression analysis was done to determine the relationship between socio-economic characteristics of the farmers and their rate of

Table 1. Distribution of the farmers according to their socio-economic characteristics.

Variable	Frequency	Percentage
Age (years)		
21 - 30	7	6
31 - 40	25	20
41 - 50	45	36
51- 60	30	24
61 - 70	18	14
Total	125	100
Education		
Primary/Qur'anic	64	51
Junior secondary school	13	10
Senior secondary school	27	22
Tertiary education	21	17
Total	125	100
Marital status		
Married	113	90
Single	12	10
Total	125	100
Farming experience (years)		
1 - 10	41	33
11 - 20	44	35
21 - 30	24	19
31 - 40	16	13
Total	125	100
Farm size (ha)		
<2	13	10
2 - 4	84	67
4 - 7	21	17
8 - 10	7	6
Total	125	100
Number of years in cooperative		
≤5	33	43
6 - 10	25	32
11 - 15	16	21
16 - 20	3	4
Total	125	100
Household size		
1 - 5	10	8
6 - 10	61	49
11 - 20	49	39
21 - 30	5	4
Total	125	100
Annual income (N)		
<100,000	48	38.4
100,000 - 150,000	31	24.8
151,000 - 200,000	34	27.2
>200,000	12	9.6
Total	125	100

Source: Field survey (2010).

Table 2. Estimated stepwise linear regression equations for factors determining accessibility of farmers to agricultural credit.

Regression coefficient									Constant	F- value	R^2	R^2 change
X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9				
1.118									45.013	4.461	0.076	-
(2.112)**									(8.540)*			
1.128	3.682								41.506	2.318	0.080	0.004
(2.114)**	(0.488)								(4.645)*			
1.193	3.582	7.874E-02							39.506	1.573	0.083	0.003
(2.082)**	(0.471)	(0.394)							(3.823)*			
1.223	3.625	0.108	0.235						39.535	1.168	0.084	0.003
(2.082)**	(0.472)	(0.433)	(0.199)						(8.790)*			
1.236	4.032	0.354	0.292	-0.922					42.967	1.135	0.102	0.018
(2.104)**	(0.524)	(1.010)	(0.247)	(-1.001)					(3.913)*			
1.257	4.503	0.434	0.506	-1.030	-2.76E-05				42.759	0.993	0.108	0.006
(2.122)**	(0.578)	(1.151)	(0.283)	(-1.090)	(-0.599)				(3.867)*			
1.185	3.635	0.399	0.307	-0.754	-2.14E-05	-28.369			70.120	1.404	0.170	0.062
(2.048)**	(0.478)	(1.034)	(0.176)	(-0.809)	(-0.476)	(-1.887)***			(3.881)			
1.150	4.451	0.389	0.832	-0.829	-2.44E-05	-30.569	-9.410E-02		68.048	1.937	0.248	0.078
(2.065)**	(0.608)	(1.097)	(0.491)	(-0.924)	(-0.562)	(-2.109)**	(-2.208)**		(3.910)*			
1.204	4.007	0.418	0.628	-1.134	-2.87E-05	-30.777	-9.155E-02	0.407	69.850	1.793	0.260	0.012
(2.142)**	(0.544)	(1.172)	(0.366)	(-1.171)	(-0.656)	(-2.117)**	(-2.136)**	(0.854)	(3.973)*			

Source: Field survey (2010). Figures in parenthesis are t-values. *, ** and ***significant at 1, 5 and 10%, respectively.

accessibility to agricultural credit. The result of the stepwise regression analysis is presented in Table 2 and reveals that about 26% of the variation in rate of farmers' accessibility to agricultural credit was explained by all the nine independent variables included in the regression model. Of all the explanatory variables included in the model, only education, type of credit sources and distance to credit source were found as significant factors affecting individual rate of accessibility to agricultural credit in the study area.

Education was positively and significantly related to the rate of credit accessibility at 5% level. Ideally, educated farmers are likely to understand the benefits of credit in modern production and comprehend extension information on sources and utilization of credit. This is in line with the findings of Ozowa (1995) who reported that the literacy level promote the understanding of extension activities among farmers in the rural areas. As expected, distance to type of credit source shows a negative relationship with the rate of credit accessibility and significant at 5% level. This implies that the farther the source of credit from the farmer's home, the more it becomes difficult for the farmer to access agricultural credit. The coefficient for the types of credit source was also negative and significant at 5% level. This implies that there was significant difference in amount of credit available to the farmers between the formal and informal sources. The credit services from the informal sources targeted to the smallholder farmers in the rural areas are readily and closely available and required less paper work without collaterals needed for loans advancement.

Conclusion

The role of agricultural credit in the development of agricultural sector cannot be overemphasized. Credit enhances farmers' purchasing power to enable them acquires modern technologies for their farm production. Access to the credit seems to be limited among smallholder farmers due to certain constraints. This study has identified education, distance to credit source and types of credit source as major factors that influenced farmers' access to agricultural credit. This study therefore, recommends that:

a) Enabling environment should be created to improve farmers' accessibility to educational facilities. This can be achieved through mass education for rural dwellers and functional extension activities.
b) Most of the formal sources of credit (for example, commercial banks) should be encouraged to open branches in rural areas and promote rural micro finances to make credit easy for farmers to obtain.

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