

## **AN ANALYSIS OF THE EFFECT OF SOCIO-ECONOMIC VARIABLES ON CREDIT NEEDS OF FARMERS IN BENUE STATE NIGERIA**

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### **ABSTRACT**

The effects of socio-economic variables on credit needs of farmers in Benue State were investigated. A set of structured questionnaire was administered on 180 respondents randomly selected from eighteen communities in the state. The socio-economic variables considered in this study include: age distribution, farm size, farming experience, educational status, family size, and farm income. The result showed a positive relationship between all the socio-economic variables mentioned and credit required by farmers. It was therefore, recommended that government, financial institutions and other relevant agencies involved in loan disbursement to farmers should take serious cognizance of their socio-economic background to determine the appropriate loan to individual farmers.

**Keywords:** credit need, farmers, financial institution, agricultural development, socio-economic variables.

### **INTRODUCTION:**

Robust economic growth cannot be achieved without putting in place well focused programmes to reduce poverty through empowering the people by increasing their access to factors of production, especially credit, (Iweala, 2005).

Donald (1976) defined credit as simply the ability to command the present use of goods and services commonly through the medium of money in return for a promise to pay back at some time in the future. In finance, credit refers to the acquisition of means of obtaining control over the use of money, goods and services in exchange for a promise to pay at some future date. With agricultural credit, the farmer secures machinery and equipment, covers the unsubsidized portion of his farm inputs and hires additional labour (Ohale, 2004). Credit is an important part of agricultural production the absence of which poses severe constraints to agricultural development in low-income countries, like Nigeria (fig.1).

Presently, the position of farmers is such that if unaided, they may not be able to adopt new methods and techniques which are required for increase in production and productivity upon which the development of the economy depends.

According to Adegeye and Dittoh (1985) credit is needed to break the poverty circle among the farmers since low income implies high portion of low productivity, which will still result in lower income. On the other hand, Awoniyi (1991) noted that if the small-scale farmer is to grow to become medium and eventually large scale-farmer, he must be having among other things an assured supply of credit for short-term, medium and long-term respectively.



Fig. 1 MAP OF NIGERIA

According to Nweze (2001) short-term or seasonal or production credit are those forms of credit needed for a short period or production cycle or for a seasonal activities on the farm. Medium term or intermediate credit is used to finance items whose spanning period is between 25 to 60 months (2-5 years). Credit stretching beyond five years may be regarded as long-term credit.

The importance of credit for stimulating agricultural production, particularly at the small-scale level with enormous unrealized production potentials, cannot be over-emphasized. Agricultural credit in this respect is regarded as a vital component in the agricultural supporting services to be guaranteed from agro-service system.

Credit facilitates agricultural output, food security and investment. Eboh (1996), Odoemenem et al (2005), observed that credit financed investments, help the rural poor to produce for the market, generate cash surpluses and accumulate savings, which will be the basis for future income growth or a protection against sudden reversals in household income and food security.

Onucheyo (1998) noted that credit has assumed a dominant role in agricultural finance since credit extended to the agricultural sector had significant influence on the rate at which farmers adopt innovations, increased farm output and returns on investments for farmers. Similarly, Nweze (1995) and Havbarhe and Enabulele (1999) maintained that the role of credit in developing agriculture should be to enable the farmer to move on to a level of technology that would create a sustained basis for output, number of man-days in employment and indicators of development in terms of land and human beings. Farmers' requirements for credit have direct implications on the adoption of innovation. Most of the improved technologies extended to farmers; demand that they have the means by which they will produce them. Credit will therefore facilitate innovation adoption by farmers, which will eventually lead to higher output from the agricultural sector (Nwagbo, 1981; Otit, 1991; Huppi and Feder, 1990 and Yaron, 1994). Hoshi and Scharfstein (1990) asserted that credit is needed by farmers to expand their farm size, hire more labour to supplement the limited and fixed supply of family labour and for transporting inputs to the farms and evaluation of farm produce, among others.

Okorji (1994) opine that agricultural credit is demanded by farmers for a variety of production, investment and deferred consumption purposes. These include conserving seeds, purchasing new farm inputs and storing of crop produce for lucrative market prices. In conclusion, Miller (1977) stressed that any analysis of the role of credit in agricultural development needs to be time, place and farmer specific if it is to be helpful to farmers and policy makers.

Credit is the lifeblood of modern economies. Odufalu (1994) underscored the importance of credit when he asserted that credit had done much more than all the mines of the world to enrich nations. It had excited labour, stimulated manufacturers, pushed commerce on every side, and brought every nation and every tribe among races of men to be known to all the rest (CBN, 1992). The phenomenal increases in output and in the varieties of output and consumption of modern economies with the concomitant improvements in the well-being of peoples all over the world may be attributable in large measure, to the facilities made possible by credit. Large scale production requires considerable amount of physical resources. By obtaining credit, such large scale enterprises can fill their resource gap, and produce on a scale that will result in great economies for the benefit of the nation (Odufalu, 1994).

Similarly, in developing countries, where small-scale entrepreneurship is adopted as a development strategy for poverty alleviation and for the promotion of employment and growth, credit helps to meet working capital requirements and physical distribution and marketing needs. Thus credit helps to bring about the fullest utilization of available physical capital (Tomori, 1978). Credit therefore provides employment opportunities for the society's savings, and for a large number of financial intermediaries who are mobilizers and managers of the nation's savings.

Adeyemo (1982) explains that inspite of the importance of credit as an instrument for improving nation's agriculture, it must be noted that its role is complementary to other developmental factors. In line with this assertion, Herbert (2001) maintained that the benefits of credit to farmers would be maximized if there are adequate transportation and communication systems, together with adequate storage facilities, disease control measures and availability of improved inputs, efficient marketing systems and efficient extension services. Inadequate attention in the past to those other factors of agricultural improvements has led to the little impact that government credit efforts have made in agriculture in Nigeria (Fig.1).

For sustainable credit administration and the development of the economy, the influence of socio- economic variables like age, farm size, farming experience, education, family size and farm income cannot be overemphasized. It is against this background that this research was carried out to determine the effects of these socio-economic variables on credit need of farmers in Benue State, Nigeria.

### **THE STUDY AREA**

Benue State (Fig.2) derives its name from River Benue, the second largest river in Nigeria. The State created in 1976 is located in the Middle Belt of Nigeria. It is an area within the quadrilateral formed by latitudes  $4^{\circ}$  and  $14^{\circ}$  North of the Equator and longitudes  $2.75^{\circ}$  and  $14.5^{\circ}$  East of the Greenwich Meridian. NPC, (2006). The State shares boundaries with five other States. namely: Nasarawa to the North, Taraba to the East, Cross River to the South-East.

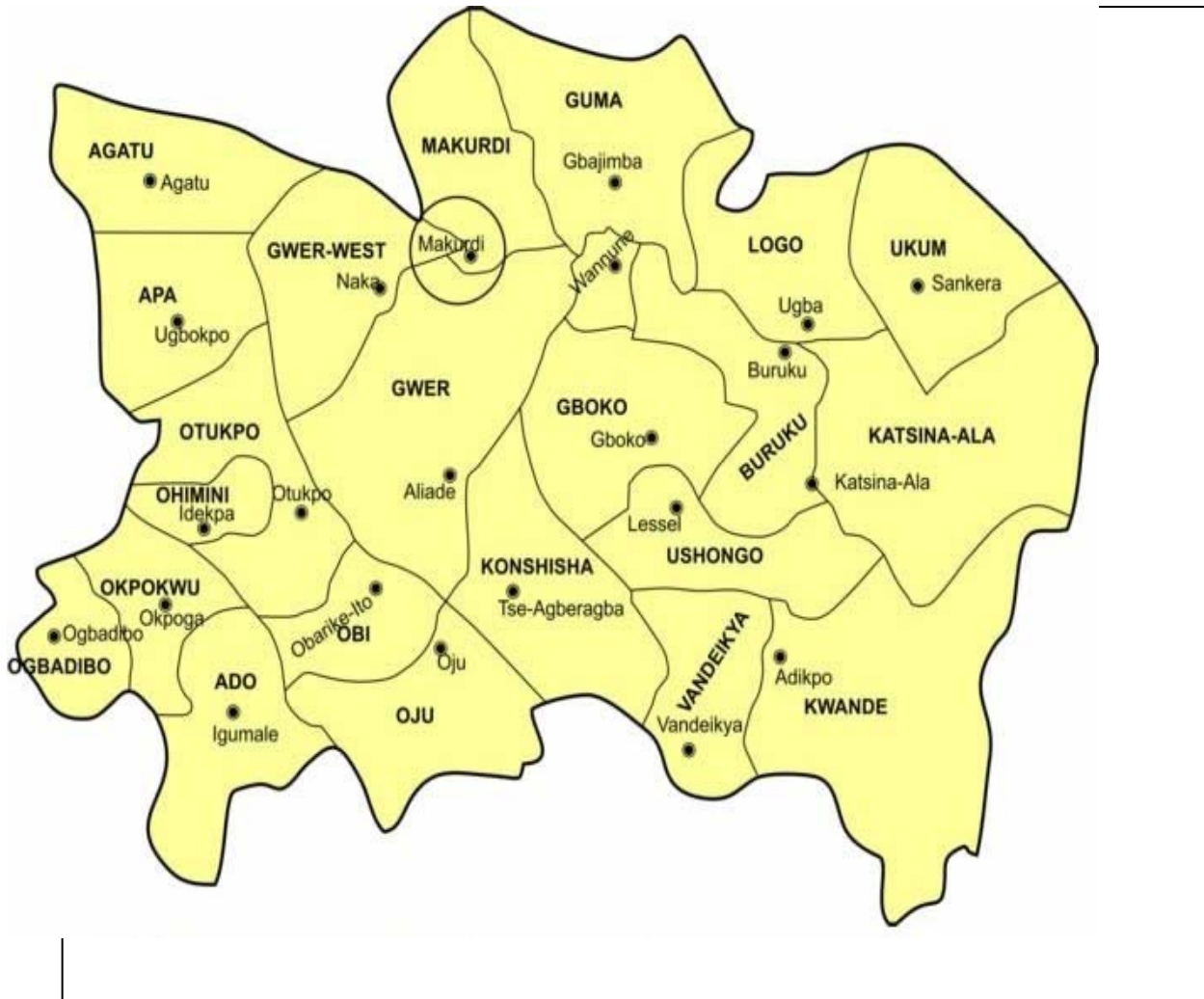


Fig. 2 LOCAL GOVERNMENT AREAS IN BENUE STATE

Part of the State also shares boundary with the Republic of Cameroon. The State is also bordered on the North by 280km of River Benue, and is traversed by 202km of River Katsina-Ala in the inland areas.

The State has a total area of about 30,955 square kilometers and administratively it is divided into 23 Local Government Areas with its Headquarters at Makurdi. According to the 2006 census results, Benue State (Fig.2) has a population of about 4.2 million. NPC (2006).

There are two main ethnic groups in Benue State, namely Tiv, who represent about 72 percent of the total population and the Idoma who constitute slightly over 21 percent of the population. The Igede tribe represents 6 percent of the population; smaller communities of Hausa, Fulani, Jukun, Abakwa, Nyifon, Etulo and Igbo traders account for the remaining 1 percent of the population. About 75 percent of the population live in the rural areas and the main occupation is farming.

Benue State has a tropical climate, which manifests two seasons. The rainy season is April to October while the dry season is from November to March. Annual average rainfall varies from 1,750mm on the Southern part of the State to 1250mm in the North. In the mountain region Turan and Ikyurav-ya areas of Kwande Local Government, average rainfall rises up to 4000mm. The hot season comes in mid-April with temperature between 32<sup>o</sup> and 38<sup>o</sup>C with high humidity. BNARDA (1999). The State stretches across the transition belt between the forest and savanna vegetation. Much of the area consists of undulating hills or grassy open space on the North and derived savanna in the South.

Benue State (Fig.2) is referred to as the “*Food Basket of the Nation*” because of the abundance of its agricultural resources. About 80 percent of the State population is estimated to be involved directly in subsistence agriculture. The State is a major producer of food and cash crops like yam, cassava, rice, groundnuts and maize. Others include sweet potatoes, millet, sorghum, sesame and a wide range of others like soyabeans, sugarcane, oil palm, mango, citrus and banana. Irrigation farming along the bank of Rivers Benue and Katsina-Ala is a common feature. The State can boast of a great deal of livestock resources like goats. Though the major occupation is crop farming, a lot of fishing activities are carried out on Rivers Benue and Katsina-Ala in the State. Irrigation is widely practiced along the riverine areas during the dry season; making them to grow vegetable crops such as tomatoes, okro, carrot, onion, pepper and amaratus in large quantities. It is also common practice to find each farming family keeping one form of livestock or the other such as poultry, rabitry, piggery, sheep and goat on a small scale which are traditionally reared on free range by small holder farmers.

The strategic location of Benue State (Fig.2) between the Southern forest region and the Northern semi and grassland regions of the country makes it to have fertile land for agriculture with the estimated arable land constituting about 60 percent of the total area. Average farm size is 1.5 to 2.0 hectares ( BNARDA,1999).

## **MATERIALS AND METHODS**

Benue State (Fig.2) is delineated into three agricultural zones. The three zones include Zone A, B and C.

All the Local Government Areas in each agricultural zone are similar in terms of vegetation, socio-cultural activities and agricultural practices. Three Local Government Areas were therefore randomly selected from each of the three zones to get a total of nine Local Government Areas involved in the survey. From each of the nine Local Government areas selected, a random sample of two communities was selected from the list of the communities compiled. Finally, from each of the eighteen communities, a random sample of 10 respondents who are loan beneficiaries from the bank were selected to give a total of 180 respondents. Primary data were collected through personal interview conducted with the use of structured questionnaire. Prior to the administration of the questionnaires, the questionnaires were pre-tested and necessary corrections were also made.

## MODEL SPECIFICATION

Regression analysis was used as statistical model to measure the change in the dependent variable that is associated with a unit change in the amount of one or more independent variables.

The multiple regressions model measured credit need ( $Y_c$ ) as a function of the various variable factors ( $X_1$   $X_2$   $X_3$  - - -  $X_n$ ).

The function is represented implicitly as follows:

$$Y_c = f(X_1, X_2, X_3, X_4, X_5, X_6, e)$$

where

$Y_c$  = Credit Need (₦);

$X_1$  = Age of respondents (Years)

$X_2$  = Farm Size (Hectares)

$X_3$  = farming experience (years)

$X_4$  = Level of education (years)

$X_5$  = Household size

$X_6$  = Farm income (₦)

$e$  = Stochastic Error Term

The function is represented explicitly in the three functional forms namely: linear, semi-logarithmic and double logarithmic form as follows:

(i) Linear form

$$Y_c = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + e$$

(ii) Semi-logarithmic form

$$Y_c = b_0 + b_1 \log x_1 + b_2 \log x_2 + b_3 \log x_3 + b_4 \log x_4 + b_5 \log x_5 + b_6 \log x_6 + e$$

(iii) Cobb-Douglas (Double-logarithmic form)

$$\log Y_c = b_0 + b_1 \log x_1 + b_2 \log x_2 + b_3 \log x_3 + b_4 \log x_4 + b_5 \log x_5 + b_6 \log x_6 + e$$

The functional form which best fits the data with respect to  $R^2$  and consistency with a prior expectation was selected as the lead equation for the multiple regression models.

## RESULTS AND DISCUSSION

The credit need (C) of the farmer is obtained by deducting farmers' own income (I) from the farmers' total expenditure (E).

That is  $C = E - I$

Double log regression model was chosen out of the three functional forms fitted in estimating the relationship between independent variable ( $X_1, \dots, X_6$ ) and credit need as the dependent variable ( $Y_2$ ).

These independent variables were: Age of farmers ( $X_1$ ), Farm Size ( $X_2$ ), Farming Experience ( $X_3$ ), Education ( $X_4$ ), Household Size ( $X_5$ ) and Farm Income ( $X_6$ ). The result is presented in table 1 as follows.

TABLE 1: REGRESSION RESULTS OF THE EFFECT OF SOCIO-ECONOMIC VARIABLES ON CREDIT NEED

Socio-Economic VARIABLE		DOUBLE LOG	SEMI-LOG	LINEAR.
Age	X <sub>1</sub>	0.014 (1.947) <sup>xxx</sup>	7.50-006 (0.643)	318.185 (0.643)
Farming size	X <sub>2</sub>	-0.014 (-2.244) <sup>xxx</sup>	1.289 (1.502)	300072.613 (5.850) <sup>xxx</sup>
Farming experience	X <sub>3</sub>	0.011 (1.565)	0.789 (25.652) <sup>xxx</sup>	-266.406 (0.608)
Education	X <sub>4</sub>	0.018 (1.200)	-0.280 (-3.861) <sup>xxx</sup>	318.502 (0.648)
Family size	X <sub>5</sub>	1.61005 (20.588) <sup>xxx</sup>	0.807 (5.596) <sup>xxx</sup>	-11.236 (-0.011) <sup>xxx</sup>
Farm income	X <sub>6</sub>	0.013 (1.934) <sup>xxx</sup>	-2.20.006 (-0.145)	0.163 (1.662)
Constant		-0.069 (0.535)	24.894 (23.509)	-15818.118 (-1.124)
R - square		0.893	0.793	0.616
Adjusted R <sup>2</sup>		0.889	0.787	0.603
F-statistics		240.609	133.271	46.300

Source: Regression analysis Result

Note: The figures in parenthesis are t-values.

Significant at 5% level of probability.



Regression Equation for Credit Need is also as follows

$$\begin{aligned} \text{Log Y} = & -0.069 + 0.014 \text{ Log X}_1 - 0.014 \text{ Log X}_2 + \\ & (-0.535) \quad (1.947)^* \quad (-2.244)^* \\ & 0.011 \text{ Log X}_3 - 0.018 \text{ Log X}_4 + 1.61005 \text{ Log X}_5 + \\ & (1.565) \quad (1.200) \quad (20.588)^* \\ & 0.013 \text{ Log X}_6 \\ & (1.934)^* \end{aligned}$$

**Note:**

The figures in parenthesis in the regression equation are the t-values. The asterisk (\*) coefficients are significant at 5% probability level

R – Square = 0.893

F – Ratio = 240.609 (significant at 5% level)

The co-efficient of multiple determinations ( $R^2$ ) for credit need of these farmers is 89.3 percent. This was tested for significance with the F-statistic. The result shows that the combined effects of age of farmers, farm size, farming experience, education, household size and farm income explained 89.3 percent of the variability of credit need. Calculated F-statistic was 240.61 which is far above the tabulated F-statistic of 2.10 indicating a significant effect of these variables on credit need.

The regression results from the equation and table 1 show that the marginal contribution for age of farmers ( $X_1$ ) is 0.014. The t-value which is 1.947 shows that the effect of age on credit need is significant. The positive signs of the co-efficient and t-value indicates that as the age of farmers increases, the need for credit also increases.

Farm size ( $X_2$ ) has a marginal contribution of -0.014 and a t-value of -2.244 which is significant at 5 percent level. The values of the co-efficient and t-ratio are negative which implies that any additional use of farm land may decrease the credit required. The implication of the negative relationship is that as the size of land increases, credit need decreases. The farmer may be using his savings to cultivate additional land to reduce cost of credit.

Farming experience ( $X_3$ ) has a marginal contribution of 0.011 with a t-value of 1.565. The t-value is not significant at 5 percent level of probability. The result also revealed that farming experience is directly related to credit need. The more experienced the farmer, the more may be the credit need. This may be due to the fact that more experienced farmer, may operate large farm, and may have larger family size which would necessitate more credit.

The marginal contribution of educational status of farmers ( $X_4$ ) is 0.018. The t-value of 1.200 is not significant at 5 percent level of probability. The result further shows that there is a positive relationship between the level of formal education of farmers and the credit need. It is expected that farmers with higher level of formal education may be more informed about modern techniques of farming and the implication of use of banking services. Thus the need for credit may be higher among the educated farmers.

Household size ( $X_5$ ) as presented in the lead equation has a marginal contribution of 1.61005 and a t-value of 20.588 which is significant at 5 percent level of probability. This means that household size is directly related to credit need. This result is

expected because as the family size increases, the expenditure on feeding, health, education and other social needs may increase and thus increase in the requirement for more credit.

Lastly, as indicated in the lead equation, farm income ( $X_6$ ) has a marginal contribution of 0.013 and a t-value of 1.934 which is significant at 5 percent level. The result also shows that farm income has a positive relationship with credit need. In other words as farm income increases, the need for credit increases. The significant level of farm income shows that the variable is a significant determinant of credit need. It is expected high farm income will serve as security for them to take farm credit for expansion purposes. The high propensity to save from the high income will also necessitate high credit need.

## **CONCLUSION AND RECOMMENDATIONS**

This research work has analyzed the effect of socio-economic variables on credit needs of farmers in Benue State. Some of the socio-economic variables considered in this study include – age distribution, farm size, farming experience, educational status, family size and farm income of respondents.

The regression result shows that farming experience and educational status are not significant for the determination of credit need even though they have a positive relationship.

Educational status is not particularly significant because most farmers in Nigeria and Benue State in particular have low educational background and the need for credit is for small scale farming which makes their level of education adequate.

Farming experience is not significant probably because innovation and changes in technology may not be part of the experience of the farmer while carrying out his farming activities.

However, farm size, age, household size and farm income are significant and important determinants of credit need. From findings it can be concluded that the socio-economic variables are part of the major determinants of credit need of farmers in Benue State.

Currently, the most popular methods of granting loans to farmers in Nigeria and in Benue State in particular is through cooperative societies and not to individual farmers. Cooperatives are formed based on mutual interest and without any consideration for socio-economic background of individual members. For sustainable credit administration and development of the economy, it is therefore recommended that government, financial institutions and other agencies involved in loan disbursement to farmers should first of all determine the socio-economic background of individual farmers before granting loan to them.

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