EFFECTS OF MICRO-CREDIT ON CASSAVA PRODUCTION IN OBIO/AKPOR LOCAL GOVERNMENT AREA OF RIVERS STATE, NIGERIA

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Abstract

The study was designed to determine the effect of micro-credit on cassava production in Obio/Akpor Local Government Area of Rivers State, Nigeria. The objectives were to describe the socio-economic characteristics of the cassava farmers using micro credit in the study area, determine the effect of micro-credit on cassava producers, determine the level of access to micro-credit on cassava producers in the study area, and know the constraints affecting Cassava producers' access to micro-credit in the study area. It involves a study of 100 Cassava farmers which were selected using simple random sampling from Ten (10) communities. Data were collected using structured questionnaire, scheduled interview with. Objectives were achieved using descriptive analytic tools such as tables, mean and percentages. Multiple regression was used to estimate the effects of micro-credit and level of micro-credit access. The double was the lead equation. The coefficients of multiple determinant (R^2) value of 0.836 indicate that 83.6% of the variation on micro-credit on Cassava farmers can be explained by the independent variables in the regression having an F ratio of 1.09. The result indicated that 42.2% of the respondents were in the age bracket of 45-55, 43.1% were observed to be in the age range of 26-45, 6.9% were observed to be in the age range of 56-75 and 4.9% of the respondents were in the age range of 18-24. The socioeconomic characteristic such as income level were found to have a significant effect on the cassava producer access to micro-credit in the study area. The major constraints identified in the access to micro-credit limited documentation, struggle with financial literacy, affordability barrier, size of farm and cumbersome process having specific mean of 2.2000,2.0500,2.0900,1.7000,1.6700. The findings reveal that gender, age, marital status, education level, and farming experience significantly impact farmers' access to microcredit.

In conclusion, the socio-economic characteristics of cassava farmers in Obio/Akpor Local Government Area of Rivers State, Nigeria, play a significant role in determining their access to microcredit and the subsequent effects on cassava production. Factors such as gender, age, marital status, education level, income, and years of farming experience all influence the ability of farmers to access and benefit from microcredit. This study reveals that there is a strong correlation between microcredit availability and cassava production, as well as the financial inclusion of farmers. The recommendation was proffered, Easy access to microcredit for cassava farmers, especially those with limited resources. Financial Literacy Programs should be made available, so as to improve cassava farmers understanding on financial concepts. It is advisable to encourage the formation of cooperative and farming group. Financial institutions should design microcredit products tailored to the needs and challenges of cassava farmers.
KEYWORDS: Effects, Microcredits, Cassava Production.

1.0 Introduction

Agriculture has played a significant role in the history of the nation Nigeria, as indicated by the "Green" in the flag, and it continues to be a vital sector, providing livelihoods for over 75% of the population. According to the FAO, agriculture remains the foundation of Nigeria's economy, supporting Nigerians' livelihoods and generating millions of jobs, alongside crude oil. Agriculture serves as the bedrock of Nigeria's economy, offering potential solutions for the country's socio-economic progress. It provides food, employment opportunities, income generation, education, improved and mechanized farming, access to finance in rural areas, supply of cash crops, arable crops, timber, livestock, and fisheries (Esobhawan *et al.*, 2021).

Despite its importance, Fakayode *et al.* (2019) stated that agriculture in Nigeria still faces numerous problems such as inadequate funding, insufficient availability of inputs in the right quantity and quality, underdeveloped marketing systems, and inadequate infrastructural facilities for production. These challenges highlight the need for farmers to have access to credit facilities.

Micro-credit has proven to be effective in enabling farmers without access to lending institutions to borrow at reasonable interest rates and start their businesses. This micro-credit provides soft loans to farmers who cannot provide collateral or meet the stringent conditions for traditional loans.

Access to microcredit can provide farmers with much-needed financial resources for purchasing quality inputs, improving farming practices, and expanding their operations (Adewale, *et al.*, 2019). Moreover, microcredit programs often provide training and technical support to borrowers, equipping them with the necessary skills and knowledge to enhance productivity.

The performance of the agricultural sector is crucial for the country's food security, as a majority of the food is produced in rural areas, which directly rely on agriculture and related economic activities for their livelihoods (Olukoya, 2020). Agriculture is a major sector of the Nigerian economy, accounting for up to 35% of the total national employment in 2020. Additionally, agriculture plays a crucial role in economic growth, contributing 4% to the global Gross Domestic Product (GDP).

The lack of formal financial services, among other factors, has hindered farmers and entrepreneurs, especially in rural areas, from increasing their savings, capital formation, and investments, resulting in reduced household consumption. Access to financial services could help farmers accumulate funds to purchase inputs such as fertilizers, which are crucial for increasing the production of food crops like yam, cassava, rice, maize, cocoyam, etc (Eswara, 2021)

According to the International Institute of Tropical Agriculture (IITA, 2019), cassava (*manihot esculenta*), a woody shrub of the *Euphorbiaceae* (spurge) family native to South America, is extensively cultivated as an annual crop in tropical and subtropical regions of the world. Cassava is the third-largest source of food carbohydrates in the tropics after rice and maize. Additionally, cassava is a major staple food in the developing world, providing a basic diet for over half a billion people. IITA's extensive research has documented that cassava is one of the most drought-tolerant crops, capable of growing on marginal soils. According to IITA (2021), Nigeria is the world's largest producer of cassava in West Africa. Cassava production in Nigeria has increased from 9.57 million tonnes in 1972 to 63 million tonnes in 2021, with an average annual growth rate of 4.28%. Since cassava holds a unique position as a food security crop for

small-scale farmers in Obio/Akpor Local Government Area of Rivers State and Nigeria as a whole, promoting its production requires addressing or minimizing the constraints surrounding its cultivation. Among the myriad of problems affecting cassava production, limited access to credit for farmers has been identified as the most serious issue. The objectives were to describe the socio-economic characteristics of the cassava farmers using micro credit in the study area, determine the effect of micro-credit on cassava producers, determine the level of access to micro-credit on cassava producers in the study area, and know the constraints affecting Cassava producers' access to micro-credit in the study area.

However, one important factor responsible for the decline in agricultural productivity in Nigeria is the limited access of farmers to credit

2.0 Methodology

The study was conducted in Obio/Akpor Local Government Area of Rivers State, Nigeria. According to the population projection in the year 2022, about 665,000 was estimated. Obio-akpor Local Government is located in the South-south geopolitical zone of Nigeria; it was established on the 3rd of May, 1989. Obio-akpor Local Government Area is one of the 8 Local Government Areas that formed the Rivers East Senatorial District. It is made up of agricultural communities, which are consists the following Communities, Rumuewhara, Eliozu, Rumunduru , Elimgbu Eliowhani, Rumuodara, Nmgbuesilari, Iriebe. Rumuokwurusi, Atali,Rumuodomaya, Rumuobiakani, Rumuobochi, Elelenwo, Woji, Rumurolu, Rumuibekwe, Rumuogba, Oginigba, Rumuokoro, Rumuagholu. Elieke, Awalama, Eligbolo, Rukpakwusi, Bori-camp,Federal Government College (FGC, Rumuomasi, Rumuepirikom ,Elioparanwo, Rumueme – Oro-owo, Oro Agbolu, Eligbam, Oroazi, Rumuchida, Mgbuosimini, Ngbu-osimini , oroakwor, Rumueme, Rukpakani, Akwaka, Rumuchiorlu, Ibemeru, Oro-ogologo, Ogwa, Rumuigbo (Rumuomoi, Nkpolu, Mgbuadu, Mgbesilaru and Rumuorosi, Rumuadaolu, Rumuola, Rumuokwuta (Mgbuoba Rukpokwu , Eneka. Choba, Rumuosi, Rumuekini, Alakahia and Rumuolaogu., Ozuoba, Ogbogoro, Rumuokwachi, Rumuokparali, Rumualogu., Rumuolumeni (Ngbosimini, Nkpor, Mgbuodohia, Azumini, Minikpiti and Mgbuakara).

3.0 Sampling Methods and Size

Multiple regression analysis looks at the relationship with one dependent variable and many independent variables. A dependent variable (y) is a variable whose outcome is influenced by other variables (x).

3.1 Model Specifications

Mathematically, multiple regression models are expressed explicitly as;

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 + U.$$

Where;

Y = Cassava Output (Kg)

β_0 *= intercept*

β_1 *= coefficient*

X_1 = *Age in years*

X_2 =*Sex (dummy)*

X_3 = *Marital status (dummy)*

X_4 = *Educational level in years*

X_5 = *Amount of loan Naira*

X_6 = *Farm size in hectare*

X_7 = *Repayment term frequency*

X_8 = *Income of farmer Naira*

X_9 = *Interest Rate*

U = *Error term*

Objective 3- Level of Access to Micro-credit by Cassava based producers

Multiple Regression Analysis

Mathematically, multiple regression models are expressed explicitly as;

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 + U.$$

Where;

Y = *Cassava Output (Kg)*

β_0 = *intercept*

β_1 = *coefficient*

X_1 = *Income (N)*

X_2 =*Sex*

X_3 = *Educational level*

X_4 = *Experience*

X_5 = *Interest*

X_6 = *Farm size (Ha)*

U = *Error term*

4.0 Results and Discussion

The socio-economic characteristics of cassava farmers in Obio/Akpor Local Government Area of Rivers State, Nigeria, play a significant role in determining their access to microcredit and the subsequent effects on cassava production

Socio-economic characteristics of farmers

Table 1: showing Descriptive statistics analysis

Value	Frequency	Percentage
Gender		
Female	49	50.0
Male	51	50.0
Age		
18-24	5	4.9
26-45	44	43.1
45-55	43	42.2
56-75	7	6.9
Marital status		
Single	52	51.0
Married	23	22.5
Divorced	5	4.9
Widowed	20	19.6
Educational level		
Primary	14	13.7
Secondary	55	53.9
Tertiary	24	23.5
No formal Education	7	6.9
Income level		
20,000 - 60,000	82	81.2
70,000 - 120,000	17	11.9
130,000 and above	1	0.99
Years of farming experience		
1-5	33	32.4
5-10	58	56.9
10 and above	9	8.8

Source: Field Data, 2023

The Table 1 above shows the summary of the socio-economic characteristics of the respondents. The result shows that the majority of the respondents were male accounting for 51% while females accounting for

49% of the total sample. This implies that males are likely to be having more access on micro-credit. The result also shows that 42.2% of the respondent were in the age bracket of 45-55 and 43.1% were observed to be I'm the age range of 26-45, 6.9% were observed to be in the age range of 56-75, 4.9% were found to be in the age range of 18-25 and 1% was found to be in the age range of 75 and above. This implies that farmers at the age range of 31-40 and 51-60 are more likely to be financial included. According to the result, it was shown that 51.0% of the farmers were married, 19.6% were widowed, 22.5% were single while 4.9% were divorced. This indicates that farmers that are married has higher percentage of the effects of microcredit on cassava production. This could be due to the fact that the higher percentage of the effects of microcredit on cassava production among married farmers may be attributed to increased family support, collaboration, and shared resources, leading to more successful adoption of microcredit-based practices. This could be due to the fact that married farmers would want to save for the future of their families. Based on the findings, it was also observed that 53.9% of the farmers had secondary education, 13.7% had just primary education, 23.5% of the farmers attained tertiary education while 6.9% had no formal education. About 32.9 % of farmers had a farming experience of 1-5years, 56.9% had a farming experience of 5-10 years, 8.8% had a farming experience of 10years and above. This means that farmers with less farming experience will determine if a farmer is having micro-credit effects on cassava production or not. This could be due to the fact that farmers with less farming experience may struggle to access financial services and, therefore, their level of financial inclusion is determined by their ability to engage with and utilize such services. The estimated annual income of the farmers was observed as follows: 20.6% farmers earned income of 20,000, 18.6% earned 30,000, 17.6% earned 40,000 and 50,000, 3.9% earned 60,000, 2.9% earned 70,000, 4.9% farmers earned 80,000, 7.8% farmers earned 90,000 while1.0% farmers earned 120,000 and 150,000, all in naira. About 68.6% of the total respondents were observed to belong to a farming cooperative/group while 28.4% do not belong to any.

Effects of micro-credit on Cassava based Producers

Table 2: showing Multiple regression analysis

Variables	**Linear**	**Double Log**	**Semi-log**
Constant	**177.175**	**-3.542**	**3.875**
	(6.721)	(-0.394)	(4.524)
AgeX_1	0.392***	0.223***	
	(1.903)	(4.007)	
SexX_2	7.342***	0.133***	
	(1.140)	(1.959)	
Marital statusX_3.	10.685***		0.186***
	(3.185)		(3.140)
Educational Level X_4.	-7.534	0.474	-0.061
	(-1.59)	(0.888).	(-0.954)

Loan amount X_5	-0.110	-5.124E.5**.	-1.569**.
	(-0.586)	(-0.278)	(-1.907)
Farm size X_6	0.947***		0.270**
	(1.393)	(4.309)	
Repayment plan X_7	0.63.566	-474	-0.748
	(-6.982)	(0.888)	(-7.044)
IncomeX_8	0.000	4.837	0.09
	(2.099)	(0.665)	(1.861)
Interest X_9	.3.369	0.301	-0.221
	(-2.309)	(0.498)	(-2.793)
F-value	21.270	1.019.	38.008
R-square	0.680	0.836	0.792

Source: Field Data, 2023

The results of multiple regression analysis of the effects of micro-credit for all the three functional forms. Significant ($p<0.01$) value was observed in coefficient values for constant in double log and exponential regression models. The age of the farmers, sex, marital status, farm size, were significant at ($p<0.01$) under Linear. This implies that they play a role in influencing the effect of micro-credit. In multiple regression analysis, the linear form is often considered the lead equation when the assumption of linearity between the independent and dependent variables is met. Additionally, the linear form provides coefficients for each independent variable, indicating the strength and direction of their impact on the dependent variable.

The linear form might be considered critical in this result due to its level of significance and it highest value of R-square (R^2)

Educational level is negatively significant which means a unit change in the effect of micro-credit. Loan Amount has a negative coefficient, which suggests that as the loan amount increases, the Cassava output decreases and it is statistical significance. Education level was significant at 5%.

This significance level implies that the probability that the result on the Effect of micro-credit occurred by chance. (<0.05) Lower p-value are not considered statistically significant. F-value has a higher F-value and it means that the model is statistically significant. According to R-square the proportion of the variance in the Cassava output that is predictable from the independent variables. In this case, approximately 68% of the variance is explained by the model.

Table 3: Access to micro-credit for cassava producers

Variables	Linear log	Double log	Semi-log
Constant	**0.606**	**-9.21**	**-0.291**
	(2.158)	**(1.998)**	**(-0.244)**
Gender	0.277***	-0.753	0.364
	(2.907)	(-0.519)	(2.804)
Educational level.	-0.154**	-0.368**	-0.293**
	(-2.487)	(-0.922)	(-2.566)
Experience	0.672*	0.090**	1.168*
	(8.013)	(0.163)	(9.083)
Income	1.780E.6*	-2.405	0.134**
	(1.459)	(-1.317)	(1.300)
Interest	-0.095	-1.491	-0.640
	(-4.184)	(-3.627)	(-4.263)
Farm size	0.034	-0.753	0.525
	(3.724)	(-0.519)	(4.883)
F-value	**17.144**	**4.502**	**22.083**
R-square	0.525	0.495	0.588

Source: Field Data, 2023

The determinants of access to micro-credit for cassava producers in Obio/Akpor Local Government Area of Rivers State, Nigeria. The linear form was chosen as the lead equation on the basis of the highest value R-square more significant coefficient, higher F-value and conformity to the theoretical expectation of the regression coefficients. In the model, Gender has a positive effect (coefficient: 0.277), implying that an increase in the output of Cassava with higher gender value. Educational level is significant at 10% which has a negative impact across the models with varying magnitudes. Experience has a positive impact in all

the models, with higher coefficient in the linear and semi-log. Income has a large positive impact in the linear and a negative impact on the double log. Interest is negatively significant and Farm size is positively significant across all models. From the result above, F-value is significant and R-square indicate the better-fitting model.

Table 4: constraints faced by cassava-based farmers using micro-credit in the study Area

Variable	Frequency	Percentage	Mean	Std. Deviation
Limited documentation				
Agree.	**34**	**33.7**	**2.2000**	**.9211**
Strongly Agree	**12**	**11.9**		
Disagree	**54**	**53.5**		
Financial literacy				
Agree	**38**	**37.7**	**2.0500**	**.90314**
Strongly Agree	**19**	**18.8**		
Disagree	**43**	**42.6**		
Affordability barrier				
Agree	**40**	**39.6**	**2.0900**	**.94383**
Strongly Agree	**11**	**10.9**		
Disagree	**49**	**48.5**		
Farm size				
Agree	**48**	**47.5**	**1.7000**	**.75879**
Strongly Agree.	**34**	**33.7**		
Disagree	**18**	**17.8**		
Cumbersome process				
Agree	**61**	**60.4**	**1.6700**	**.88825**
Strongly Agree	**11**	**10.9**		
Disagree	**28**	**27.7**		

The challenges faced by cassava farmers using micro-credit. The result revealed that 37.7% of the total respondents agreed with the problem of struggle with financial literacy,18.8% Strongly Agreed, while

42.6% Disagree. About 39.6% of the respondent Agreed with Affordability Barrier, 10.9% Strongly Agreed and 48.5% Disagreed. The issue of having small size of cassava farm is a problem faced by 47.5% of the respondent,33.7% Strongly Agreed and 17.8% Disagreed. Another challenge faced by cassava farmers access to micro-credit is cumbersome process, were 60.4% of the respondent agreed, 10.9% Strongly Agreed and 27.7% Disagreed. The size of cassava farm and cumbersome process has a relatively higher percentage of respondents agree with the statements, indicating that they perceive certain challenges or issues in these areas. Also "Limited Documentation such as Land Ownership," "I Struggle with Financial Literacy," and "Affordability Barrier" have more mixed responses with some level of agreement but also a significant portion of disagreement. The mean values give an idea of the average level of agreement or disagreement, while the standard deviations indicate the extent to which responses vary.

5.0 Conclusions

In conclusion, the socio-economic characteristics of cassava farmers in Obio/Akpor Local Government Area of Rivers State, Nigeria, play a significant role in determining their access to microcredit and the subsequent effects on cassava production. Factors such as gender, age, marital status, education level, income, and years of farming experience all influence the ability of farmers to access and benefit from microcredit. This study reveals that there is a strong correlation between microcredit availability and cassava production, as well as the financial inclusion of farmers. The findings suggest that microcredit has the potential to significantly impact cassava production, particularly among married farmers with more years of farming experience.

However, various challenges, such as limited documentation, financial literacy issues, affordability barriers, and cumbersome processes, pose obstacles to farmers in accessing microcredit. These barriers must be addressed to ensure that microcredit is a practical and effective tool for promoting cassava production.

6.0 Recommendations

The following recommendation were proffered.

1. Easy access to microcredit for cassava farmers, especially those with limited resources.

2. Financial Literacy Programs should be made available, so as to improve cassava farmers understanding on financial concepts.

3. It is advisable to encourage the formation of cooperative and farming group. 4. Financial institutions should design microcredit products tailored to the needs and challenges of cassava farmers.

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