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EFFECT OF VOLUME OF MICRO-CREDIT ON FARMERS ANNUAL TURNOVER IN EDO STATE NIGERIA: IMPLICATIONS FOR LOAN REPAYMENT

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Abstract
The study examined the effect of volume of loan received on farmers' annual turnover and loan repayment. Multistage random sampling procedure was used in selecting 150 arable crop farmers in the study area. Data collection was facilitated by means of a structured questionnaire and analyzed using descriptive statistics and regression analysis. Findings from the study show a positive relationship between volume of loan received and farmer's annual turnover at 1% level of significance. Farmers who received higher volume of loans recorded higher annual turnover than their counterparts who received less. The analysis of loan repayment performance of the farmers in Edo State showed an average repayment rate of 90.1%, which can be attributed to efficient loan utilization and the need to qualify for loan next time. The Coefficients of loan received, and educational level were directly related to loan repayment and significant at 1% level and farm size and annual income at 10% level. The coefficient of household size had an indirect relationship with loan repayment and significant at 10% level. The results underscore the need to scale up loan sums advanced to farmers by micro-credit institutions who presently are constrained by low capital base. The Central Bank of Nigeria (CBN) and International NGOs should come up with an intervention fund for informal micro-credit organizations to shore up their capital base. There is also need for policy aimed at free and affordable education to enable farmers access information on better fund management and land re-form policies to enable them more access to land for increased output to enhance loan repayments.

Keywords: Micro-credit, loan repayment, annual turnover, and volume of loans

Introduction

The objective of the agricultural credit policy in Nigeria is to make adequate investment funds available to the agricultural sector at the right time and at such rates that will make returns from agriculture more attractive (Ikhelowa, 2011 and Aligbe, 2015). This policy will remain relevant for a long time since current technologies of agricultural production require modern inputs that have to be purchased. Since the performance of the agricultural sector partly depends on availability of credit (Ikhelowa, 2011), provision of credit therefore is a *sine qua non* for the agricultural sector to satisfactorily perform its role in the economy. However, banks and other financial institutions are reluctant to advance credit to farmers because of fear of indebtedness, especially farmers who cannot provide acceptable collateral. Also, the characteristics of the agricultural sector as noted by Onietan and Afolayan (2010), may be a contributory factor to reluctance to lend to the sector. The characteristics include: long gestation period; seasonality of production-especially for those who depend on rain-fed crop production, perishability of raw agricultural products, irreversibility of investment made, and bulkiness of agricultural products.

With these constraints, government and non-governmental organizations (NGOs) established banks and lending programmes targeted at the rural poor. Overtime, reforms and innovations have emerged to improve credit market opportunities for the rural dwellers and increase the effectiveness and efficiency of financial intermediaries. One of such innovation is micro credit or small loans targeting the poor. This has transformed the way credit is viewed by the poor (FAO, 2008).

In its modest form, micro credit fills the gaps in credit delivery that are not addressed by other credit providers. In its most ambitious form, it attempts to catalyze

economic development that will reduce rural poverty (FAO, 2000). Hence, Ikhelowa (2011), emphasized the need for an effective and efficient credit system to boost arable crops production. According to Asekowe and Ogbechie (2011), the development and use of micro credit is one of such ways to boost some staple food crops in Nigeria like; rice (*Oryza sativa*), maize (*Zea, mays*), cassava (*Manihot esculenta*), sorghum (*Sorghum bicolor*), millet (*Pennisetum glaucum*) and yam (*Dioscorea species*). Also, Oyedeji (2008), noted that such development will provide a suitable avenue for arable crops farmers to reduce rural poverty by: ensuring household food security, improving employment generation, supply of raw materials to non-farm sector, increase farm income, and increased participation in decision-making particularly by women. Provision of credit to arable crop farmers is expected to promote rapid increase in productivity (Ikhelowa, 2011). This will guarantee an increase in the supply of food for domestic consumption among farmers with its double effect of reducing food prices and ensuring household food security (Mitchell, 2008). This will help to solve the twin problem of hunger and malnutrition which are the first visible signs of poverty (Oyedeji, 2008). 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). 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.

The accessibility of a good financial service is considered as one of the engines of economic development. Governments of less developed countries have frequently practiced the policy of providing cheap credit to the agricultural sector through financial intermediaries. This cheap credit, it was hoped, would lower the dependence on the rural money lenders (Pinaki, 1998). The provision of credit has increasingly been regarded as an important tool for raising the incomes of rural populations, mainly by mobilizing resources for more productive uses. As development takes place, one question that arises is the extent to which credit can be offered to the rural poor farmers to facilitate their farm operations, all things being equal. Thus, the usefulness of any agricultural credit programme does not only depend on its availability, accessibility and affordability, but also on its proper and efficient allocation and utilization for the intended purpose by beneficiaries (Oboh, 2008). However, credit diversion, poor repayment rate and loan default among farmers continue to be a challenge. The extent, to which this is true among arable crop farmers in Edo State in terms of rate of credit allocation to the farm sector, and the factors affecting it, is not known.

A number of studies 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), noted 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 indicated 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 funds available to farmers at the right time, and at such rate that will make returns on investment more attractive. Although, 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.

Financial institutions and other credit providers continue to lower credit to the agricultural sector. This is partly due to poor loan repayment performance from the sector (Ojiako and Ogbukwa, 2012). Most of the loan defaults in the agricultural sector could arise from poor management procedures, loan diversion and unwillingness to repay loans as well as other socio economic factors. Although much study had been conducted on loan repayment among farmers in Ghana, AkwaIbom, Cross River, Abia, Oyo, Ogun, Lagos and Imo States by Acquah and Addo (2011), Afolabi (2008), Afolabi (2010), Balogun and Alimi (1988), Eze and Ibekwe (2007), Ojiako and Ogbukwa (2012), Oke *et al*., (2007), Onyenucheya and Ukoha (2007), Kuyeet *et al.,* (2019) and Mejeha *et al.,* (2019), little is known empirically regarding loan repayment performance and its determinants among arable crop farmers in Edo State. The question of loan repayment performance is relevant in the sense that it plays a critical role in the sustainability of financial institutions and poverty reduction within the Nigerian context. It can also serve as stimulus to lending institutions to release credit to the farming sub-sector.

A study of this nature is expected to assist farmers in realizing their potentials for increasing output and incomes. The study will help determine the credit situation of the farmers in the study area; help provide information that will enable financial institutions to understand credit use, and thereby formulate appropriate lending policies accordingly. It will also help to identify innovative options and institutional arrangements that would serve as input for policy makers in formulating rural credit policy. A better understanding of the farmers' behaviour in allocating credit may assist policy makers in designing sustainable financial systems that can serve resource poor farmers better than before.

Methodology

The study was conducted in Edo State. The state has an area of about 19,794 km^2. It lies roughly between longitudes 05°04′E and 06°43′E and latitudes 05°44′N and 07°34′N. The state had a population of 2,159,848 (NPC, 2007). Edo State is made up of 18 Local Government Areas (LGAs) grouped into three agricultural zones: Edo North, Edo Central and Edo South. Edo North is made up of Akoko-Edo, Owan West, Owan East, Etsako West, Etsako Central and Etsako East LGAs. Esan North-East, Esan South-East, Esan Central, Esan West and Igueben LGAs constitute Edo Central. While Edo South comprise of: Oredo, Ikpoba-Okha, Egor, Orhionmwon, Uhunmwode, Ovia North-East and Ovia South-West LGAs. The climate of Edo State is equatorial in nature. It is characterized by humid conditions in the Southern parts and sub-humid conditions in the Northern parts (Okoro, 2002). The rainfall pattern, which is bimodal, varies from 200cm a year in the southern part to 115cm in the north, spanning about eight months of the year (Azeke, 2002). The temperature is about 27°C on the average with a monthly range of 22°C to 35°C and relative humidity of 79% to 90%. The vegetation zones distinguished the agricultural zones. Geologically, the state overlies the sediments of the "Ogoni Sand" or the Benin formation (Lar, 1974). These soils are derived from sand stone and shale and are of very recent deposits and very susceptible to leaching and thus lose their fertility very fast (Okoro, 2002). The soil type ranges from low productive sand to fertile clay soil.

The people are predominantly farmers. Arable crops grown by the respondents/farmers in the study area are cassava (*Manihot esculenta*), rice (*Oryza sativa*), maize (*Zea mays*), tomatoes (*Lycopersicum esculentum*), yam (*Dioscorea species*), and groundnuts (*Arachis hypogea*). Besides farming, other major occupations are trading, carpentry; block making, teaching, shoe making and pottery (Aligbe, 1999). Other sources of employment include the civil service and general contracting business concerns. Three LGAs were selected from each of the 3 agricultural zones of the state using purposive and random 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, Etsako West, Owan West and Akoko-Edo were selected. From Edo Central Agricultural Zone, Esan North-East, Esan West and Igueben LGAs were selected, Uhunmwode, Ovia North East and Orhionmwon LGAs were selected from Edo South. 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 assistance of the 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 were 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, giving 150 respondents. A pre –tested questionnaire was used in obtaining primary data.

Descriptive and inferential statistical tools were employed in analyzing data. 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. Simple regression analysis was employed in analyzing the effect of micro-credit loan sums on farmer's annual turnover. The simple regression model as specified in this study is given as:

$$Y = \beta_0 + \beta X_i + e_i \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where,
Y = Micro-credit loan sum received
β_0 = Constant term
β = Unknown coefficient to be estimated
X = Farmers Annual Turnover

Repayment performance was estimated using the repayment rate formula thus;

$$\text{Repayment Performance (RP)} = \frac{\text{Amount Repaid}}{\text{Total amount due for Repayment}} \ldots\ldots\ldots (2)$$

The factors influencing the repayment performance of the farmers was determined using multiple regression analysis. The multiple regression analysis used to determine factors influencing the amount of loan repaid by a farmer followed Onyenucheya and Ukoha (2007) and Aligbe (2015), and is implicitly represented as;

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}) + e \ldots\ldots\ldots (3)$$

Where,
Y = Amount of Loan repaid (N)
X_1 = Amount of Loan received (N)
X_2 = Age (years)
X_3 = Gender (dummy variable; 1 for male; 0 for female)
X_4 = Marital status (dummy variable; 1 for married; 0 for otherwise)
X_5 = Education (Number of years of schooling)
X_6 = Farming experience (years)
X_7 = Household size (Number of Persons)
X_8 = Interest charge on loan (%)
X_9 = Farm size (Hectares)
X_{10} = Annual income (N)
X_{11} = Timeliness in release of loan (dummy variable; 1 = loans released at the right time and 0=loans not released at the right time)
e = Error term

Results and Discussion

Relationship between Volume of Loan Received and Farmer's Annual Turnover

Simple regression result as shown in Table 1 indicates a relationship between farmer's annual turnover and volume of loan received which was significant at 1%

level of probability. The result implies that a farmer's turnover increases with increase in the amount of micro-credit received. This implies that an increase in the amount of micro-credit advanced to an arable crop farmer will *ceteris paribus* facilitate a corresponding increase in his annual turnover. A high annual turnover on the other hand can bring about a corresponding increase in farmer's income. This result is in tandem with Nwaru *et al.,* (2011), Effiong *et al*., (2018), Aligbe *et al*., (2018) and Kuye *et al.,* (2019), who indicated 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 as well as enhance farmers' ability to repay their loans at maturity. Strengthening the capital base of micro-credit institutions will greatly enhance their capability to disburse higher amount of micro-credit to farmers. This is contingent on the fact that a farmers' income level is a major determinant of micro-credit demand and supply.

Table 1: Relationship between Volume of Loan Received and Farmer's Annual Turnover

Parameter	Coefficient	T-ratio
Constant term	186147.744	17.296***
Volume of loan	2.487	19.614***
R^2	0.722	
Adjusted R^2	0.720	
F-statistics	384.727	
Durbin Watson	1.879	

Source: Computed from survey data, 2018
Note: **Significant at 1% level of probability

Loan Repayment Performance of the Farmers

The distribution of size of loans repaid is shown in Table 2. Thirty two percent (32%) of the farmers were able to repay less than N25,000; 44% repaid between N25,000 - N50,000; 12% were able to repay between N51,000- N75,000; only 2% were able to repay more than N150,000. However, 6% of the farmers repaid N100,000- N150,000. The analysis of the loan repayment performance of the farmers in Edo State showed an average repayment rate of 90.1%. This is high and in tandem with the findings of Oke *et al.,* (2007), who reported a repayment rate of 90% in their study on micro-credit repayment in South-West Nigeria. Mejeha *et al.,* (2019), noted that only 64.38% of the total amount granted as loan was repaid by the beneficiaries. Findings of loan repayment of farmers in this study is however contrary to the findings of Acquah and Addo (2011), who reported a low repayment rate of 29.1% in their study among fishermen in Ghana and Onyenucheya and Ukoha (2007), who reported a low repayment rate of 45% among farmers under the Nigerian Agricultural, Cooperative and Rural Development Bank (now Bank of Agriculture) in Abia State. The repayment rate (90.1%) could be due to the efficient utilization of loan by farmers in the study area and the fact that it places them in a vantage position to get loans next time.

Table 2: Distribution of Size of Loans Repaid and the Loan Repayment Performance

Amount of Loan repaid (N)	Frequency	Percentage	Repayment performance (%)	Frequency	Percentage
Less than 25,000	48	(32.00)	< 20	6	4.00
25,000 - 50,000	66	(44.00)	20 - 35	10	6.67
51,000 – 75,000	18	(12.00)	36 - 50	12	9.00
75,000 – 100,000	6	(4.00)	51 - 65	15	10.00
100,000 – 150,000	9	(6.00)	66 - 80	18	12.00
Greater than 150,000	3	(2.00)	81 100	89	59.33
Total	**150**	**100.00**	**Total**	**150**	**100.00**

Average Repayment Performance = 90.1%
Source: Field survey, 2018

Factors influencing Loan Repayment among the Farmers

The result of the multiple regression analysis of the factors influencing the loan repayment is presented in Table 3. The double-log form performed best of all the functional forms as it produced the highest value of coefficient of multiple determination (R^2), highest number of variables with significant t-values and conformity of the signs to *a priori* expectations. The F-value of 97.33 is significant at the 1% level. This implies that the model is good. The coefficient of multiple determination was 0.875 implying that 87.5% of the variation in the farmers' loan repayment performance was explained by the independent variables included in the model.

The coefficients for loan received, educational level, household size, farm size and total income were significant implying that these variables are important factors influencing the amount of loan repaid by the

farmers. The coefficient for loan received was positive and significant at 1% level. This result is contrary to the findings of Eze and Ibekwe (2007), but in agreement with Afolabi (2008), and Kuye *et al.,* (2019). An explanation of this result is that a 1% increase in loan received will lead to a 0.81% increase in loan repayment. The more volume of loan given to a farmer, the more likely that he/she will make adequate amount available for the farm business. This will lead to higher income and consequently result in higher repayment capacity (Mejeha *et al.,* 2019). This is possible due to the advantages associated with the economies of scale which come through the expansion of purchases and production (Okorji and Mejeha, 1993). The coefficient for educational attainment was also significant at 1% level. This implies that a 1% increase in educational level will lead to a 0.76% increase in loan repayment. This is in agreement with the findings of Oladeebo and Oladebo (2008), that a good educational standing is required to understand the importance of loan repayment.

The coefficient for household size was negative and significant at the 5% level. This implies that a 1% increase in household size will lead to a 1.33% decrease in loan repayment. Large household sizes could exert pressure on a loan beneficiary thereby leading to poor loan repayment as fund to be used to repay loan could be diverted to meet a large household needs. This is contrary to the findings of Afolabi (2008), who reported a positive relationship between household size and loan repayment. However in another study on small scale farmers of Oyo State, Nigeria, Afolabi (2010), reported that household size had negative influence on loan repayment performance which is in agreement with this finding. The coefficient for farm size was positive and significant at 10% level. This implies that a 1% increase in farm size will lead to a 1.27% increase in loan repayment. This is acceptable as it is expected that larger farm size implies higher income to the farmer which keeps him/her in a better position for loan repayment. The coefficient for annual income was positive and significant at 5% level. This is in agreement with Onyenucheya and Ukoha (2007), Mejeha *et al.,* (2019) and Kuye *et al.,* (2019). A high annual income implies enough funds to meet family needs and also meet loan repayment agreement.

Table 3: Regression Estimates of determinants of Loan Repayment among Farmers in Edo State

Variables	Double Log	Exponential	Semi- log	Linear
Intercept	1.3327	-0.7859	-23.784	-0.4270
	(1.75)*	(-1.74)*	(-1.21)	(-0.17)
Loan received	0.8141	-2.3978	1.0542	566.12
	(5.19)***	(-2.35)**	(0.82)	(0.35)
Age	0.0013	8.0856	0.5855	856.21
	(-0.37)	(0.01)	(0.79)	(0.93)
Gender	0.8610	7.1811	-0.6675	16740
	(0.76)	(1.04)	(-1.28)	(1.24)
Marital Status	0.0064	0.0001	1.7880	18581
	(1.51)	(0.70)	(1.14)	(1.19)
Education	0.7632	5.5870	0.4329	44325
	(5.28)***	(3.22)***	(1.04)	(2.00)**
Farming experience	0.9183	-3.7700	0.2823	1756.2
	(1.34)	(-1.19)	(1.35)	(2.14)*
Household size	1.3327	-0.7859	-23.784	44270
	(-2.15)**	(-1.74)*	(-1.21)	(1.77)*
Interest	1.1327	-0.7859	-23.384	-0.4270
	(1.25)	(-1.74)*	(-1.91)*	(-0.17)
Farm size	1.2711	-0.7859	-23.184	-0.9270
	(1.85)*	(-1.14)	(-1.21)	(-0.19)
Annual income	1.927	-0.7859	-23.784	-0.4270
	(2.15)**	(-1.74)*	(-1.21)	(-0.17)
Timeliness of loan	1.027	-0.7859	-13.784	-1.4270
	(1.15)	(-1.24)	(-1.31)	(-0.87)
R2	0.875	0.787	0.636	0.649
F – Value	97.33***	51.43***	24.27***	25.65***

*****, ** and * denote significant at 1%, 5% and 10% respectively**
Source: Computed from Survey Data, 2018

Conclusion

In order to increase farmers' annual turnover and hence their ability to repay loans, there is need to scale up loan sums advanced to farmers by micro-credit institutions who presently are constrained with low capital base. To shore up the capital base of informal micro-credit institutions, the Central Bank of Nigeria (CBN) and International NGOs 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. It is imperative to grant farmers the required amounts of loan to enhance their loan repayment performance and to ensure increased productivity of crops grown for increased welfare and livelihood of these farmers and the citizens of the State as a whole. Efforts should be made by farmers through efficient utilization of resources to improve on their income level by way of increased production. This will enhance their ability to repay their loans at maturity. There is need for policies aimed at provision of free and affordable education to enable farmers access and process information innovations that will enhance loan repayments and reform policies that will enable farmers access more lands to increase production, thereby enhancing loan repayments. As means of boosting food supplies, government should subsidize micro-credit provisioning to farmers. Finally, the management of credit institutions should place more emphasis on farmer characteristics which promote loan repayment. This is capable of improving credit institutions' overall performance.

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