

## **Analysis of Credit Utilization and the Determinants of Micro-Credit in Arable Crop Farming In Edo State, Nigeria**

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**Abstract:** *This study analysed the credit utilization pattern and the determinants of micro-credit among arable crop farmers in Edo State. The multi stage sampling technique was used in randomly selecting 360 respondents. Data were obtained with the use of structured questionnaire/interview schedule. The data collected were analyzed through the use of descriptive statistical tools such as frequencies, mean, percentages and standard deviation. The inferential statistics deployed were ordinary least squares (OLS) and multiple regression analysis. Results showed that majority of the respondents (71.1%) were males while 28.9% were females. The mean age distribution of the arable crop farmers was 52 years. The educational level of the respondents, revealed that they were literate with 99.2% haven obtained formal education. Majority of the respondents (85.6%) were married and the loan repayment ability of the farmers showed that majority of them (63.1%) could not fully repay the loans which they obtained. From the results only 60.1% of the credit obtained were used for arable crops development with about 40% of the credit diverted to non-farm operations. The Cobb-Douglas production function provided the best fit equation to examine the variables that determined credit assessment by the arable crop farmers. The overall equation was significant at 1% level of probability ( $<0.01$ ) with the F-value computed of 45.21. The R-squared adjusted value of 0.89 obtained showed that all the included variables had been able to explain 89% of the adjusted total variation in the amount of credit advanced to the farmers. Four of the included explanatory variables, that is, household size (6.62), savings (6.91), Non-farm income (5.14) and farm income (4.38) were significant at 5% level ( $<0.05$ ) and positively related to the credit advanced to the farmers. The study recommends that females should be given consideration in credit advancement. The study also recommends proper monitoring and supervision of credit beneficiaries to avoid loan diversion. It was also recommended that farmers should improve on their savings ability, farm income and non-farm income to enable them attract loans from the micro-credit lending agencies.*

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### **I. Introduction**

Agriculture is the most important sector of the Nigerian economy from the standpoint of its numerous contributions to the socioeconomic development of the Country. These include the provision of food for the teeming population, employment and income generation, provision of raw materials for the agro-industries and contribution to the nation's Gross Domestic Product. According to Adesina (2011) about 70% of the Country's population is engaged in agriculture. And the contribution of agriculture to the GDP stood at 40.84% in 2010 while the CBN (2013) revealed that the sector contributed 23.30% to the GDP that year. In terms of the contribution to the growth rates of the GDP, agriculture dropped from its 2.4% in 2010 to 0.7% in 2013. These statistics clearly revealed the sorrow-state of the Nigeria's agriculture sector whose major constraint has been traced to poor funding. Hence, Ukwuteno et al (2011) asserted that for agriculture to play vital roles in the development of the economy, credit should be extended to the farmers for self-employed projects in agriculture.

Nigeria's agriculture is dominated by resource poor farmers who live in rural areas and produce about 90% of the domestic food output (Daramola, 2004). According to Esobhawan and Alabi (2011), these farmers constitute about 80% of the farming population in Nigeria, producing at small-scale level with low capitalization, fragmented farm holdings and low yield per hectare. These farmers are excluded from formal lending institutions to finance their small farm holdings because of the stringent conditions placed on their ways to credit assessment from the conventional banks. This therefore calls or the place of micro-credits for agricultural financing in Nigeria. Micro-credit fund, according to Ehigiamusoe (2011), is a means of providing financial services to farmers who are traditionally, not served by the conventional financial institutions. The CBN (2011), revealed that three features distinguished micro-credit from other financial schemes. These are: the smallness of loan advanced and savings collected, the absence of asset-based collateral and the simplicity of operation. These features clearly indicate that micro-credit funds are targeted to serve the financial needs of the small-scale farmers in their farming operations who are the real producers of the nation's food.

Empirical evidence has revealed that 65% of the economically active population in Nigeria are excluded from credit assessment by the formal credit institutions which include, the commercial banks Merchant banks and Development bank (CBN, 2003). He further revealed that this majority of the economically active population are only served by the micro-finance institutions such as the credit unions, money lender, savings and loan schemes and the Non-Government organizations (NGOs). Hence, as important as Microfinance is to the credit needs of the arable farmers in Edo State, this study was carried to analyze the determinants of these sources of credit to the respondents. This was with a view to bringing to knowledge, the critical factors to be considered in formulating credit guidelines for the arable farmers by the policy makers. It could also properly guide the farmers on the factors to be considered when applying for loans. This study empirically examined:

- (a) the socioeconomic characteristics of the farmers
- (b) the pattern of loan utilization and
- (c) the determinants of credits to them

## II. Methodology

**Study Area:** The study was carried out in Edo State Nigeria. It is one of the 36 States in the Country created out of the defunct Bendel State on the 27<sup>th</sup> August, 1992. It has a land area of 19,283.93km<sup>2</sup> with a population of 3,218,332 people, made up of 1,640,461 males and 1,577,871 females (NBS, 2007). It is bounded on the East, by the River Niger, on the West, by Ondo State, on the North and Northeast, by Kogi State and on the South and Southeast, by Delta State. It lies within the tropical climatic zone and located within latitude 05<sup>o</sup> 44<sup>1</sup> N and 07<sup>o</sup> 34<sup>1</sup> N of the equator and longitude 05<sup>o</sup> 04<sup>1</sup> and 060 45<sup>1</sup> E of the Greewich Meridian. It has two distinct seasons of rainy and dry seasons with an annual rainfall which varies from 2500mm in the Southern part to 1500mm in the extreme North. The state is drained by many rivers of which the important ones are: River Niger, River Ovia, River Osse, River Orhionwon, River Alika and River Orle. It has three vegetational belts which are, the margrove swamp forest in the coastal areas, rain forest in the middle and the Guinea Savannah in the North. It has fertile soil of clay-loamy type which is favourable for the production of arable crops such as. Yams, cassava, cocoyam, maize, rice melon and vegetables. The perennial crops grown are: Palm produce, cocoa, coffee, rubber, pineapples and plantain. Artisanal fishing is the predominant occupation of the riverine communities while fish farming is a growing economic activity in all the Local Government Area (LGAs) of the State.

**Data collection and sampling:** The study relied mainly on primary data which were collected using structured questionnaire. The multistage sampling technique was adopted in the selection of the respondents. This involved the purposive selection of two LGAs from each of the three agricultural zones in the State based on the prominence of arable crops farming in the LGAs. The arable crops considered in this study were, yams, cassava, rice and maize. The second stage involved the purposive selection of three communities from each of the LGAs, also based on the heavy farming activities in these communities. This brought to 18, the number of communities surveyed. The third and final stage involved simple random sampling technique to select 20 respondents from each of the communities to bring the sample size to 360.

**Method of data analysis:** Descriptive statistical tools and inferential statistics were employed to analyze the data. Descriptive statistical tools involved the estimation of frequencies, mean, percentages and standard deviation were used to achieve objectives (a) and (b). The inferential statistics involving ordinary least squares and multiple regression analysis were used to achieve objective (c). These descriptive statistical tools are expressed mathematically as:

$$\bar{X} = \frac{\sum Xi}{n} \text{-----(1)}$$

Where:

X = Mean

Σ = Summation notation, meaning addition

X = Values of the variables involved

n = Sample size

I = ith number of respondents

$$P = \frac{\sum Xij}{n} \times \frac{100}{1} \% \text{-----(2)}$$

Where:

P = Percentage value

X = as defined earlier

n = as defined

i = also as defined

j = each variable considered

$$S = \sqrt{\frac{\sum(X_i - \bar{X})^2}{n-1}} \text{-----(3)}$$

Where:

S = standard deviation

V = square root

Σ = as defined

X<sub>i</sub>-X = deviation of the values of the variables from the mean value

n-i = degree of freedom.

The ordinary least squares multiple regression analysis was explicitly expressed as:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + U_i \text{-----(4)}$$

Where

Y = Amount of loan obtained (₦)

X<sub>1</sub> = Age of farmers (years)

X<sub>2</sub> = Household size (Actual numbers)

X<sub>3</sub> = savings (₦)

X<sub>4</sub> = Non-farm income (₦)

X<sub>5</sub> = Farm income (₦)

X<sub>6</sub> = Value of collateral (₦)

U = Error term

I = As earlier defined

Four functional forms were fitted with the survey data. These were: Linear, Semilog, Cobb-Douglas and Exponential. The best fit equation was selected for the analysis of the result based on the established criteria.

### III. Results and Discussions

#### Analysis of socio-economic characteristics of the respondents

Characteristics	Frequency	Percentage	Mean
Gender			
Males	256	71.1	
Females	104	28.9	
Total	360	100.0	
Age			
≤ 20	24	6.8	
21 - 40	133	36.9	
41 - 60	187	51.9	
>	16	4.4	
Total	360	100.0	
Educational level			
No formal education	3	0.8	
Primary education	134	37.2	
Secondary education	192	53.3	
Tertiary education	31	8.7	
Total	360	100.0	15
Marital status			
Single	23	6.4	
Married	308	85.6	
Divorced	22	6.1	
Widowed	7	1.9	
Total	360	100.0	
Farm size			
< 1	110	30.5	
1.0 – 1.9	196	54.4	
2.0 – 2.9	37	10.4	
3.0 – 3.9	12	3.6	
≥ 4.0	5	1.1	
Total	360	100.0	1.2
Membership of cooperatives			
Members	255	70.9	
Not members	105	29.1	
Total	360	100.0	
Loan repayment			
Not fully repaid	227	63.1	
Fully repaid	133	36.9	
Total	360	100.0	

Source: Field survey data (2015)

The socioeconomic variables considered were Gender, age, educational level, marital status, farm size cultivated, membership of cooperatives and loan repayment ability:

The gender distribution of the respondent showed that the males dominated beneficiary arable crop farmers with about 70% as against the females with about 30%. This result is in consonance with the norm of the study area where males are expected to take control of arable crops production while the female are expected to take control of the home management. The finding confirms the result of Alufohai and Ilavbare (2001) where majority of yams and cassava producers were found to be male farmers and also the result of Adams and Bartholomew (2010) where the males were found to be more risk taking than the females hence the males could go for loans for agricultural production.

The age distribution of the respondents showed that they were at their active and productive age with a mean of 52 years. This result was expected because age relates to physical fitness of the farmers in explaining whether or not they will be active energetic and strong enough to take part in arable crop production in Edo state, agricultural practices involve manual labour with the application of physical energy which people under 20 years and those above 60 years cannot supply. This finding is consistent with the reports of Alabi (2004) and Olaleye (2008) that small-scale farmers in Oyo State and in Niger State respectively were at their middle age. Age also relates to ability to attract credit. Creditors will not want to grant credit to the youths and the aged people.

The educational level of the respondents revealed that they were literate with 99.2% of them having obtained formal education. The high literacy level of the respondents has implication for loan security and arable crop production. Education enabled the farmers to apply for loans, fill the necessary documents and improve their network and social contacts with the creditors. Education of the respondents also enabled them to acquire productive skills and the adoption of agricultural technology which lead to increase in output and income.

Majority of the respondents (85.6%) were married, indicating that they were settled family persons who needed micro-credits to expand their arable crop farming production. This could enable them to increase their farming output and income with the resultant ability to cater for the family's needs. It could also have implication for the supply of family labour to the respondents.

The respondents cultivated small-size farm holding with a mean of 1.2 ha, indication that they were small-scale farmers who needed micro-credit to expand their holdings. This supports our earlier finding that the farmers needed credit to expand their arable farming production with consequent increase in their output and income.

The loan repayment ability of the farmers showed that majority of them (63.1%) could not fully repay the loans which they obtained. This brought to about 37%, the farmers' loan repayment ability. The low loan repayment ability of the farmers could hamper their credit assessment with negative effects on their arable crop production activities.

### **Analysis of pattern of Utilization**

The areas identified where credit obtained by the farmers was used included farm development, school fees and family upkeep, hospital bills and funeral ceremonies. The table 2 revealed that only 60.1% of the credit obtained were used for arable crops development with a about 40% of the credit diverted. The proportion of the loan diverted to non-farm operations was quite high and this could affect the farmers' ability to expand their farm holdings, increase in output and income with the resultant inability to repay the credits granted. This could be the reason for the low loan repayment ability of the farmers as analyzed earlier. This calls for proper monitoring and supervision of credit beneficiaries by the lending agencies to reduce the incidence of credit diversion to the barest minimum.

**Table 2:** Analysis of micro-Credit Utilization pattern

Pattern or form of utilization	Percentage
Farm development	60.1
School fees and farming upkeep	19.6
Hospital bills	16.9
Funeral ceremonies	3.4
Total	100.0

Source: Field survey data (2015)

### **Determinants of Credit Assessment by farmers**

The ordinary least square multiple regression analysis was used to examine the variables that determined credit assessment by the arable crop farmers. Four functional forms were fitted with the survey data. These were: linear, semilog, exponential and Cobb-Douglas production function. The best fit equation was selected on the basis of the established criteria. The Cobb-Douglas production function provided the best fit

equation for the analysis of the result. Table 3 shows that the overall equation was significant at 1% level of probability (<0.01) with the F-value computed of 45.21. This showed the fitness of the overall model used with the survey data fitted. The R-squared adjusted value of 0.89 obtained showed that all the included variables had been able to explain 89% of the adjusted total variation in the amount of credit advanced to the farmers. Four of the included explanatory variables, that is, household size (6.62), savings (6.91), Non-farm income (5.14) and farm income (4.38) were significant at 5% level (P<0.05) and positively related to the credit advanced to the farmers. Hence these variables were the determinants of micro-credit assessment of the arable crop farmers in the study area.

**Table 3 :** Determinants of micro-credits to arable crop farmers in Edo State

Variables	Coeff	S.E	t-ratio
Constant	-4.33*	1.13	-3.83
Age	-5.65	4.54	-1.24
Household size	6.62*	2.91	2.28
Saving	6.91*	2.35	2.94
Non-farm income	5.14*	1.96	2.62
Farm income	4.38*	0.86	5.09
Collateral	1.73	3.84	0.45
F-Value	45.21		
R <sup>2</sup>	0.90		
R <sup>2</sup> -Adjusted	0.89		
S.E	0.212		

Source: Data analysis (2015)

- Coeffs are significant at 5%

#### IV. Summary And Recommendations

The study examined the pattern of credit utilization and the determinants of micro-credit to arable crop farmers in Edo State with 360 farmers selected for the study. It was found that majority (71.1%) of the farmers were males and cultivated small size farm holding. Their loan repayment ability was low with about 37%. A high proportion of the credit obtained (40%) was diverted to non-farm activities. It was found that household size, savings, non-farm income and farm income were the significant determinants of micro-credits to the arable farmers. It was recommended that the females should be given consideration in credit advancement, that there should be proper monitoring and supervision of credit beneficiaries to avoid loan diversion, that savings ability, farm income and non-far income of the farmers should be improved to enable them attract loan from the lending agencies.

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