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Determinants of Profitability and Constraints in Cassava Production Among Microcredit Beneficiaries and Non-Beneficiaries in Ona-Ara Local Government Area, Oyo State, Nigeria

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ABSTRACT

This study aimed to describe the socio-economic characteristics of cassava farmers, identify factors influencing profitability in cassava production, and examine constraints faced by farmers in Ona-Ara Local Government Area, Oyo State, Nigeria. The methodology employed multistage sampling to purposively select villages and communities prominent in cassava production, followed by stratification into credit beneficiaries and non-beneficiaries and random selection of 2% of registered farmers (yielding 218 valid responses from 238 questionnaires), with primary data collected via structured questionnaires and interviews, analysed using descriptive statistics, Cobb-Douglas production function, marginal value productivity for resource allocation efficiency, and Likert-scale ranking of constraints. Findings indicated that cassava farmers were predominantly male, married, and literate with secondary education, averaging small households and limited extension contact; beneficiaries operated larger farms (2.1 ha compare to 0.8 ha for non-beneficiaries) and achieved significantly higher profitability; key profitability determinants included farm size (production elasticity >1 indicating increasing returns), planting materials, labour, herbicides, and fixed costs, though most inputs were inefficiently allocated; major constraints ranked high were poor transportation, land scarcity, delayed and inadequate loans, and high labour costs, with non-beneficiaries additionally hindered by capital access barriers. In conclusion, microcredit access substantially boosts cassava production profitability by facilitating farm expansion and input intensification despite prevalent resource inefficiencies and infrastructural challenges. It was therefore recommended to encourage greater microcredit uptake among farmers, improve rural infrastructure such as roads, and timely disbursement of adequate credit facilities to mitigate production bottlenecks.

Keywords: Cassava, Microcredit, Profitability, Determinants, Constraints

1. INTRODUCTION

Nwaru (2004) revealed that the significant information vital for the practical use of unrivalled innovation that would change customary farming creation framework by asset helpless families in a creating economy is credit. One issue that emerges is the degree to which credit can be offered to small-scale farmers at low financing costs, at the ideal opportunity and with no pre-condition, to facilitate agricultural production. The significance of credits to small-scale farmers cannot be over-underlined, Eswaran In this vein Federal Government of Nigeria, in the 1970's set up the farmers' Agricultural Credit Guarantee Fund Scheme (ACGFS) in order to improve credit delivery to farmers (Zeller, 1994). However, most of small-scale farmers in Nigeria are usually not seen to be credit worthy by most of the commercial lenders. Inadequate flow of funds into farming has been recognized as the most restricting issue to expanding agriculture in Nigeria.

Accessibility to sufficient credit to back agrarian creation is fundamental for significant agricultural practice. In acknowledgment of the significant job of credit in farming, since 1964 to-date, successive governments in Nigeria executed several agrarian credit programs. These included the Agricultural Credit Guarantee Fund Scheme (ACGFS) in 1977, the Agricultural Credit Scheme (ACS) in 2006, Commercial Agricultural Credit Scheme (CACS) in 2009 and Nigerian Incentive Risk Based Sharing System for Agricultural Lending (NIRSAL) in 2012 (Fakayode, *et al* 2009). The Central Bank of Nigeria (CBN) in a bid to extend loan funds to the agricultural sector operationalized numerous approaches ranging from tax waiver on interest brought in by Deposit Cash Bank (DMBs) on agrarian credits among others. Notwithstanding these projects and strategies pointed toward directing credit to facilitate commercial farming activities among farmers (Fakayode *et al*, 2009). Moreover, the greater part of the credit programs has been criticized based on their low recuperation rate and insufficient differentiated portfolio.

Onwudiujo (2012) distinguished irregularity and delay in agricultural production, high pace of default, absence of collaterals, significant expense of loan advance organization, obliviousness of certain farmers, metropolitanisation areas of the lender's environment and the lukewarm attitudes of most loaning establishments towards loaning to farmers as justifications why farmers perceive it is hard to get to access from formal monetary establishments in Nigeria. Therefore, the study seeks to address the following objectives:

a. to examine socio-economic characteristics of cassava farmers in the study area;
b. to analyse the variables that determine profit that accrue to cassava production,
c. to examine the problems faced by the farmers.

2. MATERIALS AND METHODS

Study Area

The study was carried out in Ona-ara Local Government of Oyo State, Nigeria. It is one of the 33 LGAs in Oyo state, Nigeria. It was created from the agitation by its founding fathers after the creation of Oluyole LGA that was considered to be extremely large for any meaningful and effective administration. The argument of these founding fathers was premised on the fact that too much emphasis was placed on urban areas to the detriment of the predominately agrarian rural areas. Ona-ara lies on latitude 7′.22^0 North of the equator and Longitude 4′.03^0 East of the Greenwich Meridian. According to the 2006 population census, Ona–ara has a total population of 265,059 people, made up of 131,471 males and 131,588 females. The land mass is about 3570km^2.which is bounded in the north, by Egbeda LGA, in the south by Oluyole LGA, in the east by Ogun and Osun States and in the west by Lagos-Ibadan express way with Ibadan South East LGA on the other side of the express way. Ona–ara comprises of six (6) wards. The people of Ona–ara are predominantly farmers that cultivate fertile land for crops including cocoa, kola cashews and citrus like oranges, and mangoes. The farming population is scattered all over the various communities in the LGA. These communities include Foworogun, Idi–Ogun, Elese–Erin, Olosunde, Ojebode, Akanran and Gbada–Efon among others It has an annual rainfall of 1,250mm. The Local Government council has a Traditional Council made up of the 13 recognised Baales whose chairmanship is on rotational basis the Olubadan.

Research design

The research design adopted was the survey method. This design is one in which a group of people or items are studied by collecting and analysing data from only a few of the people or items of investigation that are considered to be representative of the entire group or population. This method was chosen because it was considered to be more economical in terms of resources required and the time needed for the study. It facilitates sample(s) drawn from the population.

Study Population

The study covered farmers in the six wards of the Ona-ara LGA. The lists of these farmers were obtained from Oyo State Ministry of Agriculture and Natural Resources and Agricultural Development Projects (ADPs) to form the sampling frame. The list revealed that there were 11,826 registered farmers in the study area.

Sampling Techniques

A multistage sampling technique was adopted in selecting the respondents for the study. The first stage of selection was the purposive selection of two (2) agricultural villages from each of the 3 Agricultural Wards based on the prominence of cassava production activities. The selected villages were: Akanran and Alagbaa from Akanran ward, Gbedun and Kajola from Gbedun ward, Jago and Butu-Butu from Olorunsogo. In the second stage of selection, three (3) communities were purposively selected from each of the Villages, also based on prominence of cassava production activities, to give a total of eighteen (18) communities that were studied. The communities are shown in Table 1. The third stage was the stratification of the farmers into credit beneficiaries and non-beneficiaries, the forth and the final stage was the random sampling techniques to select 2% from the population of registered farmers in the study area. This came to a total of two hundred and thirty-eight (238) questionnaires administered; where two hundred and eighteen (218) were retrieved representing 91.6% response rate. Details are shown in Table 1.

Table 1. Study Sampled outlay

Agricultural Ward	Agricultural village	Communities	Population	2% of thepopulation
Akanran	Akanran	Aperin	468	**10**
		Ogbere	583	**12**
		Odi Aperin	985	**20**
	Alagbaa	Oremeji	1310	**26**
		Agugu	250	**5**
		Ojebode	380	**8**
Gbedun	Gbedun	Gbedun	1000	**20**
		Olorunda	820	**16**
		Araromi	623	**12**
	Kajola	Gbada Efon	1075	**22**
		Odi Odeyale	650	**13**
		Aba Eku	400	**8**
Olorunsogo	Jago	Ogunbunmi	1030	**21**
		Kupalo	438	**9**
		Jago	372	**7**
	Butu-Butu	Butu-Butu	650	**13**
		Aba Paanu	400	**8**
		Eletu	392	**8**
3	**6**	**18**	**11,826**	**238**

Sources of Data and Data Collection Method

The data for the study were obtained from primary sources. The data were obtained from the respondents through the administration of structured questionnaire for the literate farmers and interview schedule for the non-literate farmers. Questions covered the areas relating to the farmers' socio-economic characteristics, sources of capital, and accessibility of farmers or otherwise to microfinance institutions, production inputs and output obtained. The secondary data were obtained from text books, journals and internet.

Data Analysis Techniques

Data collected were analysed as follow:

Descriptive statistics

Descriptive statistical tool, involving frequencies, percentages, means and standard deviation, was used to analyse the socio-economic characteristics of the respondents.

Production Function Analysis

The Production Function Analysis was used to analyze the variables that determined the two group of farmers' revenue. This tool was used to achieve objective four. It is expressed explicitly as:

$TR = \beta_o+\beta_1X_{1i}+\beta_2X_{2i}+ \beta_3X_{3i}+ \beta_4X_{4i}+\beta_5X_{5i}+\beta_6X_{6i}+\beta_7X_{7i}+\beta_8X_{8i}+U_i$ .....(6)

Where:

TR=	Value of output i.e. sales from unprocessed cassava
(N)X1=	Educational level (years of schooling)
X2=	Farming experience (years so far spent in farming)
X3=	Farm size (Ha)
X4=	Planting materials Kg
X5=	Labour used (Man days)
X6=	Herbicides in litres
X7=	Fixed cost (N)
X8 =	Operating expenses (N)
Bo =	Intercept or constant
β's=	Coefficients of the parameters to be estimated ei = Error term
i =	i^{th} Number of respondents for i =1, 2, 3….....238

Different functional forms, namely. Linear, Exponential, Cobb-Douglas and Semi-log function were fitted with the survey data and the lead equation was selected for further analysis of the result based on the established criteria of economic, statistical and econometric. Thus according to Osifo (1998), the economic criteria recommended the appropriate function to use in a specific field of study. It therefore recommended Linear and Cobb-Douglas for production studies and Exponential for average cost and marginal cost studies.

The statistical criteria are based on the magnitude of coefficient of multiple determinations, R^2 and R^2-adjusted and the significance of the overall hypothesized model, using F-ratio test for goodness of fit, the correctness of signs and the magnitude of the regression coefficients. Statistical consideration also involves the significance of the regression coefficients of individual variables using t-ratio test. The important econometric criterion is the magnitude of the standard error of the overall model with the choice of the one with the least value. The results of the four functional forms are contained in the Tables and for the beneficiaries. In the consideration of the criteria stated above, the Cobb-Douglas functional form provided the best fit equation and hence it was selected for the analysis of the results.

Marginal Value Productivity (Allocative Efficiency)

The marginal value productivity analysis was used to determine resource-use efficiency in cassava production by the two groups of farmers to achieve objective five. This is optimum allocation of resources, taking into account, the prices of inputs and output. At the point of efficient resource use in production, the ratio of input and output prices must be equal to the marginal physical product for each of the input used. This criterion is expressed as:

$$MPP_{xi} = \frac{P_{xi}}{P_y} \quad \text{.....(7)}$$

$\frac{d_y}{}$ = Marginal Physical Product (MPP) of the input used d_x

X = inputs employed P_x = unit price of inputs

P_y = unit price of output

i = number of inputs used

Multiplying each side of equation (7) by $\frac{P_y}{P_{xi}}$

$MPP_{xi} \times P_{xi} = \frac{P_{xi}}{P_y}$ $\frac{P_{xi}}{P_y \times P_y}$ or $\frac{MPP_{xi}}{P_{xi}} \times Py = 1$… ..... (8)

$\frac{MPP_{xi}}{P_{xi}} \times P_y = 1$ is also expressed as: $P_y \times MPP_{xi} \mid P_{xi} = 1$.

This can also be expressed as: $P_y \times MPP_{xi} = P_{xi}$ .....(9)

But P_y (MPP_{xi}) = MVP of inputs hence $\frac{MVP_{xi}}{P_{xi}} = 1$ or $MVP_{xi} = P_{xi}$

hence $\frac{MVP_{xi}}{P_{xi}} = 1$, resources are efficiently used

$\frac{MVP_{xi}}{P_{xi}} > 1$, resources are inefficiently used (under-utilization of resource)

$\frac{MVP_{xi}}{P_{xi}} < 1$, resources are inefficiently used (over-utilization of resource)

$\frac{MVP_{xi}}{P_{xi}} < 0$, resources are inefficiently used (gross inefficient utilization of resource)

Likert scale

The statistical tool used in measuring the respondents' constraints is the three-point Likert scale (Esobhawan and Ogundele, 2011). The scale was used to determine the seriousness of the constraints using the format as:

* Very serious assigned the value of (3)
* Serious assigned the value of (2)
* Not serious assigned the value of (1)

The mean value which forms the benchmark on which the constraints is judged is obtained using the formula:

$\bar{X} = \Sigma \frac{x_{ij}}{n}$ .....……..(10)

Where

$\bar{X}$ = mean value which will form the benchmark
X = the assigned value of constraints (x = 3, 2, 1)
n = number of occurrence (N = 3)
I = i^{th} number of identified constraints
J = j^{th} number of respondents

3. RESULTS & DISCUSSION

Socio-Economic Characteristics

Age Distribution

The analysis of the age of respondents in Table 2 revealed that the mean age was 50 and 47 years for credit- beneficiaries 50 years and non-beneficiaries respectively. This result implied that older farmers need more credit to pay for labour especially. This is because as a farmer ages, their physical strength required for active farming decreases. Thus, the dominant age group found in this study is

indicative of the active demand for credit to supplement dwindling strength of the farmers as shown by Audu *et al*. (2009) that the ageing trend of the farmers is undesirable for agricultural production. Also, the mean age of both groups of farmers which are 50 and 47 years respectively is in contrast with Obinne *et al*. (2009) who stated that the active farming age for Nigerian farmers was 37years, implying a certain level of potential to effectively use of credit.

Table 2. Age Distribution of the Respondents

Credit Beneficiaries			Non-Beneficiaries	
Age Range (yrs)	**Frequency**	**%**	**Frequency**	**%**
≤30	1	0.90	5	(4.7)
31-40	20	18.02	28	(26.2)
41-50	36	32.43	30	(28.0)
51-60	43	38.74	37	(34.6)
>60	11	9.91	7	(6.5)
Total	**111**	**100.0**	**107**	**(100.0)**
Mean		**50.0**		**47.0**

Source: Analysed tables from data generated from field

Sex Distribution

Table 3 shows the sex distribution of the respondents. The sex distribution of the respondents shows that the males dominated farmingoperation among the loan beneficiaries. It shows that about 92% of the males and about 8% ofthe females were involved in cassava production. Also, among the non- credit beneficiaries, the males accounted for about 83% while the females accounted for about 7%. This is an indication that males were more involved in cassava production because of the energy requirement in the operations. The study also shows that males have more access to credit are dominant in the sample. This finding confirmed that men tend to benefit more from agricultural innovations and interventions than women (Mohammed *et al*. 2009). However, Shaw (2004) had demonstrated that credit empowers women, promotes gender-equality and improves households' wellbeing.

Table 3. Sex Distribution of the Respondents

Sex	**Credit Beneficiaries**		**Non-Beneficiaries**	
	Frequency	**%**	**Frequency**	**%**
Male	102	91.9	89	83.2
Female	9	8.1	18	16.8
Total	**111**	**100.0**	**107**	**100.0**

Note: The figures in the brackets are the percentage values

Source: Analysed tables from data generated from field

Marital Status

The marital status of the respondents in Table 4 revealed that majority of the loan beneficiaries (81.1%) and (78.5%) non-beneficiaries were married respectively. The result agrees with Nasiru *et al*. (2006) findings that marriage is a labour asset source to agricultural productivity in the developing countries. It also indicates that the farmers involved in cassava farming were responsible people who generate money from cassava farming to cater for their families' numerous needs.

Educational Level

The educational level of the respondents' in Table 5 shows that majority of them were literate with about 85% of the credit beneficiaries and 82% of the non-beneficiaries having had formal education. The finding corresponded with Balogun *et al*. (2007), who stated that the average level ofeducation among farmers was secondary. Idiong *et al*. (2006) also revealed that education facilitates the acquisition and utilization of appropriate technologies. Muhammad-Lawal *et al*. (2006) stated that the level of education was expected to influence

ability to adopt agricultural innovations and make decisions.

Table 4. Distribution of Respondents According to Marital Status

Marital Status	Credit Beneficiaries		Non-Beneficiaries	
	Frequency	%	Frequency	%
Married	90	81.1	84	78.51
Single	6	5.4	10	9.34
Widows/widowers	13	11.7	12	11.22
Divorce	2	1.8	1	0.93
Total	**111**	**100**	**107**	**100**

Note: The figures in the brackets are the percentage values
Source: Field Survey, 2022

Table 5. Distribution of Respondents according to their Educational Level

Education Level	Beneficiaries		Non-Beneficiaries	
	Frequency	%	Frequency	%
No Formal education	17	15.32	19	17.76
Primary education.	27	24.32	28	26.17
Secondary education.	49	44.14	44	41.12
Tertiary education.	18	16.22	16	14.95
Total	**111**	**100.0**	**107**	**100.0**

Note: The figures in the brackets are the percentage values

Family Size

Table 6 presents the family size of respondents. The respondents maintained a small family with a mean family size of about 4 persons each for the credit beneficiaries and non- credit beneficiaries per household. The smallness in mean family size of the respondents is in contrast with the finding of Nwaru *et.al*. (2011), that farmers maintained large family size and concluded that large size of respondents seemed to encourage seeking knowledge about the availability of credit. It however confirmed our findings that the respondents were educated who know the economies of maintaining small family size through birth control.

Table 6. Family Size

	Credit Beneficiaries				Credit Beneficiaries			
Family size	**Frequency**	**%**			**Frequency**	**%**		
1-2	4	3.6			16	15.0		
3-4	54	48.7			52	48.6		
5-6	46	41.4			30	28.0		
>6	7	6.3			9	8.4		
Total	**111**	**100.0**	**4.0**	**1.5**	**107**	**100.0**	**3.7**	**2.1**

Source: Analysed tables from data generated from field

Extension Access

The result in Table 7shows the extension access of respondents that 80.2% and 95.3% of credit beneficiaries and non-beneficiaries respectively had no access to extension services. This could hinder the farmer's knowledge of adopting modern farming technologies.

Table 7. Extension Access

	Credit Beneficiaries'		Non-Beneficiaries	
Access	**Frequency**	**%**	**Frequency**	**%**
had no access	89	80.2	**102**	**95.3**
had access	22	19.8	**5**	**4.7**
Total	**111**	**100.0**	**107**	**100**

Source: Analysed tables from data generated from field

Farm Size

The farm size of the farmers in Table 8 shows that the credit beneficiaries cultivated larger hectarage (2.1ha) than the non-credit beneficiaries whose hectarage size of (0.8ha). This could be so considering the fact that the beneficiaries could have more financial empowerment to cultivate and maintain larger farm sizes

Table 8. Farm Size

	Credit Beneficiaries			Non-Beneficiaries		
Farm size	**Frequency**	**Mean**	**S.D**	**Frequency**	**Mean**	**S.D**
≤1 (8.1)	9 (8.1)			97 (90.7)		
1.1-2.0	89 (80.2)			10 (9.3)		
2.1-3.0	11(9.9)			-		
3.1-4.0	1 (0.9)			-		
4.1-5.0	1 (0.9)			-		
Total	**111 (100.0)**	**2.1**	**0.54**	**107 (100.0)**	**0.8**	**0.6**

Note: The figures in the brackets are the percentage values.

Source: Analyzed tables from data generated from field

Determinants of Profit in Cassava Production

The results of the four functional forms obtained are shown in the Table 9 for the beneficiaries and Table 10 for non-beneficiaries. Cobb-Douglas Production Function analysis, was used to ascertain the variables that determined the two groups of farmers' profit. In the Cobb-Douglas functional forms, the estimated coefficients of the explanatory variables are the direct elasticity of the dependent variable with which these variables are associated. The R^2 adjusted of 0.89 for the beneficiaries and 0.95 for the non-beneficiaries obtained, showed that the explanatory variables were able to explain 89% of the adjusted total variation in the dependent variable for the beneficiaries and 95% for the non-beneficiaries. This shows goodness of fit of the survey data with function used. The F-value of 104.31 and 226.01 obtained for the beneficiaries and non-beneficiaries respectively were highly significant at any level of probability, indicating that the joint effects of the explanatory variables on the dependent variable were significant. This also shows the goodness of fit of the overall model with the data used. The Durbin Watson statistic value of 1.78 and 2.02 obtained for the two group of farmers shows that the regression equation is not spurious, that is DW >R^2, this also indicate the absence of autocorrelation among the explanatory variables as supported by Oriola (2009).

All the variables except experience for the beneficiaries and operating expenses for the non- beneficiaries, contributed positively to the farmers profit in cassava production. The elasticity of production with respect to education, experience, farm size, planting materials, labour, herbicides, fixed cost and operation expenses are 0.002, -0.046, 1.107, 0.078, 0.061, 0.212, 0.034 and 0.009 for the beneficiaries and -0.017, 0.018, 1.080, 0.542, 0.028, 0.018, 0.052 and -0.027 respectively for the non-beneficiaries. Hence, 1% increase in the employment of these variables in cassava production will increase the profit accruing to the farmers, but for negatively signed coefficients, they will contribute negatively to their profit (Yazdani, 1995). Five of the variables, that is, farm size (1.107) planting materials (0.078), labour (0.061), herbicides used (0.212) and fixed cost (0.34) are the significant determinants of the beneficiaries' income $P<0.05$ for the non-beneficiaries, four (4) of the variables, that is farm size (1.080), planting materials (0.542), labour (0.028) and fixed cost (0.052) are significant at 5% level $P < 0.05$, thereby rejecting the null hypothesis that they are not significant determinants of the respondents profits which is in agreement with study of Ugbajah (2011). In order of importance, farm size (1.107) herbicides used (0.212), planting materials (0.078), labour used (0.061) and fixed cost (0.034) are the Important variables that determined the

beneficiaries' profit, while farm size (1.080), planting materials (0.542), fixed cost (0.052) and labour (0.028) are the important variables that determine the non-beneficiaries' net income.

Table 9. Regression Analysis of the Beneficiaries of micro credit

Variables	Linear Coefficient	Exponential Coefficient	Cobb-Douglas Coefficient	Semi Log Coefficient
Constant	93053.832	12.085**	9.776**	**-776457.131**
	(1.923)	(90.027)	(18.315)	**(294003.934)**
Education	2859.945**	-0.002	0.002	**7520.803**
	(2.674)	(0.723)	(0.189)	**(1.199)**
Experience	1030.014	0.001	-0.046	**-11142.220**
	(0.908)	(0.248)	(-1.358)	**(-0.599)**
Farm size	183248.227**	0.250**	1.107**	**867437.557**
	(10.312)	(5.082)	(7.846)	**(11.161)**
Planting materials	1.754	1.005	0.078**	**-3800.500**
	(0.487)	(100.42)	(2.161)	**(-0.191)**
Labour	24.370	0.000	0.061**	**20441.552**
	(0.220)	(1.088)	(2.681)	**(1.635)**
Herbicides	23040.873*	0.051**	0.212**	**-30611.662**
	(5.567)	(4.737)	(2.202)	**(-0.577)**
Fixed cost	0.665	7.990	0.034**	**31315.254**
	(1.567)	(0.679)	(2.009)	**(1.668)**
Operating exp.	0.006	5.742	0.009	**-11119.322**
	(0.064)	(0.226)	(0.216)	**(-0.484)**
R =	0.962	0.907	0.950	**0.952**
R^2 =	0.926	0.823	0.903	**0.906**
R^2 Adjusted =	0.920	0.807	0.894	**0.897**
F-Value =	140.999	52.128	104.312	**107.730**
S.E =	45193.344	12535.150	0.0928215	**51124.125**
D.W Statistics	**1.716**	**1.844**	**1.784**	**2.070**

***: Coefficients are significant at 5% level (P < 0.05)*

Note: The figures in brackets are the t-ratios

Source: Analysed tables from data generated from field

Table 10. Regression Analysis of the Non- beneficiaries of micro credit

Variables	Linear Coefficient	Exponential Coefficient	Cobb-Douglas Coefficient	Semi Log Coefficient
Constant	36556.292	11.279**	8.164**	**570430.973****
	(1.495)	(67.625)	(11.541)	**(3.489)**
Education	-389.720	-0.001	-0.017	**-2184.331**
	(-0.585)	(-0.280)	(1.209)	**(-1.333)**
Experience		0.003	0.018	**14566.1**
	997.293	(0.726)	(0.445)	**(1.580)**
Farm size	38188.608**	0.092	1.080**	**810040.217****
		(1.004)	(4.381)	**(14.212)**

Planting materials	217.399**	0.001**	0.542**	**-121378.433****
		(6.327)	(5.312)	**(-5.149)**
Labour	-48.844	0.000	0.028 **	**-10725.595**
		(0.453)	(0.949)	**(-1.578)**
Herbicides	1784.972	0.031	0.018	**-6207.945**
	(0.746)	(1.924)	(0.654)	**(-0.955)**
Fixed cost	0.072	1.120	0.052**	**9002.026**
	(0.772)	(1.752)	(2.681)	**(1.259)**
Operating exp.	0.024	-1.759	-0.027	**5610.065**
	(0.690)	(-0.751)	(-0.653)	**(0.590)**
R =	0.914	0.941	0.977	**0.974**
R^2 =	0.948	0.885	0.954	**0.949**
R^2 Adjusted =	0.943	0.874	0.950	**0.944**
F-Value =	197.312	82.762	226.008	**201.063**
S.E =	24547.430	16891.120	0.1061641	**24537.308**
D.W Statistics	**1.872**	**1.803**	**2.016**	**1.728**

***: Coefficients are significant at 5% level (P < 0.05)*

Note: The figures in brackets are the t-ratios

Source: Field Survey, 2022

Resources-use Efficiency Analysis

The results of the analysis are contained in Table 11 and 12. The Marginal Value Productivity analysis was used for the basis of determining resource-use efficiency in cassava production for the micro credit beneficiaries and non- beneficiaries. In this analysis, the ratio of Marginal Value Product (MVP_{Xi}) of each of the inputs used in cassava production and its market acquisition price (P_{Xi}) was computed. Resources is efficiently utilized if $MVP_{Xi} = P_{Xi}$ or $MVP_X / P_X = 1$. If $MVP_x/P_x > 1$, resource is underutilized and it is inefficiently utilized. If $MVP_X/P_X < 1$ resources is over utilized and hence it is inefficiently utilized if MVP_x.

If MVP < O, resources is grossly over utilized and it is highly inefficient.

Marginal Value Productivity Analysis for the Micro-credit Beneficiaries

For the beneficiaries shown in the Table 11, none of the resources examined was efficiently utilized because the ratios obtained were either less than unity or greater than unity. This result indicates that the resources were not efficiently utilized.

Table 11. Marginal Value Productivity Analysis for the Micro credit Beneficiaries

Variables	Ep(bi)	APP_{xi}	MPP_{xi}	P_y	MVP_{xi} / $(MPP_{xi}.P_y)$	P_{xi}	MVP_{xi} / P_{xi}	Decision
Farm land	1.107	16.20	17.23	23.86	427. 81	16, 473.62	0.03	Over utilized
Planting Materials	0.078	31.21	2.43	23.86	57.98	8.99	6.45	Underutilized
Labour	0.061	420	0.26	23.86	6.20	914.34	0.01	Over utilized
Herbicides(liter)	0.212	68.22	14.46	23.86	345.02	944.45	0.37	Over utilized

Source: Analysed tables from data generated from field

Marginal Value Productivity Analysis for the Non-beneficiaries

The resources efficiency analysis for non-beneficiaries reveals that only one of the resources examined was efficiently utilized that is herbicides used because the ratio obtained for this resource is approximately, unity. The other resources employed were either less than unity or greater than unity implying that they were either over utilized or underutilized corroborated by study of Smith (2007).

Table 12. Marginal Value Productivity Analysis for the non-beneficiaries

Variables	E_p(bi)	App$_{xi}$	Mpp$_{xi}$	P$_y$	MVP$_{xi}$ (MPP$_{xi}$.P$_y$)	P$_{xi}$	MVP$_{xi}$ / P$_{xi}$	Decision
Farm land	1.080	13.74	14.84	23. 25	345.03	22, 453. 25	0.02	Over utilized
Planting Materials	0.542	30.09	16.31	23.25	379.21	9.39	40.38	Underutilized
Labour	1.080	3.19	0.09	23.25	2.09	911.82	0.002	Over utilized
Herbicides(litrs)	0.654	65.00	42.51	23.25	988.86	1005.03	0.98	Efficient
Fixed Cost	0.052	9.45	0.49	23.28	11.39	2.46.	4.63	Underutilized

Source: Analysed tables from data generated from field

Production Constraints in Cassava Production

Table 13 shows the rating of production constraints by respondents. There were some production constraints that prevented the farmers from achieving maximum returns from the enterprise and hence, achieving efficiency in the resources utilized was hampered. The Table 13 has revealed that for the beneficiaries and in order of seriousness, the identified constraints were: Transportation problems (=2.55), land scarcity (= 2.48), loan not granted on time (= 2.35), smallness of amount granted (=2.31) and high cost of labour (=2.12). For the non-beneficiaries, the serious constraints identified by them were: lack of access to micro credit (=2.98), lack of capital (=2.92), transportation (=2.64), land scarcity (=2.51) and high cost of Labour (=2.28). The other constraints did not pose serious problem to the micro credit beneficiaries and non-beneficiaries in the study area. This finding is consistent with the studies of Rahji and Adeoti (2011) and Richard and Wambua (2015).

Table 13. Rating of Production Constraints by respondent

Identified constraints By the respondents	Beneficiaries		No beneficiaries	
	Mean score	S.D.	Mean	S.D.
Transportation problem	2.55*	0.52	2.64*	**0.48**
Land Scarcity	2.48*	0.87	2.51*	**0.84**
Late timing of loan granted	2.35*	0.57	1.00	**0.00**
Smallness of loan granted	2.31*	0.64	1.00	**0.00**
High cost of labour	2.12*	0.32	2.28*	**0.47**
Stringent repayment terms	1.98	0.65	1.04	**0.27**
Lack of capital	1.82	0.49	2.92*	**0.31**
Poor sales	1.37	0.48	1.44	**0.50**
Exploitation by middlemen	1.21	0.41	1.26	**0.44**
Lack of microfinance access	**1.15**	**0.45**	**2.98***	**0.19**

** Serious constraints*

Source: Analysed tables from data generated from field

4. CONCLUSION

It could be concluded from the study that access of micro credit could offer more opportunities to farmers in terms of higher profit, expansion of farm holding, reduction of risks and enjoyment of economies of large-scale production with the associated benefits of reductionin the cost of operations and increase in returns.

The important findings from the study include:

a. All the socioeconomic variables examined had positive relationship with revenue generations from cassava production by the two

groups of farmers.

b. All the variables except experience had positive contribution to the credit beneficiaries' profit with five of the seven variables examined had significant contributions. Among the non-beneficiaries, all the variables except education and operating expenses had positive contribution to the profit earned with three of the seven variables found to be significant.
c. All the resource inputs were not efficiently utilized in cassava production by the credit beneficiaries, while for the non-beneficiaries, only herbicides were efficiently utilized.
d. The serious constraints facing the credit beneficiaries were: transportation, land scarcity, lateness of the timing of the loan granted, smallness of the amount granted and labour scarcity, while for the non-beneficiaries' lack of access to credit, shortage of capital, transportation, land and labour scarcity were the serious production constraints facing them.

Arising from the findings, the following recommendations are made:

a. Farmers should avail themselves of credit facilities in their farming business so as to be able to expand their holdings and hence be able to graduate from small scale to large scale farming.
b. Deliberate efforts should be made by the relevant authorities to release cultivatable land from land mongers and made available to the willing farmers. This can solve the problemof land scarcity which is presently facing the farmers.
c. Farming communities should be transformed with the provision of basic amenities such as good motorable roads, water, electricity, schools and hospital. This will make transportto be available at reduced cost and make the youths to reside in their rural communities and offer their services in farming business.

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Author Contributions

Ismaila, M.O.: Conceptualization, methodology, data collection, formal analysis, writing – original draft preparation. Akanbi, O. M.: Data validation, writing – review and editing. Fakayode, S.B.: Supervision, project administration, writing – review and editing. All authors read and review the final manuscript.

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Conflict of interest

The authors declare that they have no conflicts of interest, competing financial interests or personal relationships that could have influenced the work reported in this paper.

Ethical approval

Ethical approval was not required for this study as it did not involve animals, or plants requiring ethical clearance. The study was based solely on survey interviews with farmers regarding their agricultural practices and credit access.

Informed consent

Informed consent was obtained verbally from all participating farmers after explaining the purpose of the study. Participation was voluntary, and respondents were assured of confidentiality and the right to withdraw at any time.

Data availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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