Journal of Agripreneurship and Sustainable Development (JASD)
Volume 4, Number 1, March, 2021
ISSN (Print): 2651-6144; ISSN (Online): 2651-6365

EFFECT OF CREDIT UTILIZATION ON THE PRODUCTIVITY OF SMALL-SCALE COWPEA FARMERS IN SELECTED LOCAL GOVERNMENT AREAS OF NIGER STATE, NIGERIA

[1]Salisu, J., [2]Tanko, L., [3]Adewumi, A., 4Yisa, F. and [2]Omobaba, Y. R.
[1]Department of Agricultural Extension and Management,
Niger State College of Agriculture Mokwa, Niger State, Nigeria
[2]Department of Agricultural Economics and Farm Management,
Federal University of Technology, Minna, Niger State, Nigeria
[3]Department of Agricultural Extension and Management,
Federal College of Freshwater Fisheries Technology, New Bussa, Niger State, Nigeria
[4]Department of Agricultural Economics and Rural Sociology,
Ahmadu Bello University, Zaria, Kaduna State, Nigeria
Corresponding Author's E-mail: adewumiadeoluwa@gmail.com **Tel.:** 07063155051

ABSTRACT
Small-scale farmers use their meagre household resource to finance their agricultural production. The study investigated the effects of credit utilization on the productivity of smallscale cowpea farmers in the selected Local Government Areas in Niger State, Nigeria. Data were obtained from 212 respondents comprising of 98 credit and 114 non-credit users through the administering of questionnaire. Data were analysed using descriptive statistics, Ordinary Least Squares (OLS) regression, Data Envelopment Analysis (DEA) and Additive Multiplication Dummy Variable Approach (AMDVA) The study found that access to credit, farm size and distance to farm were the significant factors affecting the farmers' productivity. Results specifically revealed that access to the credit had a significant effect on the productivity of the cowpea farmers at $P \leq 0.01$ probability level. Late disbursement and unavailability of bank in the communities were found to be major problems limiting farmers' access to credit. The study recommended sufficient availability of credit facilities to the farmers through government interventions to enhance farmers' incomes and productivity, and also, farmers should be encouraged to form co-operative societies so as to enable them have access to credit facilities from formal lending institutions.

Keywords: Credit utilization, Productivity, Small-scale farmers, Niger State.

INTRODUCTION
Agriculture plays a significant role in the growth of Nigeria's economy especially, as it contributes over 24.1% of the nation's Gross Domestic Product (GDP), offers 66% employment to her populace, accounts for 50% of the sources of raw materials required by industries for further production, provides 80% food for man and market for other industrial goods as well as export earnings (National Bureau of Statistics (NBS, 2017). Despite these, agricultural production in Nigeria is subsistence, as a result of low utilization of modern inputs by farmers, unavailability and inaccessibility of farm land as well as low mechanized nature of the prevailing agricultural production system. Therefore, to improve the national economy, farmers should be supported to expand their scale of production through financial resource, such as credit (Akpokpodje and Olomola, 2000). Okuruti *et al.* (2004) affirmed that associated with mechanization and acquisition of agricultural inputs is the issue of credit without which the envisaged agricultural production and development will be a mirage. Inadequate access to credit by the smallholder farmers has been identified as one of the contributing factors to

Journal of Agripreneurship and Sustainable Development (JASD)
Volume 4, Number 1, March, 2021
ISSN (Print): 2651-6144; ISSN (Online): 2651-6365

poverty. Credit allows farmers to satisfy their cash needs induced by the production cycle which characterizes agricultural production.

Credit supply to farmers is widely perceived as an effective strategy for enhancing increase in agricultural productivity and transformation of rural economy (Philip *et al.*, 2009). According to Mahood *et al.* (2009), the introduction of easy access and low interest rate credit is the quickest way for boosting agricultural production. The argument is that the agricultural sector depends more on credit than any other sector of the economy because of the seasonal variation in the farmer's returns and requirement in transformation of subsistence to commercial farming. The provision of credit as noted by Rosemary (2001) has increasingly been regarded as an important tool for raising the income of the rural populace, mainly by mobilizing resources to more productive uses.

Cowpea is an important major staple food crop in sub-Sahara Africa, especially in Nigeria. The seeds are major source of plant protein and vitamins to man and feed for animals. The young leaves and immature pods are eaten as vegetables. The sale of cowpea seeds and fodder earns income to the farmers. In Nigeria, farmers who cut and store cowpea fodder for sale at the peak of dry season have been found to obtain as much as 25% of their annual income by this means. Cowpea also plays an important role in providing nitrogen to the soil when included in crop rotation system (Okenmadewa, 2009). In Nigeria, the greatest production comes from northern region with about1.7million tonnes. This represents over 60% of total production. The producing areas are Niger, Kano, Sokoto, Kaduna, Zamfara and Gombe State. Despite that cowpea yield is very low, grain yield range between 100-300kg/ha. This is due to several constraints such as weather, parasitic weeds, insect-pests and diseases (Olomola, 2009).

In Niger State, cowpea production is rain fed, usually planted between the months of April-May for early variety and July-August for late variety. It is worth noting that cowpea production is dominated by small scale producers in the state who employ traditional practices and inadequate techniques with resultant negligible outputs and low supply of commodity despite its high demand (Andrew, 2012). Low production efficiency and inaccessibility of credit have been implicated as some of the culprits leading to low outputs. Against this backdrop this study was undertaken to describe the socio-economic characteristics of small scale cowpea farmers, identify the various sources of credit available to small scale cowpea farmers, analyse the effect of credit on small scale cowpea production, estimate the relative technical efficiency in cowpea production of credit beneficiaries and non-beneficiaries and identify the problems limiting small scale cowpea farmer's access to credit in the study area.

MATERIALS AND METHODS

The Study Area

The study was carried out in selected Local Government Areas (LGAs) in Niger State, Nigeria. The State is located between Latitudes 8°22′N and 11°30′N and Longitudes 3°30′E and 7°20′E. The State occupies a land mass of 74,244km^2 which is about 8% of the country's total land area (Niger State Geographic Information System [NIGIS], 2007) and accommodating over 3,950,249 inhabitants (National Population Commission [NPC], 2006). Going by the population growth rate in Nigeria of 3.2% (World Bank, 2013), the population of the State was projected to 5,056,321 as at 2019. The main occupation of the people of the State is farming which is the bedrock of her economy, employing over 80% of the total population in the State. It is endowed with one of the most fertile soils in the country capable of producing most of the staple crops available, producing natural and rich vegetation for grazing, production of fishery and forestry, and all at large scales.

Journal of Agripreneurship and Sustainable Development (JASD)
Volume 4, Number 1, March, 2021
ISSN (Print): 2651-6144; ISSN (Online): 2651-6365

Sampling Techniques

A multi-stage sampling procedure was used to sample the farmers. The first stage involved selection of two LGAs in Niger State, Agaie and Lapai LGAs. The LGAs were selected purposively because of their high involvement in cowpea production. In the second stage, two (2) villages were randomly selected from each of the LGAs giving a total of four (4) villages. The third stage of the sampling involved selection of farmers using the proportionate allocation technique following Nwaru (2003). A total of 98 credit beneficiaries and 114 non-beneficiaries were selected giving a total of 212 respondents. A summary of the sampling procedure is presented in Table 1. The formula is given in equation (1):

$S_c = (n*N_c)/NT$ …(1)

where;

S_c = number of small-scale cowpea farmers selected from the communities;
n = number of sampled farmers in each of the community;
N_c = total number of cowpea farmers in the community;
NT = sum of cowpea farmers in the communities.

Table1: Sampling Design for the Study

LGAs	Villages	Sampling frame (credit users)	Sample size	Sampling frame (non-credit users)	Sample size
Agaie	Zago	280	26	299	29
	Fogbe	260	24	287	28
Lapai	Kpada	259	24	290	27
	Gulu	257	24	279	28
Total		**1,056**	**98**	**1,155**	**114**

Source: Field survey (2019)

Analytical Techniques

Data were collected using structured questionnaire and analysed using descriptive statistics, Ordinary Least Squares (OLS) and Data Envelopment Analysis (DEA) model with the aid of Additive Multiplication Dummy Variable Approach (AMDVA). The AMDVA was used to analyse the relative technical efficiency of credit beneficiaries and non-beneficiaries. Following Baggi (2003), Nwaru (2003) and Ihere (2006), the log-linear Cobb-Douglas production functional form used is specified in equation (2):

$\ln Y = \ln A_0 + \beta_0 \ln D + A_1 \ln X_1 + \beta_1 D \ln X_1 + \ldots + A_6 \ln X_6 + \beta_6 D \ln X_6 + e$ …(2)

where;

Y = output of cowpea (kg);
ln = natural logarithm;
A_0 = intercept or constant term;
β_0 = coefficient of the intercept shift dummy or neutral technical efficiency parameter;
D = dummy variable which takes the value of unity (1) for beneficiaries and zero for non-beneficiaries;
X_1 = farm size (hectare);
X_2 = labour (man-day);
X_3 = fertilizer (kg);
X_4 = agrochemical (litres);

Journal of Agripreneurship and Sustainable Development (JASD)
Volume 4, Number 1, March, 2021
ISSN (Print): 2651-6144; ISSN (Online): 2651-6365

X_5 = cowpea seed (kg);
X_6 = capital inputs (depreciation of hoes, cutlasses, knapsack sprayers, rent on land, interest payment on borrowed capital (₦);
X_1D, X_2D, X_3D, X_4D, X_5D and X_6D = slope shift dummies for farm size, labour, fertilizer, agrochemical, cowpea seed and capital inputs, respectively;
Ai (i = 1, 2…,6) are the coefficients of the i^{th} variable;
e = stochastic error term assumed to satisfy all the assumption of the classical linear regression model.

Previous studies that adopted the AMDVA to measure relative technical efficiency adopted the Cobb-Douglas production function only on the premise that it fits production data best. However, in this study, the data were fitted to other functional forms and the equation of "best fit" was chosen for further discussion. The choice of the lead equation was based on the normal economic, econometric and statistical criteria. The other functional forms fitted to the data in addition to the Cobb-Douglas, include the Linear, Exponential and Semi-log functional forms specified explicitly in equations (3), (4) and (5):

Linear: $Y = A_0 + \beta_0 D + A_1X_1 + \beta_1 DX_1 + \ldots + A_6X_6 + \beta_6 DX_6 + e$ …(3)
Exponential: $\ln Y = A_0 + \beta_0 D + A_1X_1 + \beta_1 DX_1 + \ldots + A_6X_6 + \beta_6 DX_6 + e$ …(4)
Semi-log: $Y = \ln A_0 + \beta_0 \ln D + A_1 \ln X_1 + \beta_1 D \ln X_1 + \ldots + A_6 \ln X_6 + \beta_6 D \ln X_6 + e$ …(5)
where; all variables are as previously defined and ln = natural logarithm.

In setting the decision criteria, if the coefficient of the Dummy variable, D (in additive form) is significant, it means that there is a difference in the technical efficiency of the farmer groups. If it is positive, it implies that the production function for cowpea farmer groups with credit denoted as unity has larger intercept term denoting a higher level of technical efficiency than the group denoted as zero and vice versa. If $\beta_0 = 0$ and $\beta_1 (I = 2, 3\ldots,6) = 0$, then, the two farmer groups are represented by the same production function. If $\beta_i = 0$ but $\beta_0 \neq 0$, the two groups of farmers are facing factor biased or non-neutral production function. If at least one βí ≠ 0, the two groups of farmers are facing factor biased or non-neutral production function (Onyenweaku, 1994).

Data Envelopment analysis (DEA) was used to determine the technical efficiency of the cowpea farmers. Technical efficiency was measured using mathematical programming model *adopted from Ojo, M. A. and Ojo, A. O. (2015)* as specified in equations (6) and (7):

$$\text{Max TE} = \frac{\sum_{r=1}^{s} \alpha_r Y_{ro}}{\sum_{r=1}^{m} \beta_i X_{i0}} = \frac{q}{q^*} \quad \ldots(6)$$

Subject to:

$$\frac{\sum_{r=1}^{s} \alpha_r Y_{rj}}{\sum_{r=1}^{m} \beta_i X_{ij}} \leq 1,\ j = 1,\ldots\ldots,\ n \quad \ldots(7)$$

$\alpha_r, \beta_i \geq 0$; r = 1, -----, s; i = 1, …., m
where;
X_{ij} and Y_{ij}, respectively, are quantities of the i^{th} input and r^{th} output of the j^{th} firm and $\alpha_r, \beta_i \geq 0$ are the variable weights to be determined by the solution to this problem
where;
Y_{rj} = *cowpea output (kg);*
X_1= farm size (hectare);

Journal of Agripreneurship and Sustainable Development (JASD)
Volume 4, Number 1, March, 2021
ISSN (Print): 2651-6144; ISSN (Online): 2651-6365

X_2 = labour (man-days);
X_3 = fertilizer (kg);
X_4 = agrochemical (litres);
X_5 =cowpea seed (kg); and
X_6 = capital inputs (depreciation of hoes, cutlass, Knapsack sprayers, rent on land, interest payment on borrowed capital (₦).

The data were analysed using input-oriented Data Envelopment Analysis for both the Constant Return to Scale (CRTS) and Variable Returns to Scale (VRTS). Many studies have decomposed the Technical Efficiency (TE) scores obtained from a Constant Return to Scale (CRTS) DEA in to two components, one due to scale inefficiency and the other due to 'pure' technical efficiency. This may be done by conducting both (CRTS) and Variable Returns to Scale (VRTS) DEA upon the same data. If there is difference in both the (TE) score for a particular Decision-Making Unit (DMU), then it indicates that the DMU has Scale inefficiency (SE). The scale inefficiency was calculated from the difference between the VRTS TE score and the CRTS TE score in equations (8) and (9):

$TEi_{CRTS} = TE_{iVRTS} \times SEi$ …(8)

$SEi = TE_{iVRTS} - TEi_{CRTS}$ …(9)

A decision-making unit is said to be scale efficient if it operates under CRTS. In this study, scale efficiency score was used as proxy for productivity. In order to identify factors influencing resource productivity of respondents, the predicted efficiency score from the DEA model was regressed against farmers-specific variables believed to affect their levels of productivity.

The model is specified implicitly in equation (10) as:

$SE = F(Z)$ ...(10)

where;

SE = scale efficiency for the i^{th} cowpea farmer and Z is a factor of the determinants of efficiency among which is credit status of the beneficiary. The model is explicitly specified equation (11) as:

$SE_i = \delta_0 + \delta_1 Z_{1i} + \delta_2 Z_{2i} + \delta_3 Z_{3i} + \delta_4 Z_{4i} + \delta_5 Z_{5i} + \delta_6 Z_{6i} + \delta_7 Z_{7i} + \ldots + \delta_{12} Z_{12i}$ ...(11)

where;

SE_i = as previously defined (Proxy for productivity of the i^{th} cowpea farmer);
Z_{1i} = Gender of the i^{th} farmer (Male = 1, Female = 0);
Z_{2i} = Experience in credit acquisition (years);
Z_{3i} = Level of involvement in the enterprise (Full time = 1, Part time = 0);
Z_{4i} = Active household size of the i^{th} farmer (No. of the persons available for farm work);
Z_{5i} = Education (No. of years of formal schooling);
Z_{6i} = Membership of Co-operative of i^{th} farmer (If respondent is member=1, otherwise=0);
Z_{7i} = Age of i^{th} farmer (years);
Z_{8i} = Extension contact (Accessed = 1, otherwise = 0);
Z_{9i} = Credit access (amount received as credit in Naira);
Z_{10i} = Farm size allocated to cowpea crop by i^{th} farmer in (hectares);
Z_{11i} = Marital status (Dummy variable whereby Married= 1, others = 0);
Z_{12i} = Distance to farm from home (km);
δ_o = Constant term;
δ_1-δ_{12} = Unknown scale parameter estimated.

Journal of Agripreneurship and Sustainable Development (JASD)
Volume 4, Number 1, March, 2021
ISSN (Print): 2651-6144; ISSN (Online): 2651-6365

RESULTS AND DISCUSSION

Credit Beneficiaries Sources of Funds

Results in Table 2 shows that 50% of credit users sourced their funds to finance their farm operations through relatives and friends which ranked first. Bank of Agriculture (BOA) was ranked second with 24.5%, co-operative society was third with 19.8% and 5.7% obtained from Commercial Banks which ranked fourth. This implies that half of the credit users in the study area depended solely on borrowing from informal financial lending institutions. However, this was complemented with the use of meagre household resources which limit economies of scale and levels of productivity. This is in line with the findings of Ajetomobi and Olagunju (2000) who found that 50.0% of farmers in South Western Nigeria obtained their credit from informal institutional sources against 3% who obtained from the Commercial Banks Funds from relatives and friends are limited and this could negatively affect farmers' effectiveness and scope of operations and invariably results in low productivity. Credit especially from formal sources could help in acquisition of more land, inputs such as pesticides, herbicides and fertilizers and adaptation of new technologies.

Table 2: Distribution of Credit Beneficiaries According to Sources of Funds

Source	Frequency*	%	Ranking
Relatives/friends	53	50.0	1st
Bank of Agric	26	24.5	2nd
Co-operatives	21	19.8	3rd
Commercial bank	6	5.7	4th
Total	106	100.0	

*Multiple responses were recorded.
Source: Field Survey, 2019

Respondent's Level of Production Efficiency

The distribution of respondents according to levels of TE using the CRS, VRS, Scale efficiencies and as well as peer count are presented in Table 3 and 4, respectively. The results in Table 4 revealed that the mean efficiency score for the CRSTE was 0.920 and the mean TE under the VRS in Table 3 was 0.550 (that is, 0.920 divided by 0.550). Only 12 farms were fully technically efficient under the CRS while 18 farms were fully technically efficient under the VRS. A total of 13 farms were operating under the most productive scale size. This finding is contrary to that of Peprah (2010) who found that the technical efficiency of farmers was 0.748 and 40.2% farmers produce at efficiency in Ghana. The result of the scale efficiency classes of farmers is also presented in Table 3. The mean scale efficiency was 0.579. Only 13 farmers had technical efficiency with about 13.3% which operate in most productive scale size.

Journal of Agripreneurship and Sustainable Development (JASD)
Volume 4, Number 1, March, 2021
ISSN (Print): 2651-6144; ISSN (Online): 2651-6365

Table 3: Distribution of Respondents According to Their Technical Efficiency Score

Technical efficiency score range	Constant return to scale		Variable return to scale		Scale efficiency	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
0.000 – 0.100	5	5.2	4	4.1	-	-
0.101 – 0.200	19	19.4	17	17.3	-	-
0.201 – 0.300	20	20.4	18	18.4	-	-
0.301 – 0.400	16	16.3	14	14.3	6	6
0.401 – 0.500	12	12.2	11	11.2	-	-
0.501 – 0.600	4	4.1	5	5.1	4	4.1
0.601 – 0.700	6	6.1	5	5.1	8	8.2
0.701 – 0.800	3	3.1	4	4.1	8	8.2
0.801 – 0.900	1	1	2	2	59	60.2
0.901 – 1.000	12	12.2	18	18.4	13	13.3
Total	98	100	98	100	98	100
Mean	0.920		0.550		0.579	
Standard deviation	0.108		0.277		0.254	
Minimum	0.480		0.146		0.145	
Maximum	1.000		1.000		1.000	

Source: Field Survey, 2019

Results in Table 4 indicated that some farms were appearing more frequently as peers for other farms. These farms are said to be robustly efficient, because, they were used to form the frontier. Farm 52 with 67 peers was the most frequent peer. This farm was followed by farms 31 with 41 peers and then 54 with 32 peers. These farms exhibited better production practices and efficiently allocated the existing scarce resources in their production activities. Using technology, farmers who share similar socio-economic characteristics could emulate these farms to enhance their productivity.

Journal of Agripreneurship and Sustainable Development (JASD)
Volume 4, Number 1, March, 2021
ISSN (Print): 2651-6144; ISSN (Online): 2651-6365

Table 4: Peer Count of Sampled Farms

Farm Number	Peer Count
1	5
20	25
22	8
24	1
31	41
33	13
41	5
46	22
52	67
54	32
60	21
61	30
74	30
76	3
87	13

Source: From DEA output.

Factors Influencing the Productivity of Cowpea Farmers in the Study Area

The results of the estimates of factors affecting productivity of cowpea farmers presented in Table 5 revealed that the estimated model had an R^2 value of 0.815 which implies that 81.5% of the variation in the productivity (Scale efficiency) of cowpea farmers was influenced by the variables included in the model while the remaining 18.5% was as a result of omission of some important explanatory variables as well as errors in estimation. Results shows that the amount of credit (2.491E- 08), farm size (-0.003), distance to farm (-0.128), farm experience (-6.689) and extension contact (-0.008) were significant at explaining the productivity of cowpea farmers at $p \leq 0.01$, $p \leq 0.01$, $p \leq 0.01$, $p \leq 0.01$ and $p \leq 0.05$ probability levels respectively. The coefficient of farm size, distance to farm, farm experience and extension contact were negatively signed implies that an increase in each of these variables would decrease the scale efficiency or the productivity of the cowpea farmers while an increase in credit with positive sign would increase productivity.

The estimated regression coefficient with respect to credit was 2.491E-8 though small in magnitude, it was positive. It implies that as the amount of agricultural loan received by the farmer increases, his/her productivity increased. This underscores the important role credit plays in enhancing the productivity and farm incomes. However, Nwaru (2003) found that credit was seen by small scale farmers as national cake. The negative coefficient of farm size implies that an increase in farm size decreased the farmers' productivity. A reason for this could be attributed to inadequate labour and other production capital inputs to cater for larger farm sizes as well as managerial issues as smaller farms may be better managed than larger farms. The coefficient of distance from home to farm was signed negative which implies that the closer the farm was to the homestead, the more probable the increase in the level of productivity. Longer distances to the farm could constitute additional burden to agricultural production and vice visa. This affects all the farm operations from land preparation to harvesting. This is in line with the findings of Olayemi (2012) who found that nearness to the farm significantly reduced transportation costs and thereby increased the productivity.

Journal of Agripreneurship and Sustainable Development (JASD)
Volume 4, Number 1, March, 2021
ISSN (Print): 2651-6144; ISSN (Online): 2651-6365

Nearness of the farm to the homestead could lead to enhancement in timeliness in accomplishing farm operations.

Table 5: Regression Estimates of Factors Affecting the Productivity of Cowpea Farmers

Variables	Coefficient	t-value
Constant	0.980	15.145***
Gender	-0.075	-1.441
Experience	-0.780	-6.689***
Status of farming	-0.005	-0.584
Household size	0.003	1.452
Education	0.005	1.115
Co-operative	0.029	1.215
Age	0.001	-0.475
Credit	2.491E-8	2.896***
Farm size	-0.003	-3.338***
Marital status	5.128E-8	0.111
Distance to farm	-0.128	-2.295**
Extension contact	-0.008	-4.361***
R-square – value	0.815	
Adjusted R-square	0.792	
F-ratio	23.770***	

*** and** statistically significant at P≤0.01 and P≤0.05 probability level, respectively.
Source: Field survey, 2019.

Determination of the Relative Technical Efficiency in Cowpea Production

The result of AMDVA on the measure of relative technical efficiency of credit beneficiaries as compared to the non-beneficiaries is presented in Table 6. The Linear functional form was chosen as the equation of the best fit with F-ratio of 16.721 which was significant at 1% level of significance and R^2 value of 0.782. The R^2 squared value of 0.782 implies that 78.2% of the variation in the output of cowpea was explained by the independent variables included in the model and the remaining 21.8% was as a result of omission of important explanatory variables as well as factors beyond farmers' control. Among all the variables included in the model, five (5) were statistically significant at P≤0.01 probability level. Farm size with a regression coefficient of 18.586 was positively signed and significant which implies that increase in farm land would lead to an increase in cowpea output *ceteris paribus*. This result is in agreement with the findings of Aja (2003) who found that farm size is an important factor that influenced farmers' output. Land is an important resource to both credit and non- credit users alike. The employment of land would lead to greater output. Other variables, that were statistically significant were the intercept shift dummy variable (D) (31.897), slope shift dummies for capital inputs (-17.177) and fertilizer (0.002).

This study sought to analyse the relative technical efficiency between the two farmers groups (that is, credit and non- credit beneficiaries). The slope and intercept dummies were observed. Results in Table 6 indicated that the estimated regression coefficient for the intercept shift dummy was 31.897 statistically significant at P≤0.01 probability level. This implies that there exists a shift in technology between farmers who had access to credit and those who did not in the study area. Furthermore, since the coefficient for the dummy was positive, it implies that farmers with access to credit realized more output and operated at a higher level of technical efficiency as compared to their counterparts. A cursory look at the results also indicated that at least one of the estimated regression coefficients that are; β_1 was not negative

Journal of Agripreneurship and Sustainable Development (JASD)
Volume 4, Number 1, March, 2021
ISSN (Print): 2651-6144; ISSN (Online): 2651-6365

and significant. It therefore implies that the two groups of farmers faced factor-biased or non–neutral production function further lending credence to the fact that the two groups operated at different levels of output. It also indicated that credit access exerted a positive significant effect on cowpea production in the study area.

Table 6: Regression Estimates of the Additive Multiplicative Dummy Variable Model

Variables	**Coefficient**	**t-value**
Constant	-17.51	-3.005***
Dummy	31.897	3.635***
Farm size (ha)	18.586	11.502***
Labour (md)	-2.600E-6	-0.042
Fertilizer (kg)	0.000	0.090
Agrochemical (Lt)	0.001	-2.112**
Seeds (kg)	0.00	1.376
Capital inputs	0.001	1.558
Slope shift dummies for capital inputs (SSD)	-17.972	-10.891***
SSD for seeds	-3.946E-5	-0.457
SSD for Agrochemical	0.000	-0.380
SSD for fertilizer	0.002	2.753***
SSD for labour	0.000	0.237
SSD for farm size	-0.000	-0.727
Diagnostic statistics		
R^2	0.782	
Adjusted R^2	0.633	
F-ratio	86.721***	

***,**and * statistically significant at P≤0.01, P≤0.05 and P≤0.10 probability level, respectively.
Source: Field survey. 2019.

Constraints to Credit Access for Cowpea Production

The problems limiting access to credit for cowpea production are presented in Table 7. The result revealed that late disbursement of loanable fund was the most (46.23%) pressing problems which were ranked first. Late disbursement of credit by financial institutions could negatively affect farmers productivity, because, credit is needed to procure inputs and increase scale of production. This is in line with the findings of Adegeye and Dittoh (1995) who found that late disbursement of loans, bureaucratic bottlenecks, high interest rate and other stringent conditions imposed by formal institutions discouraged farmers from seeking for loan from formal institutions who had to rely on the personal savings. In decreasing magnitude of importance, unavailability of bank in the community which was ranked second with about 38.21% was also identifying as a problem. This is in consonance with a prior expectation. In a situation whereby there is no financial institution in a community, farmers are usually reluctant to travel to long distances in search of a bank. Idle cash is therefore either spent or saved by the farm household. High interest rate charged by banks accounted for 37.26% was ranked third. This implies that formal lending institutions charged high interest rate on borrowed funds which could depress farm incomes. This is consistent with the findings of Philip *et al.* (2008) who found that high interest rate and short-term nature of loans repayment period do not suit annual cropping and this constitute hindrance to credit access. Low level of literacy was ranked 4th with 35.85% of the respondents attesting to this. This implies that majority of rural farmers cannot read and write English language which could make loan transaction difficult. This is in

line with the findings of Ijere (1989) who found that majority of farmers in Otukpo Local Government Area in Benue State had low levels of education; hence filling of forms will look very cumbersome.

In a similar vein, collateral requirement ranked as the fifth problem with a total of 32.55% of the respondents attesting to this. This implies that farmers in the study area lacked collateral which is a basic requirement for granting of loans from financial institutions. This is in accordance with Okojie *et al.* (2010) who found out that unavailability of banks in community, lack of collateral by farmers and high interest rate charge by banks are found to be problems limiting access of credit by farmers in Nigeria. Bureaucratic bottlenecks and lack of awareness were ranked 6th and 7th and accounted for 26.89% and 23.11%, respectively. They were found to constrain farmers' access to credit. This is in line with the findings of Rahji and Fakayode (2009) who found out that lack of awareness is a major problem encountered by small scale farmers in their bid to access credit from formal lending institutions. Similarly, Adebanjo (2010) found that bureaucratic bottlenecks on loan processing and it the demand for formal credit. Unfriendly nature of bank staff accounted for 21.23% and was ranked 8th among factors limiting access to credit for cowpea production. This implies that the stringent principles of some Banks could have negatively affected credit acquisition by farmers. On the contrary, Agnet (2004) found out that the complex mechanism of commercial banks is least understood by small scale farmers and limits their access to agricultural credit.

Table 7: Problems Limiting Credit Access for Cowpea Production (n = 212)

Problems	**Frequency***	**%**	**Ranking**
Late disbursement	98	46.23	1st
Unavailability of bank in community	81	38.21	2nd
High interest rate	79	37.26	3rd
Low literacy level	76	35.85	4th
Collateral	69	32.55	5th
Bureaucratic bottleneck	57	26.89	6th
Lack of awareness	49	23.11	7th
Unfriendly nature of bank staff	45	21.23	8th
Total	554		

*Multiple responses were recorded
Source: Field survey, 2019.

CONCLUSION AND RECOMMENDATIONS

The study concluded that credit utilization is a significant determinant of the productivity of cowpea farmers. Effective utilization of the credit is an important tool that will helps in breaking the vicious cycle of poverty, promotes adoption and application of new technology, expansion of scale of production as well as enhances standard of living among rural farmers. It was therefore recommended that:

1. Government should implement sustainable policies targeted to encouraging credit access.
2. Cowpea farmers should be encouraged to form cooperatives societies or join the existing ones so as to enable them pool resources together for mutual benefit of their members.
3. Better recognition should be accorded to existing co-operative societies by stakeholders, policy makers and other donor agencies to necessitate improved access to credit and other facilities to the small-scale farmers.
4. Agricultural credit policies that will bring timely disbursement of credit by the government should be implemented so as to encourage borrowing among farmers.

5. Demand for the collateral as well as interest rate charged by banks should be reviewed by the government for easy access to credit by the farmers at a low interest rate.
6. The rural banking scheme should be reactivated to enhance the farmers' access to credit facilities to solve the problem of unavailability of bank in the community.

REFERENCES

Adebanjo, O. O. (2010). *Informal Financial Institutions and Poverty Reduction in Informal sector in Nigeria case study of Rotating Savings and Credits Access (RoSCA) in Ijebu Ode.* M.Sc. Thesis in Department of Art & Development Studies. Ijebu- Ode, Ogun State.

Adegeye, J. A. and Dittoh, J. S. (1995). *Essentials of Agricultural Economics.* Impact Publishers Limited, Ibadan. Pp. 47.

Agnet, O. (2004). *Making Farm Credit Work for the Small-Scale Farmers.* <<http://www.agnet.org/libararyinc1455>>. Accessed on July 20, 2019. London: Palgrave Macmillan.

Aja, A. R. (2003). *The Institutional and Farmer related Factors Affecting the Acquisition and Utilization of Rural Credit in Ohafia Local Government of Abia State.* M.Sc. thesis, Department of Agricultural Economics, University of Nigeria Nsukka.

Ajetomobi, J. O. and Olagunju, F. I. (2000). Focus on Informal Systems of Saving and Mobilisation among Small Scale Farmers in Nigeria Survey Findings. *Journal of Financial Management and Analysis*, **2**(1): 32-34.

Akpokpodje, G. and Olomola, A. S. (2000). *Summary and Policy Implication of Crop Production and Output Values in Nigeria*. NISER Annual survey of Crop Production in Nigeria. Pp. 41-51.

Andrew, P. S. (2012). Problems of Credit Worthiness of Emergent Commercial Farmers in Developing Agriculture. *Agriculture Journal*, **2**: 249-250.

Baggi, F. S. (2003). Economic Efficiency of Share Cropping: Reply and Further Results. *Malayan Economic Review*, **27**: 86-95

Ihere, O. R. (2006). *Gender and Resource Use Efficiency in Rice Production Systems in Abia State of Nigeria*. M.Sc. Thesis, Department of Agricultural Economics, Micheal Okpara University of Agriculture, Umudike, Nigeria.

Ijere, M. O. (1989). The Lesson of State Credit Institutions in Developing Countries, The Nigerian Experience of Agricultural Administration. *The Journal of Agricultura*l *Economics and Applied Science*, **2**(1): 2-5.

Mahood, A. M, Rahji, A. Y. and Ogwumike, F. O. (2009). A multinomial logit Analysis of Agricultural Credit Rationing by Commercial Banks in Nigeria. *International Research Journal of Finance and Economics*, **24**(91): 21-22.

National Bureau of Statistic [NBS] (2017). *Gross Domestic Product Economic Statistics.* Retrieved on August 28th 2018 from www.nigeriastat.gov.ng/nbs.

National Population Commission [NPC] (2006). *Year Book on Nigerian Population Data.* National Population Commission, Nigeria. Report. Retrieved on February 2nd 2018 from- *http://www.jstor.org.*

Niger State Geographic Information System [NIGIS] (2007). *Background Information.* Retrieved on April 4th 2018 from *www.Nigergis.com/about-niger-state.*

Nwaru, J. C. (2003). Gender and Relative Production Efficiency in Food Crop Farming in Abia State of Nigeria. *The Nigeria Agricultural Journal*, **34**(2): 1-10.

Ojo, M. A. and Ojo, A. O. (2015). Gender and productivity differentials among rice farmers in Niger State, Nigeria. Proceeding of the 2nd International Conference on Agriculture and

Forestry held in Colombo, Sri Lanka on 10 – 12 June, 2015, 1, 176-183. DOI: 10.1750/icoaf2015-1121.

Okenmadewa, F. (2009). *Unlock the Gate Second Faculty of Agriculture Public Lecture.* LAUTECH, Ogbomosho, Nigeria in April 9th 2009.

Okojie, C., Monye-Emina, A., Eghafona, K., Osaghae, G. and Ehiakhame, J. O. (2010). *Institutional Environment and Access to Microfinance by self-employed Women in Rural Areas of Edo State, Nigeria.* National Strategy Support Programme (NSSP) Brief N.14. Washington. D.C: International Food Policy Research Institute. Pp. 23-28.

Okuruti, F. N., Banga, M. and Mukunga, A. (2004). *Micro-finance and Poverty Reduction in Uganda: Achievements and Challenges.* Research Series of The Economic Policy Research Center (EPRC) 41, 1-3.

Olayemi, J. K. (2012). *Food Crops Production by Small Scale Farmers in Nigeria.* **In:** S. O. Olayide *Nigerian Small Farmers,* CARD. University Press, University of Ibadan, Nigeria.

Olomola, A. S. (2009). *Strategic Agricultural Technology Assessment in Southwest Nigeria.* Final Research Report Submitted to the Agricultural research Council of Nigeria (ARCN) May, 2009.

Onyenweaku, C. E. (1994). *Economics of Irrigation in crop production in Nigeria"*. Issues in African Rural Development, Bret, S.A. (ed), Arlington, U.S.A: Win rock International Institute for Agricultural Development/African Rural Social Sciences Research Network, Pp.122-138.

Peprah, J. A. (2010). *Access to Credit and Technical Efficiency of vegetable Growers in Mfantsiman District of Ghana.* Retrieved from http://dx.doi.org/10.2139/ssrn.1805218. Accessed on Sept. 6, 2018.

Philip, D., Ephrain N., John, P. and Omobowale, A. (2008). *Constraints of Increasing Agricultural Productivity in Nigeria International Food Policy Research Institute.* Brief **4**: 21-22.

Rahji, M. A.Y. and Fakayode, S. A. (2009). A Multinomial Logit Analysis of Agricultural Credit Rationing by Commercial Banks in Nigeria. *International Research Journal of Finance and Economics*, **24**: 91-100.

Rosemary, A. (2001). *Formal and Informal Institution Lending Policies and Access to Credit by Small Scale Enterprises in Kenya: An Empirical assessment.* Africa Economic Consortium Research Paper 111, Pp. 1-33.

World Bank (2013). *Nigeria Population Growth.*