# Determinants of amount of credit demanded and supplied under micro credit providers in Edo State, Nigeria

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## Abstract

The study examines socio-economic factors which influence the amount of credit demanded and supplied by micro-credit providers. Multistage random sampling procedure was used in selecting 150 arable crop farmers in the selected area of study. Data collection was facilitated by means of structured questionnaire while descriptive statistics and regression analysis were employed in data analysis. The study revealed that the average age of the farmers was 48.2 years with majority (65.33%) being males. Majority of the respondents (78%) were married. It is deduced from the result that over 95% of the farmers were educated. The average annual income of farmers was N320, 213.22. The factors that determine demand for credit include age, educational level, household size, annual income, farming experience and farm size as they were statistically significant. Apart from age, other variables were positively signed. Household size of farmers, annual income of farmers, gender and farm size have significant influence on credit supplied to the farmers. The study recommends that farmers be given exact loan amount applied for in order to facilitate increased productivity of crops for increased welfare and livelihood. This will enhance their ability to repay their loans at maturity. To address the problem of poor capital base of informal micro-credit institutions, the Central Bank of Nigeria (CBN) should come up with an intervention fund for informal micro-credit organizations. This will strategically reposition them to provide sufficient funds to farmers. No meaningful progress can be attained at the present state of micro-credit lending

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## 1. Introduction

Arable crop farmers in Edo State, a major food crop producing State in Nigeria, are constrained by low productivity (Izekor and Alufohai, 2010). Where there is interest to raise productivity, the problem has been that of inadequate finance (Asekome and Ogbechie, 2011). Also, Toluyemi (1999) observed that absence of any of the three main factors – inputs, credits and markets which are the edges of small scale enterprise production leads to low productivity. This condition according to Umoh (2004) is a consequence of socio-economic factors which manifest in illiteracy, poor health condition, poor nutrition, lack of self-confidence and lack of access to property, factors of production and income assets. The extent to which this is the case in Edo State, a major arable crops producing State in Nigeria is not known.

Few attempts (Izekor and Alufohai, 2010; Alufohai, 2006; Alufohai and Ahmadu, 2005) have been made to understand the influence of certain socio-economic characteristics on the amount of credit demanded, obtained and repaid by smallholder farmers in Edo State. However, these empirical findings remain largely scanty and devoid of in-depth analysis on the socio-economic determinants of the amount of credit demanded, obtained, and repaid in terms of their sizes and signs in Edo State.

Access to credit can be a catalyst for economic development. This accounts for why most less developed countries adopt the practice of providing credit cheaply to the agricultural sector through established financial intermediaries. The provision of cheap credit was expected to reduce patronage of money lenders (Pinaki, 1998). Availability of loanable funds is perceived as very critical in raising rural income through the mobilization and effective utilization of resources. To what extent can credit be made accessible to rural farmers in order to facilitate agricultural development? Three variables stand out in any useful agricultural credit delivery system, these are credit availability, accessibility and affordability. However efficient allocation and utilization of credit for purpose it was meant for much more defines its usefulness (Oboh and Ekpebu, 2011). Major constraints associated credit delivery include loan defaults, poor rate of repayment and outright diversion of loan for other purposes among farmers. The extent to which this is true among arable crop farmers in Edo State in terms of the degree to which credit is allocated to the farm sub-sector and the factors affecting it is not known.

A number of researches have attempted to explain the factors affecting credit accessibility by farmers in Edo State (Izekor and Alufohai, 2010; Alufohai, 2006; Alufohai and Ahmadu, 2005). Also, Asekome and Ogbechie (2011) posited that credit is not easily accessible and if accessible from moneylenders, they charge rates too high for micro enterprises to pay. The high rates contribute to the cost of capital and further negatively impacts on the annual turnover of the farm enterprise. Asekome and Ogbechie (2011), further posited that farmers buy inputs at exorbitant rates because they cannot buy in wholesale markets, thereby reducing their profit margins. According to Ikhelowa (2011), the foregoing underscores the need to make adequate loanable fund accessible to farmers on time and at low interest rates to such an extent that will make returns on investment more attractive. But, there is lack of clarity on the relationship between the volume of loan received and farmers' annual turnover among arable crop farmers in Edo State.

Despite the centrality of micro-credit for investment in farm enterprise, Ikhelowa (2011) asserted that banks are often very reluctant to give loans to farmers because of the risky nature of agricultural enterprises.

This is due to many unforeseen and uncontrollable factors like weather problems, flood, pests and diseases. The irreversibility of investment made in agricultural enterprise may have reinforced the reluctance of banks to give credit to farmers. According to Onietan and Afolayan (2010), the foregoing factor is closely connected to the biological nature of agricultural sector which includes long gestation period, seasonality of production and perishability of raw products.

Another bottleneck inherent in credit delivery to farmers according to CBN (2011) is urban bias in banking services. Most of the existing banks are located in urban centres, and with a high proportion of the farming population located in the rural areas, accessibility to credit becomes very difficult. Also, Udoh (2005) attributed the supply and demand for credit to personal attributes of individuals, specific attributes of the area the individual comes from as well as attributes of the source from where the credit is coming. However, what is not known is the relationship between the volume of micro-credit demanded and supplied among arable crop farmers in Edo State.

Past studies by scholars, including Umoh (2004), Idachaba (1985) and Ikhelowa (2011) stressed that commercial banks do not respond adequately to the needs of the farmers especially the small – scale farmers. The poor responses include delayed processing of application, lack of or poor supervision of funded projects, inadequate amount of money compared to the requirements of the farmers (Ikhelowa, 2011). Hence the choice of micro-credit sources by farmers which include traditional savings associations, cooperative societies, micro finance banks, friends, family and relations (Osagie, 2006). But the interest rates, adequacy and timeliness of the different sources of micro-credit patronized by arable crop farmers are not known.

The efforts of government towards mobilizing and supporting the farm subsector of the economy so as to improve standards of living of the farmers are more pronounced now than ever. This is against the increasing awareness that the farmers are capable and willing to pull themselves out of poverty if a conscious effort is made to ease their access to credit. This will increase the level of farm output / income thereby solving the problems of production, consumption and nutrition among farmers.

Therefore, an in-depth knowledge of the socio-economic analysis of micro-credit demand and supply among arable crop farmers will provide empirical information on the socio – economic factors that are related to the acquisition of credit by arable crop farmers in Edo State and Nigeria in general. The findings will also be relevant to micro-credit practitioners and policy makers alike.

## 2. Methodology

Three Local Government Areas (LGAs) were selected from each of the 3 agricultural zones of the state using purposive sampling method. The LGAs selected are those with high concentration of arable crop farmers. The researcher with the assistance of the State Agricultural Development Programme (ADP) identified and selected the LGAs with the highest concentration of arable crop farmers in each agricultural zone. From Edo North Agricultural Zone, the following LGAs Etsako West, Owan West and Akoko-Edo. From Edo Central Agricultural zone, Esan North-East, Esan West and Igueben LGAs were selected while from Edo South, Uhunmwode, Ovia North East and Orhionmwon LGAs were selected. Communities in Edo South according to the ADP are more

involved in arable crop production. In each LGA, two communities were randomly selected. With the assistant of the Agricultural Development Programme (ADP) extension workers in each of the selected communities, the arable crop farmers were identified and a sample frame consisting of the names of the farmers was obtained from the extension agents. A simple random sampling technique was used in selecting eight (8) respondents among the identified arable crop farmers in each of the selected communities in Edo north and Edo central. In Edo south, nine (9) arable crop farmers were randomly selected. This brought the sample size of the study to one hundred and fifty (150) respondents.

A pre –tested questionnaire was used in obtaining primary data on the stated objectives from farmers selected. Data collected include socio-economic characteristics of the farmers, amount of credit demanded, amount of credit supplied, amount of credit repaid and amount of credit apportioned to the farm subsector. Also, data were collected on the timeliness, adequacy of the loans obtained, payback period of the loans, interest rates on the loans obtained and the constraints facing arable crop farmers in obtaining loans.

## 3. Data analysis

Descriptive and inferential statistical tools were employed in analysis. The multiple regression model was used in analyzing socio-economic factors affecting credit demand and supply. In establishing the functional relationship between the dependent and independent variables, the assumptions underlying the ordinary least square (OLS) method of regression analysis is assumed to hold.

The implicit form of the model is stated thus:

$Y_i$    =    f(AGE, EDU, HHS, AIN, FEX, GIN, FMS,)...(*Equation 1*)

Where:

$Y_i$    =    Vector of dependent variables (i = 1, 2)

$Y_1$    =    Amount of credit demanded

$Y_2$    =    Amount of credit supplied

AGE =    Age (Years)

EDU =    Educational attainment (Years)

HHS =    Household Population size (No of Persons)

AIN  =    Annual farm income (Naira)

FEX =    Farming Experience (Years)

GIN  =    Gender, Male = 1, Female= 0

FMS =    Farm size (Hectares)

e    =    Error term

## 4. Results and discussion

### 4.1. Socio-economic characteristics of arable crop farmers

Majority of the respondents (65.33%) were males while 34.67% were females (Table 1). It further shows that Arable crop farming was dominated by people within the age bracket of 40-49 years. The study observed that 42% of the farmers fell within the age range of 40 to 49 years as an indication of majority being in the active and productive age group with a mean age of 48.2 years. This finding is in line with that of Etonihu et al. (2013); Oboh (2011); Omonona et al. (2010); Oyedele et al. (2009); Alufohai (2006) and Mejeha (2005). These researchers found that the mean age of crop farmers in Nigeria was between 46 – 50 years. The active mean age can influence adoption of improved production practices, which invariably requires credit. The suggestion is that younger farmers are expected to be more economically active. They are full of energy and drive and should be willing to adopt new techniques and innovations to increase the productivity of their farming. Since traditional agricultural production systems still rely on rudimentary implements and brawn power, what it means is that very old farmers will face severe energy constraints and will be less productive than the younger and energetic farmers.

Majority of the respondents represented by 78% were married while 11.3% were widows. This finding is in line with that of Etonihu et al. (2013); Oboh and Ekpebu, (2011); Omonona et al. (2008); Oyedele et al. (2009); Alufohai (2006) and Mejeha (2005). In their studies, they found that majority of crop farmers in Nigeria were married. This implies that married farmers will be seen as being responsible and may have better access to loans.

Table 1 further shows that majority of the respondents represented by 49.33 % spent 1-6 years in pursuit of educational attainment while 3.3% had no formal education. It can be deduced from the result that over 95% of the farmers attained one form of education or the other and by implication are literates as the average number of years spent in school is 7.53 years. Educated farmers are expected to have more exposure to the external environment and accumulate knowledge. They have the ability to analyze costs and benefits. According to Musebe et al. (1993), as the household gets more formal education, the probability of obtaining credit increases, therefore, it is expected that educated farmers will be less credit constrained.

Furthermore, majority of the respondents represented by 46% had a household size of 4-6 persons. This is followed by household size of 7-9 persons which constitute 34 percent. Those with 1-3 and above 9 persons as household size each constituted 10%. The average household size is 6 persons. Olagunju (2012) observed that the family might be exploited as a source of unremunerated labour in arable crop farming and serve as means of limiting the demand for labour component of micro- credit demand. However, large family sizes might be a drain for business profit as household expenditure particularly if consumption is high. This explains why most farms close down when they could no longer provide the required funds for their smooth operation.

Table 1 further shows that majority of the farmers represented by 91.3% earned between N301,000-N500,000 as annual income while the least number of farmers represented by 2% earned less than N300, 000 per annum. The average annual income is N320, 213.22.

**Table 1.** Socio-Economic Characteristics of Respondents (Source: Field survey, 2013)

| Sex | Frequency | Percentage |
| --- | --- | --- |
| Males | 98 | 65.33% |
| Females | 52 | 34.67% |
| **Total** | **150** | **100** |
| **Age** | **Frequency** | **Percentage** |
| < 40 | 21 | 14% |
| 40-49 | 63 | 42% |
| 50-59 | 60 | 40% |
| > 59 | 6 | 4% |
| **Total** | **150** | **100** |
| **Marital Status** | **Frequency** | **Percentage** |
| Single | 13 | 8.7% |
| Married | 117 | 78% |
| Divorced | 3 | 2% |
| Widowed | 17 | 11.3% |
| **Total** | **150** | **100** |
| **Educational Attainment level (years)** | **Frequency** | **Percentage** |
| 0 | 5 | 3.33% |
| 1-6 | 74 | 49.33% |
| 7-12 | 42 | 28% |
| > 12 | 28 | 18.67% |
| **Total** | **150** | **100** |
| **Household size** | **Frequency** | **Percentage** |
| 1-3 | 15 | 10% |
| 4-6 | 69 | 46% |
| 7-9 | 51 | 34% |
| >9 | 15 | 10% |

| Total | 150 | 100 |
|---|---|---|
| **Farm Size** | **Frequency** | **Percentage** |
| < 0.5ha | 12 | 8% |
| 0.5- 0.99ha | 20 | 13.33% |
| 1.0-1.49ha | 20 | 13.33% |
| 1.5-1.99ha | 46 | 30.67% |
| > 1.99ha | 52 | 34.67% |
| **Total** | **150** | **100** |
| **Annual Income (₦)** | **Frequency** | **Percentage** |
| < 300,000 | 3 | 2% |
| 301,000- 500,000 | 137 | 91.3% |
| > 500,000 | 10 | 6.67% |
| **Total** | **150** | **100** |

*Average number of years spent in school = 7.53 years; Average household size = 6 persons; Average farm size = 1.65 Ha; Average annual income = ₦320,213.22. Mean/Average Age 48.2 years*

The table also shows that those with above 2 hectares farm size constitute the majority with 34.67%. This is followed by those with farm sizes of between 1.5-1.99 hectares (30.67%). The least were respondents with less than 0.5 hectares (8%). The average farm size or land area cultivated is 1.65 hectares. The size of holdings owned by respondents points to the fact that highest number of respondents are small scale farmers. The reason could be that most of the farmers were unable to fund large scale arable crop production ventures owing to limited access to adequate micro-credit facilities. This result agrees with Ugwumba and Omojola (2013) and Kolawole and Ojo (2007) who observed that small scale farmers scattered over wide land area dominate the agricultural landscape in Nigeria. Their holdings are characterized by it smallness of size ranging from 0.5 – 3.0 hectares with poor investment capital, use of rudimentary tools and consequently poor yields per hectare.

## 4.2. Relationship between the socio-economic status of arable crop farmers and credit amount demanded

Findings as shown in Table 2 indicates that output of the exponential functional form was the best in terms of the number and sizes of significant variables hence was selected as the lead equation. Demand for credit is the dependent variable. Out of the seven regressors, six namely, age, educational level, household size, annual income, farming experience and farm size were statistically significant while gender was not statistically significant at 5% level of probability.

The coefficient of age was negatively signed and statistically significant. This implies that the demand for micro-credit declines as people grow older. This means that the demand for micro-credit will increase as the number of younger people takes to farming. This result implies that younger people within the context of this study have better access to the loans than the older ones. A further explanation of this is that younger people are likely to be more realistic in the amount of loan demanded and also more likely to meet the collateral requirements that are attached to the amount of loan that they demand.

The coefficient of the farmer's level of education was found to be statistically significant at the 5% level of probability and showed the expected sign (positive).This result agrees with Ugwumba and Omojola (2013) and Nwaru et al. (2011) who stressed that farmers who are educated are more risk prone than the uneducated because education places them in a vantage position to appreciate and adopt improved farming practices. The corollary is that as education is made available to farmers and rural entrepreneurs, there should of necessity be in place adequate policies and programmes for sustainable micro-credit provisioning. The coefficient of household size was positively signed and statistically significant showing that micro-credit demand is higher for larger households than smaller ones.

The coefficient for annual income was positively signed and was significant at the 5% level. This result agrees with a priori expectations. Increase in annual income would *ceteris paribus* lead to an increase in amount of micro-credit demand. Nwaru et al. (2011) noted that most lenders consider income generated from a particular enterprise as a criteria for granting loans. This could mean that a significant tool for strategically repositioning micro-credit markets would be to provide an appropriate rural socio-economic environment that will enhance higher levels of farm business success, incomes and profit.

The coefficient for farming experience was only significant at 10% probability level. This fits into *a priori* expectations as it takes experience for one to understand the adequate amount that he requires in business at any given time.

The coefficient of farm size was positively signed and statistically significant at the 5% level of probability implying that as farm sizes increase, farmers would correspondingly demand for more micro-credit. This work agrees with Ugwumba and Omojola (2013).

Further result of the multiple regression analysis revealed the coefficient of determination $R^2$ to be 0.830 (83.0%), implying that 83.0 % variation in micro-credit demand of the respondents was explained by the independent variables, while the remaining 17.0% was due to error. The F-statistic value of 115.0 was significant and confirms the overall significance of the regression analysis.

## 4.3. Relationship between the socio-economic status of arable crop farmers and the amount of credit supplied

In order to evaluate the effect of the socio-economic status of arable crop farmers on the amount of credit supplied, a multiple regression was done and subjected to four functional forms (linear, semi log, double log and exponential forms). The linear form was chosen as the lead function because it has the highest $R^2$ value of 0.883 and the highest F-value of 179.3. The F-ratio is significant at 1% level of probability indicating the overall

significance of the model. The result is in conformity with what the model's theory postulates. The $R^2$ of 0.883 shows that about 88.3% of the variation in micro-credit supply in the study area has been captured by the explanatory variables in the model. This is a clear indication that the model which has predictive ability is very strong and reliable. The implication of this outcome is that 88.3% of credit supplied to farmers is induced/caused by the explanatory variables. Out of the seven regressors, four namely gender, household size, annual income, and farm size were statistically significant.

Coefficient of Gender was positive and statistically significant at the 5 per cent level. This could imply that males have higher levels of credit supply relative to females. This result conforms with *a priori* expectation. For example, the study of Lawal et al. (2009) and Omonona et al. (2008) revealed that male farmers face low levels of constraints relative to their female counterparts in accessing credit.

Household size was positively signed and significantly influenced credit supply to farmers. This implies that larger household sizes have higher probability of accessing higher amounts of credit. This may be explained by the high credit demanded by larger families in order to cultivate large expanse of farmland for family sustenance. This result agrees with a study by Nuryatoon et al. (2005) and with Oyodele et al. (2009) who reported that large households were more credit worthy.

Annual income was also positively signed and statistically significant at the 5 per cent level. This finding suggests that high income earning farmers are more credit worthy than their low income counterparts. This result agrees with *a priori* expectation. A study by Akram et al. (2008) reported that annual income was negatively related with farmers credit constrained condition.

Farm size positively impacted on the credit supplied to the farmers. This finding is related to expectation. For example, the study of Omonona et al. (2008) observed a positive relationship between farm size and credit supplied to the farmers.

The overall outcome of this model as captured by the explanatory varieties rejects the null hypothesis which states that there is no significant relationship between the socio-economic status of arable crop farmers and the amount of credit supplied.

## 5. Conclusion and recommendation

Micro-credit demand in the study area has been found to be significantly influenced by age, level of education, household size and annual income. Even though interest rate from the various micro-credit sources is moderate and loan is disbursed on time, the loan amount obtained by arable crop farmers from micro-credit providers is inadequate to meet their production needs. This suggests that with higher loan sums, farmers have the potential for generating higher annual turnover which could go a long way to break the vicious cycle of poverty. It is imperative to grant farmers the required amounts of loan to ensure increased productivity of crops grown for increased welfare and livelihood of these farmers. This will enhance their ability to repay their loans at maturity. To address the problem of poor capital base of informal micro-credit institutions, the Central Bank of Nigeria (CBN) should come up with an intervention fund for informal micro-credit organizations. This

will strategically reposition them to provide sufficient funds to farmers. No meaningful progress can be attained at the present state of micro-credit lending.

**Table 2.** Determinants of Demand for Micro-Credit (Source: Computed from Field survey data, 2013)

| Variable | Linear | Exponential | Semi-Log | Double-Log |
|---|---|---|---|---|
| Constant | 47336.013 | 11.395 | -108559.095 | 11.264 |
|  | (1.21) | (1.32) | (-1.43) | (0.92) |
| AGE | -1057.454 | -0.018 | -88057.163 | -1.010 |
|  | (-0.91) | (-1.78)* | (-1.76)* | (-1.79)* |
| EDU | 923.322 | 0.011 | 5317.738 | 0.081 |
|  | (2.35)** | (2.21)** | (2.26)** | (2.18)** |
| HHS | -401.328 | 0.004 | -1032.484 | 0.023 |
|  | (-0.91) | (2.22)** | (-1.11) | (2.19)** |
| AIN | 0.067 | 3.705E-007 | 14567.008 | 0.074 |
|  | (1.78)* | (1.88)* | (2.29)** | (2.12)** |
| FEX | 1.518 | 1.028E-005 | 33037.465 | 0.272 |
|  | (1.81)* | (1.76)* | (1.79)* | (2.38)** |
| GIN | -4743.808 | -0.042 | -3268.722 | -0.028 |
|  | (-0.89) | (-0.72) | (-1.11) | (-1.23) |
| FMS | -3670.719 | 0.065 | -2809.321 | 0.060 |
|  | (-1.11) | (2.22)** | (-0.90) | (2.26)** |
| $R^2$ | 0.832 | 0.830 | 0.816 | 0.820 |
| F-Statistics | 115.8*** | 115.0*** | 104.6*** | 105.4*** |

*Note: values in parenthesis are t-values*
*\* Significant at P≥0.1*
*\*\* Significant at P≤0.05*
*\*\*\* Significant at P≤0.01*

**Table 3.** Determinants of Supply for Micro-Credit (Source: Computed from Field survey data, 2013)

| Variable | Linear Form | | Exponential Form | | Double Log Form | | Semi Log Form | |
|---|---|---|---|---|---|---|---|---|
| | β | t-ratio | β | t-ratio | β | t-ratio | β | t-ratio |
| (Constant) | 5.425 | 15.963*** | 1.742 | 24.818*** | 1.619 | 11.773*** | 5.032 | 7.741*** |
| AGE | 1.485 | 0.701 | 0.255 | 1.406 | 0.367 | 0.560 | 1.907 | 1.598 |
| EDU | -0.073 | 1.448 | -0.031 | -1.134 | -0.015 | -0.583 | 0.002 | 0.019 |
| HHS | 336.1 | 4.400*** | -0.075 | -4.771*** | -0.078 | -2.885*** | -0.384 | -3.022*** |
| AIN | 2200.1 | 3.88*** | 0.004 | 1.350 | 0.015 | 1.137 | 0.094 | 1.518 |
| FEX | 0.078 | 0.717 | 0.010 | 0.445 | 0.001 | 0.058 | 0.040 | 0.358 |
| GIN | 4743.8 | 1.769* | -0.001 | -0.751 | -0.036 | -0.834 | -0.163 | -0.806 |
| FMS | 1502.1 | 2.170** | -0.003 | -1.111 | -0.013 | -0.583 | -0.078 | -0.748 |
| $R^2$ | 0.883 | | 0.878 | | 0.861 | | 0.873 | |
| F-ratio | 179.3*** | | 171.8*** | | 147.9*** | | 163.8*** | |

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