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EFFECT OF LOAN UTILIZATION ON OUTPUT OF CASSAVA FARMERS IN IMO STATE, NIGERIA

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ABSTRACT

The study analyzed the effect of loan utilization on the output of cassava farmers in Imo State, Nigeria. Specifically, it identified the sources of loans available to farmers, estimated the extent of agricultural loan utilization by cassava farmers, determined the effect of socio-economic factors on loan utilization among the cassava farmers, and determined the relationship between loan utilization and cassava output in the area. Multistage random sampling technique was utilized in selecting two hundred and twenty-eight cassava farmers used for the study. Data were obtained with the aid of a structured interview schedule and analyzed with the aid of descriptive and inferential statistics, such as percentage, mean, student t-test, and multiple regression model. The results showed that the predominant source of loans among respondents was farmers' cooperatives (41.3%). Multiple regression analysis revealed that annual income, farm output, and membership of cooperatives with coefficients -1.794, 0.003, and -0.302 respectively, were significant factors that influenced farmers' loan utilization. The findings revealed that there was a significant difference between the output of farmers who fully utilized the loan and those who partially utilized the loan, with $t = -18.43$, $p<0.01$. The study recommended that efforts be made to make farmers benefit from formal agricultural loans, while credit institutions should set up supervisory agencies that would monitor farmers' activities to ensure effective and judicious utilization of such loans.

Keywords: *Small scale, Loan utilization, cassava farmers, output, Imo State.*

INTRODUCTION

Sustainable agricultural productivity is essential for food security and livelihood sustenance, especially among rural farmers in developing economies like Nigeria. According to Dokua (2020), about 87% of rural dwellers engage in agriculture. Olayide (2020) reported that agricultural production in the country has witnessed a drastic decline in productivity. He further stated that this could be due to a low level of loan acquisition, lack of credit, lack of adoption of new technology, and land fragmentation among other constraints to agricultural development. Recently, due to the current decline in the world oil market, price, and economic downturn, which has also affected the oil sector in Nigeria, there is a realization of the importance of the agricultural sector to get its former pride of place. There is a need for efficient loan utilization for sustainable crop production, especially cassava.

Cassava (*Manihot esculentus*) is a perennial and vegetatively propagated shrub and one of the most important food crops grown in Imo state, Nigeria. Cassava is produced largely by small-scale farmers using rudimentary farm implements. Most of the cassava produced is used for human consumption with less than 5% used in industries. Cassava per capita consumption is very high and provides about 80% of the total energy intake of many Nigerians (Adeniji *et al.,* 2010). Cassava has the potential to improve nutrition, boost food security, foster rural development, and sustain land mass (Okonkwo, 2019). These important roles played by cassava production make imperative the need for financial assistance for cassava farmers in order to raise their production level.

It is impossible to overstate the impact of sufficient agricultural loans on agricultural operations. Agricultural loans are thought of as a catalyst that releases unused capacity and stimulates other production-related factors (Otunaiya, 2018). Thus, agricultural loan plays an important role in agricultural and rural development as they enable farmers to reap economies of scale, venture into new fields of production, employ new technologies, and empower them to provide utilities for a widening market. The rural poor in developing nations have not responded well to attempts over the years to provide them with formal credit and financial services (Ijaiya, 2019). Commercial banks generally do not serve the needs of rural farmers because of the perceived high risk and the high transaction costs associated with loans and saving deposits. Informal sources remain the leading provider of agricultural credit in Nigeria. According to research, less than 2% of Nigeria's rural residents have access to official financial institutions for credit (Ijere, 2020). Furthermore, farmers relied on loans from informal sources with cooperative societies being the most popular source (Olayide, 2020).

In recent times, the government and some financial institutions have implemented various agricultural loan schemes to help farmers access credit. This is because many farmers struggle to obtain loans to invest in their farms, purchase equipment, and improve their production. This lack of access to credit hinders the growth of the agricultural sector, and ultimately, the overall development of Nigeria (Nwosu, 2022). He further reported that some of the current agricultural loan schemes are: the Anchor Borrowers' Programme, Bank of Industry (BOI) Agricultural Loans, Central Bank of Nigeria (CBN) Agricultural Credit Guarantee Scheme Fund (ACGSF), Nigeria Incentive-Based Risk Sharing System for Agricultural Lending (NIRSAL), Bank of Agriculture (BOA)

and Commercial Agriculture Credit Scheme (CACS). In farming business, provision of credit is not enough but efficient use of such credit is an essential factor in order to increase productivity. Farmers are usually accused of diverting credits to non-agricultural businesses. This study analyzed the effects of loan utilization on the output of small-scale cassava farmers' in Imo State, Nigeria. Specifically, the study identified various sources of loans available to the farmers in the study area; estimated the extent of agricultural loan utilization by the cassava farmers; determined the effects of socio-economic factors on loan utilization among the cassava farmers; and determined the relationship between loan utilization and cassava output.

METHODOLOGY

The study was conducted in Imo State, Nigeria. It is one of the states in the southeast zone of the country. Agriculture is the major occupation of the people and the major arable crops cultivated in this area include yam, cassava, cocoyam, maize, and vegetables (NARLS, 2020). Small-scale cassava production and marketing are some of the popular businesses in the state. The state is divided into three Agricultural Zones namely: Okigwe, Orlu, and Owerri zones.

Multistage random sampling technique was used for the study. Two blocks were randomly selected in each of the three agricultural zones, two circles were randomly selected. Nineteen cassava farmers were randomly selected from each selected circle. This gave a sample size of two hundred and twenty-eight (228) respondents. Data were obtained with the aid of a structured interview schedule and analyzed with descriptive and inferential statistics such as percentage, mean, student t-test, and multiple regression. Multiple regression was used to determine the effects of socioeconomic variables on loan utilization.

The multiple regression was implicitly expressed as follows:

$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, U_i)$

Where,

Y = Loan utilized, measured as the ratio of the amount of credit obtained to the amount of credit utilized in cassava production.

X_1 = Age (years)

X_2 = Household size (number)

X_3 = Educational level (years)

X_4 = Cassava farm size (hectares)

X_5 = Cassava farming experience (years)

X_6 = Membership of cooperatives (member = 1, non member = 0)

X_7 = Farm income (naira)

X_8 = Farm output (kg)

U_i =Error term

A priori, it was expected that $b_2, b_3, b_4, b_5, b_6, b_7, b_8 > 0$, while $b_1 < 0$. Different functional forms (linear, semi-log, double-log, and exponential) were tried and the Linear function was chosen as the lead equation, based on the highest value of the coefficient of multiple determination (R^2), and more significant variables. The coefficient of determination (R^2) was 0.531which indicated that 53.1% of the variation in loan utilization was accounted for by socio-economic characteristics of

respondents while the remaining 46.9% was accounted for by factors that were not included in the study. The F-value (10.062) is significant at 1%, which shows that the linear regression model fits the data. This implies that the socio-economic characteristics of respondents influenced loan utilization.

Student t-test was used to test for a significant relationship between loan utilization and output of cassava. It was expressed as follows:

$$t = \frac{\overline{x}_1 - \overline{x}_2}{\sqrt{\frac{S^2_1}{n_1} + \frac{S^2_2}{n_2}}}$$

Where,

t = Student t-test, x_1 = Mean loan utilized (naira), x_2 = Mean output (kg), S_1 and S_2 = Standard deviations of the two samples, n_1 and n_2 = Sizes of the two samples.

RESULTS AND DISCUSSION

Sources of Loans available to farmers

From the results in Table 1, most of the respondents got loans from farmer cooperates (41.3%), while 1.6% got from commercial banks. This showed that the major source of loans among the respondents was farmer cooperatives, which is a non-institutional source of loans. The high patronage of farmer cooperatives could be attributed to the fact that loans from non-institutional sources are devoid of administrative delays and have lower interest rates. This makes it easier to access agricultural loans from farmer cooperatives (informal) when compared with financial institutions (formal).

Table 1: Distribution of respondents according to sources of loan

Source of Loan	Frequency	Percentage*
Friends	70	29.2
Relations	78	32.5
Traders	35	14.6
Private money lender	25	10.4
Farmers cooperatives	99	41.3
Produce buyers	23	9.6
Lending agency	5	2.1
Commercial banks	4	1.6

Source: Field Survey, 2022 *Multiple responses

Low patronage of commercial banks may be due to inadequate awareness of the existence of formal agricultural loan institutions among the respondents. At times farmers receive approval for loans applied for months after the planting season has expired. This finding agrees with Ugumba and Omojola (2018), that low patronage of banks could be attributed to delays in the approval of loans, disbursement, and insistence on collaterals.

Distribution of respondents according to extent of loan utilization from 2018 to 2021

Table 2 shows the breakdown of loan utilization among cassava farmers. The findings indicated that out of a total of N16,357,000.00 acquired, N11,943,000.00 was utilized, giving 73% of utilization, with an average amount of N239,587.20 utilized by each respondent for farm activities such as buying fertilizer, planting materials, hiring of a tractor, hiring of labour, transportation of farm tools/or equipment and produce, buying of herbicides and insecticides.

Table 2: Distribution of respondents according to extent of loan utilization

Loan application	No of loan applicant	Total amount acquired (N)	Total amount utilized (N)	% utilization	Average amount utilized (N)
≤100,000	102	3,366,000.00	2,632,000.00	78.19	25,803.22
100,000-200,000	115	11,535,000.00	8,321,000.00	72.14	72,355.41
>200,000	7	1,456,000.00	990,000.00	67.99	141,428.57
Total	224	16,357,000.00	11,943,000.00	72.77	239,587.20

Source: Data analysis, 2022

Socio-economic determinants of loan utilization

Table 3 shows multiple regression of socio-economic factors influencing loan utilization. From the result, coefficients of annual income, farm output, and membership of cooperatives, significantly influenced farmers' loan utilization. The coefficient of farm income was -1.794 and significant at the 1% level. This implied that loan utilization decreases with increasing farm income. It shows that farmers whose farm income increases while their loan utilization decreases are probably those with large household sizes. Indicating that, to meet the increasing needs of their households such as school fees, food, clothing, shelter, and hospital bills, they divert some of the money for farming to offset these bills, thereby affecting their loan utilization. This is consistent with Mohammed's (2021) analysis, which found that farmers with large households typically use loans for family maintenance and sustenance.

The coefficient of farm output was 0.003 and significant at a 1% level. This indicated that farm output had a significant and positive influence on small-scale cassava farmers' loan utilization. This implied that loan utilization increases with increasing farm output. An increase in farm output implies the expansion of farm business which means that the farmers will need more resources for the expanded farm business, which can be met by utilizing the loan acquired. This is in line with the report of Ikani and Ayegba (2018) that, the utilization of loans for agricultural purposes promotes productivity, improves food security, and consequently improves the standard of living of the cassava farmers. The coefficient of membership in cooperative society was -0.302 and significant at the 10% level. This shows that loan utilization decreases with increasing membership in a cooperative society.

Table 3: Multiple regression of socio-economic factors affecting loan utilization

Variable	Linear†	Semi-log	Double-log	Exponential
Age	-001(0.823)NS	0.332(0.724)NS	0.024(0.750)NS	-0.002(0.344)NS
Household size	0.028(0.283)NS	0.048(0.768)NS	-0.043(0.361)NS	-0.002(0.737)NS
Education	0.003(0.732)NS	-0.060(0.725)	-0.03(0.728)NS	0.002(0.382)NS
Farm size	-0.207(0.177)NS	-0.751(0.236)NS	-0.074(0.307)NS	-0.018(0.424)NS
Farming experience	0.007(0.358)NS	-0.085(0.645)NS	0.004(0.843)NS	0.003(0.128)NS
Membership of cooperative	-0.302(0.079)*	-0.348(0.621)NS	0.001(0.871)NS	-0.013(0.292)NS
Farm income	-1.794E(0.000)***	-6.021E(0.000)***	-0.389E(0.000)***	-1.873E(0.007)***
Farm output	0.003(0,000) ***	5.827(0.000) ***	0.572(0.000) ***	0.000(0.000) ***
Constant	1.161(0.000) ***	10.566(0.002) ***	1.208(0.002) ***	0.308(0.000) ***
Standard error	0.48713	0.61501	0.07268	0.06255
R^2	0.531	0.270	0.282	0.456
R^2	47.3	19.3	20.3	39,8
F-statistic	10.062***	3.344***	3.476***	7.650***
No. of observations	228	228	228	228
Degrees of freedom	13	13	13	13

Source: Data Analysis, 2022, ***Significant at 1% (α 0.01), **Significant at 5% (α 0.05), *Significant at 10% (α 0.1), NS = Not Significant, † = Lead equation.

Relationship between loan utilization and farmer's output

Table 4 shows the relationship between loan utilization and farmer's output. The finding revealed that loan utilization significantly influenced the yield of the cassava farmers. The average loan utilized by respondents was N239,587.20 with an average yield of 28.60t/ha.

Table 4: Relationship between loan utilization and farm output

Loan application	No. of the loan applicant	Total yield (t/ha)	Average loan utilized (N)	Average yield (t/ha)
≤100,000	102	836.40	25,803.22	8.20
100,000- 200,000	115	1,207.50	72,355.41	10.50
>200,000	7	69.30	141,428.57	9.90
Total	224	2,113.20	239,587.20	28.60

Source: Field Survey, 2022

Statistical difference between loan utilization and farmers' output

Table 5 shows the test of the statistical difference between loan utilization and farmers' output. From the results, there was a relationship between loan utilization and farmers' output ($t = -18.44$, $p < 0.01$), hence, the hypothesis that there was no significant difference between loan utilization and farmers' output was rejected. The negative sign indicated that loan utilization by cassava farmers was inversely related to their farm output. This indicated that farmers whose farm output decreased as their loan utilization increased were those whose soil fertility was poor. The poor fertility of their cassava farms was not commensurate with the input(s) utilized, which translates to low yield. This agrees with FMARD (2019) that loan utilization was inversely related to farm output.

Table 5**: Student t-test of the relationship between loan utilization and farmers' output**

Variable	Mean	Std. Deviation	Std. Error Mean	t-value	Df	Sig.(2 – tailed)
Pair 1: Loan utilization – Farm output	-1967.28426	1225.58271	106.57143	-18.428	13	0.000***

Source: Data Analysis, 2022. *** Significant at 1%

CONCLUSION

The study has shown that loan utilization significantly influenced the yield of cassava farmers. The study, therefore, recommended that credit institutions should set up supervisory agencies that would monitor farming activities in order to ensure the effective utilization of loans.

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