THE EFFECTS OF ANCHOR BORROWERS PROGRAMME ON RICE FARMING IN BENUE STATE, NIGERIA

ABSTRACT

The study analyzed effects of Anchor Borrowers Programme on rice farming in Benue State, Nigeria. Multi-stage sampling technique was used to select 125 beneficiary rice farmers of the anchor borrowers' programme. Data were collected using structured questionnaire and analyzed using descriptive statistics, multiple regression analysis and factor analysis. The results from the multiple regression analysis revealed that productivity of beneficiary rice farmers was positively and significantly determined by farm size at $P \leq 0.01$ but negatively influenced by seed and fertilizer at $P \leq 0.01$ and $P \leq 0.05$ levels. The R^2 of 0.43 implies that 43% of the variability in rice productivity was accounted for by explanatory variables included in the model. The result of the amount of credit/inputs and mode of loan repayment revealed that beneficiary rice farmers in the study area had mostly from the programmereceived ₦50, 000.00 and paid back their loan mostly as part-payment in cash. Certain limited factors such as Socio-economic factors, Economic factors and Institutional factors had constrained farmers' access to credit and other inputs from the programme. It was concluded that rice production by the beneficiary rice farmers in the study area was not optimally productive. The study recommended that farmers should be advised to expand their farm lands to ensure efficient utilization of resources for increased productivity. Also, policies that will make credit accessible to farmers will go a long way in addressing their inefficiency problems.

Keywords: Anchor Borrowers Programme, Rice farming,multiple regression analysis, factor analysis, Benue state,

INTRODUCTION

Agriculture remains the major component of the Nigerian economy and has a great potential that can address the challenges of achieving food security and poverty reduction in the country.According to Eboh (2008), the sector has contributed about 41% of the Nigeria GDP and employed 70% of the active population. It was the key potential driver of growth of Nigerian economy and a sustainable portal for foreign exchange earnings before the attainment of independence in 1960. However, the sector's contribution to GDP and export earnings steadily declined from 1970s to late 2000s when the attention was shifted to petroleum exploration due to the large revenue derived from the oil sector.

The Nigerian agriculture to a large extent still possesses the characteristics of peasant economy that was prominent in the pre-independence period (Adewumi and Omotosho, 2002). The food produced, mostly at subsistent level by small-scale farmers is inadequate due to low crop yield; while increases in food production have been achieved largely through population growth and the farming of larger expanses of land, most likely by commercial farmers rather than productivity-improving technologies (Ayoola*et al*., 2011). According to the report by Agbaje*et al*. (2005), the objective of Nigerian food security programme of increasing agricultural production for self-sufficiency is still far from being realized. Farm productivity of staple crops in developing nations such as Nigeria is low due to traditional methods of farming, misuse of modern agricultural technology and less availability of credit(Chandio*et al*.,2017)

The declining contribution of Nigeria agriculture to both GDP and exchange earnings can be attributed largely to low productivity and agricultural credit. Finance generally plays crucial role in agricultural sector's growth and development. For instance, Philip *et al.* (2008) reported that credit supply is widely perceived as an effective strategy for enhancing the increased agricultural productivity. Similarly, according to Nwaru*et al.* (2006), credit facilitates adoption of innovations leading to increased farm productivity and income, encourages capital formation and improved marketing efficiency. Modernization of agriculture is also possible only if there is enough credit supports to enable small scale farmers adopt new production technologies like improved seeds and seedlings, fertilizers, chemicals and equipment like tractors, ploughs, harrows and other machinery which reduce drudgery, improve timeliness and efficiency of farm operations (Darma et al., 2020). According to Singbo (2012), improvement of the farm productivity could be achieved through better access to agricultural credit, given that smallholders are poor and often suffer a lack of institutional services.

In the bid to increase farmers' access to credit, and stimulate increased agricultural output in the country, various financing policy initiatives have been instituted to support the intending farmers. These include the establishment of Nigeria Agricultural and Cooperative Bank (NACB) in 1972; the Agricultural Credit Guarantee Scheme Fund (ACGSF) in 1978; the Small and Medium Enterprises Equity Investment Scheme (SMEEIS) in 2001; the Agricultural Credit Support Scheme (ACSS) in 2006 and Commercial Agricultural Credit Scheme (CACS) in 2009. These achievements were however, not sustained in subsequent years due to the increasing corruption tendencies among government officials concerned, policy inconsistency, poor policy implementation and mis-specification as well as weak institutions. In recent times, the most effort towards boosting production and enhancing farmers' access to credit in the country is through Anchor Borrowers Programme introduced in 2015 by President MohammaduBuhari. Anchor Borrowers programme is a contract farmer concept which has been found to be effective in other countries like India (Bommanahalli and Rangappa, 2016). The scheme was introduced by the Central Bank of Nigeria (CBN) in line with its developmental function aimed at stimulating increased output in order to curb the adverse effects of food importation on the nation's foreign reserves. It involves the provision of farm inputs in kind and cash (for farm labour) to smallholder farmers as a means of encouraging local production of targeted commodities (Wijaya et al., 2020) to enhance capacity utilization of integrated mills, stabilize inputs supply to Agro-Processors and address the country's negative balance of payment on food. At harvest, the small- holder farmers supply their produce to the agro-processor (the anchor) who pays the cash equivalent to the farmer's account.

Benue State government under the current administration's agricultural promotion policy has also partnered with development agencies to deliver programmes and policies aimed at

revamping the agricultural sector in Benue State. One of such programmes focused on rice value chain development is the Anchor Borrowers Programme. The lunch of Anchor Borrowers Programme was aimed at improving the overall production of rice towards building a sustainable national food security in the Nigeria. Under the programme, rice cultivation has gotten a special attention in the Nigeria. Thus, it is necessary to carry out thorough investigation of the effects of Anchor Borrower programme on productivity, particularly, at the smallholder farmers' level because of their expected role of increasing food production and stimulating growth in the economy as a whole. The study seeks to achieve the following specific objectives:

i. Examine the effects of Anchor Borrowers' Programme services on productivity of beneficiary rice farmers;
ii. Describe the amount of credit/inputs accessed and mode of loan repayment of the beneficiary rice farmers
iii. Describe constraints faced by the beneficiary and non-beneficiary rice farmers

METHODOLOGY

The Study Area

The study area was Benue State of Nigeria. Benue State is located within the Lower River Benue trough in the middle belt region of Nigeria. The State lies between latitudes 6.5^{o} and 8.5^{o}N and longitudes 7.47^{o}N and 10^{o}E, with landmass of 33955 square kilometers (BSG, 2020). The State has an estimated population of 5,454,521 (NPC, 2020). Benue State shares boundaries with six other Nigerian states: Nasarawa State to the North, Taraba State to the East, Kogi State to the West, Enugu States in the South-west and Cross-River State to the South. Administratively, the State is divided into three agricultural zones namely, Zone A, B and C. It

has 23 Local Government Areas (LGAs). The State has a tropical climate, a wet and a dry season. However, the South-eastern part of the state adjoining the Odudu-Cameroun mountain range has a cooler climate. The vegetation of Benue consists of rainforests with tall trees and grasses that occupy the state's western and southern fringes while the Guinea Savannah is found in the eastern and Northern parts. Benue State has mean annual rainfall of 1500mm with a temperature ranging from 24^0C and 36 ^{0}C. About 80% of the state's population is estimated to be directly engaged in subsistence agriculture. Hence, Benue is an acclaimed food basket State. The commonly cultivated cash and food crops include yam, rice, cassava, sweet potatoes, maize, sorghum, peanuts, millets, sesame, soyabean, mango, citrus, tomatoes and pepper. The major livestock reared in the State include sheep, goats, poultry and swine.

The major agricultural programmes existing (Darma et al., 2020) in the State include the *fadama* III additional financing project, Rice and Cassave Value Chain development programme, Anchor Borrowers Programme and Nigeria Zero hunger project. These programmes are all geared towards boosting agricultural production through the provision of improved farming inputs as well as linking producers to available markets. Benue State is inhabited by several ethnic groups: the Tiv, Idoma, Igede, Etulo, Jukun, Hausa and Igbo. The Hausas and Igbo's are mainly traders, residing in towns, cities and villages. The Hausas in addition to trading are dry season farmers.

Sampling Procedure

Multistage sampling procedure was employed in sample selection. The first stage involved purposive selection of three LGAs from each of the three agricultural zones (A, B and C), based on their high concentration of Anchor Borrowers Programme registered rice farmers. These include Kwande, Katsina-Ala and Konshisha LGAs from Zone A. Gwer-west,Buruku and Makurdi LGAs were selected from Zone B while Apa, Oju and Otukpo LGAs were selected

from Zone C. The second stage involved a proportionate of 3% (0.03) and stratified random selection of the programmebeneficiary rice farmers from each of the selected LGAs, giving a sample size of 125 beneficiaries of the anchor borrowers'programme. The sample frame of beneficiaries of the Anchor Borrowers Programme in the State is obtained from the Bank of Agriculture (BOA) and is presented and distributed in Table 1.

Table 1: Sample Size Selection Plan

Zone	**LGA**	**Sampling frame Beneficiaries**	**Sampling size (0.03) Beneficiaries**
Zone A	Kwande	392	12
	Katsina-ala	745	22
	Konsisha	296	9
Sub-total		**1,433**	**43**
Zone B	Buruku	348	10
	Gwer-west	870	26
	Makurdi	702	21
Sub-total		**1,893**	**56**
Zone C	Apa	311	9
	Oju	118	5
	Otukpo	378	11
Sub-total		**807**	**25**
Total		**4,160**	**125**

Source: BOA, Makurdi, Benue State, 2019

Analytical Technique

The data collected were analyzed using descriptive statistics, multiple regression analysis and factor analysis.

Multiple Regression Analysis

The Ordinary Least Square (OLS) regression analysis was used to determine the production function which measures the technical relationship between inputs and output (Olayide and Heady, 1982). The implicit model is specified as:

$$Y = f(X_1, X_2, X_3, X_4, X_5, U) \quad \ldots(1)$$

where;

Y = output of rice (kg)

X_1 = land input planted to rice (ha)

X_2 = quantity of seed used (kg)

X_3 = labour used (Man- days)

X_4 = quantity of fertilizer used (kg)

X_5 = quantity of herbicides used (litres)

U = Error term

Four (4) functional forms: linear, semi-log, double-log (Cobb-Douglas) and quadratic will be fitted to the data and the lead equation will be chosen based on the value of coefficient of multiple determinations (R^2), *a priori* signs of the coefficients and significance of the coefficient. The multiple regression functions will be considered necessary in order to select the functional form with the best fit. The explicit forms of multiple regression function were specified as:

. i. Linear function:

$$Y = a+b_1X_1+\ldots+b_5X_5+e \quad \ldots (2)$$

where;

Y, X_1-X_5 weredefined in equation 1

a = constant term

$b_1 - b_5$ = estimated regression coefficients

e = error term

ii. Semi-log function:

$$Y = a+b_1\log X_1+\ldots+b_5\log X_5 + e \quad \ldots (3)$$

where;

Log = natural logarithm

Y, X_1-X_5 weredefined in equation 1

a = constant term

$b_1 - b_5$ = estimated regression coefficients

e = error term

iii. Double-log function:

$$\text{Log } Y = a+b_1 \log X_1 + \ldots + b_5 \log X_5 + e \quad \ldots (4)$$

where;

Log = natural logarithm

Y, X_1-X_5 were defined in equation 1

a = constant term

$b_1 - b_5$ = estimated regression coefficients

e = error term

iv. Quadratic function: $Y = a+b_1X_1+\ldots b_5X_5\ldots b_6X1^{2-}\ldots {}^{-b}{}_{10}X_5{}^2 +$

$$b_{11}X_1X_2 +\ldots +b_{20}X_iX_i+ b_{21}X_1X_2X_3X_4X_5+e \quad \ldots (5)$$

where;

Y, $X_1 \ldots X_5$ was defined in equation 1.

X_iX_j ... interaction terms between variables i and j

a = constant term

e = error term

b_1-b_{21} = estimated regression coefficients with the expected signs of b_6 to b_{10} to be negative in equation (5). In other equations, the b_5 can take either positive or negative signs. *A priori*, it is expected that b_1, b_2, b_3, b_4 and $b_5>0$.

Factor Analysis

Exploratory factor analysis was employed in identifying factors constraining the beneficiary and beneficiary rice farmers of Anchor Borrowers Programme in the study area. Principal component factor analysis with Varimax-rotation and factor loading of 0.40 was used. Therefore, variables with factor loading of less than 0.40 and variables that loaded in more than one factors will be discarded (Ashley *et al.,* 2006; and Musa *et al*., 2011). The principal component factor analysis model is specified as:

$Y_1 = a_{11}X_1+a_{12}X_2+*** + a_{1n}X_n$

$Y_2 = a_{21}X_1+a_{22}X_2+***+ a_{2n}X_n$

$Y_3 = a_{31}X_1+a_{32}X_2+***+a_{3n}X_n$

* = *

* = *

* = *

$Y_n = a_{n1}X_1+a_{n2}X_2+***+a_{nn}X_n$

where;

Y_1, Y_2… Y_n = observed variable/constraints to rice farmers in the study area.

a_1-a_n = factor loadings or correlation coefficients.

X_1, X_2…X_n = unobserved underlying factors constraining rice farmers in the study area.

RESULTS AND DISCUSSION

Determinants of Productivity among Beneficiaries of Anchor Borrowers Programme

Results of the determinants of productivity for beneficiary rice farmers are presented in Table 2. Multiple regression analysis was employed with four functional forms namely: linear, Quadratic, semi-log and double-log to determine the effects of Anchor Borrowers services on Productivity of farmers. Based on the magnitude of the coefficient of multiple determinations (R^2), the statistical significance of the individual explanatory variables and the overall significance of the production function judged by the F-value, double- log function was chosen as the lead equation and used for the discussion of results. The results indicated that the

coefficient of multiple determinations (R^2) was 0.43 which implies that 43% of the variations in the productivity of beneficiary rice farmers were accounted for by the explanatory variables included in the model. The adjusted R^2 valve shows that even when all the missed variables are included in the model, they can explain about 24% of the variations in the independent variables. The F-value of 14.679% which is a measure of joint significance of all the explanatory variables in the model is significant at 1% level, indicating a good fit of the regression model that describe the relationship between the independent variable and the dependent variable. The results indicated that variables such as farm size, seed and fertilizer were significant at various levels of probability in influencing farmers' productivity

The coefficientof farm size was positive and significant at 1%, implying that as the number of hectares used by farmers increases, their productivity will definitely increase. In other words, a 1% increase in number hectare used by farmers will result to an increase in productivity. This result is consistent with *a priori* expectation and findings by Ajah and Ajah (2014), Osanyinlusi*et al*. (2016) and Obasi*et al*. (2016) who reported a positive relationship between farm size and farm productivity.

The coefficient of seed was significant but inversely related to productivity at 1% level of probability. This implies that as the seed used by the farmers increases, their productivity tend to decrease. This follows theory that there is a limit to increasing quantity of a variable input relative to fixed inputs in production, which if not obeyed will at a point cause productivity to decline. This suggests probably an over-utilization of seed among the farmers. This result agrees with the findings of Obasi*et al*. (2013) who found that quantity of seed was inversely related to output.

Thecoefficient of fertilizer was negative and significant at 5% level of probability. This implies that as quantity of fertilizer used by farmers increases, their productivity tend to decrease. This suggests probably an over-utilization of fertilizer among the farmers. It could also be that the farmers were not applying the fertilizer in the right quantity. This result is in line with the findings of Omolalanle (2010) who found a negative relationship between fertilizer and productivity of farmers. However, the coefficients of the herbicides, pesticides and labour were not significant at any level of probability, this does not mean that the variables did not have any effect on rice productivity but the level of their significance fell below the level of confidence limits tested.

Table 2: Regression Results of Determinants of Productivity for Beneficiary Rice Farmers

	Functional forms			
Variable	**Linear**	**Quadratic**	**Semi-log**	**Double-log +**
Constant	5.849	1.595	4.324	22.305
	(5.957)***	(7.514)***	(4.781)***	(5.309)***
Farm Size	1.601	0.224	0.549	3.901
	(6.695)***	(4.342)***	(3.643)***	(5.571)***
Seed	-0.011	-0.002	-0.304	-1.743
	(-4.021)***	(-3.553)***	(-3.576)***	(-4.409)***
Fertilizer	-0.011	-0.001	-0.223	-1.540
	(-1.960)	(-0.944)	(-1.70)	(-2.486)**
Herbicides	-0.081	-0.020	-0.189	0.512
	(-1.291)	(1.477)	(1.574)	(-0.920)
Pesticides	0.83	0.004	0.078	0.291
	(0.453)	(0.103)	(1.643)	(1.322)
Labour	0.000	-2.534E-005	-0.044	-0.259
	(-0.406)	(-0.380)	(-0.749)	-0.941)
R^2	0.413	0.242	0.275	0.434
Adjusted R^2	0.382	0.382	0.203	0.237
F-ratio	13.485***	6.129***	7.261***	14.679***

+ = lead equation, *, **, *** = significant at 10%, 5% and 1% level of probability respectively.
Source: Field Survey, 2021.

Access to Loan/Inputs and Mode of Loan Repayment by Beneficiary Rice Farmers

The results of loan/inputs accessed and the mode of loan repayment by beneficiary rice farmers are presented in Table 3. The results revealed that majority (81.6%) of the beneficiary rice farmers received ₦50, 000 from the programme while 16.8% were given ₦49, 500. The least proportion (0.8%) of farmers collected ₦57, 000 from the programme. The results further revealed that majority (72.8%) of the farmers reported that inputs/ credit received from the programme were not adequate, 23.2% of them said that inputs/loan received were adequate while only 4% of the farmers reported that inputs/loan given to them were very adequate. The results also showed that about 64% of the beneficiary rice farmers had paid back their loan while the remaining 36% of farmers did not pay back the loan given to them.

The results of the mode of loan repayment in the study area indicated that only about 37.6% of the farmers had fully paid back their loan while majority (62.4%) of the farmers only paid part-payment of the amount collected. The results of the reasons for not paying back their loan revealed that majority (84%) of the farmers reported they have used their loan for other purposes, 12% of the farmers said that they have not paid because of crop failure while the least proportion 4% complained of untimely disbursement of credit and other inputs. This result agrees with the findings of Afolabi (2010) who reported that high crop failure among the farmers would translate to high incidence of loan default because of the lower level of farmers' income. Furthermore, the untimely loan disbursement and other farm inputs to farmers can negatively affect loan repayment because agricultural production is time specific, so instead of utilizing the loan for agricultural purposes, farmers may divert the loan because it did not coincide with the time they need it for agricultural production. (Afolabi, 2010). According to Tundui and Tundui (2013), loan repayment performance could be influenced by a myriad of factors such as interest

rate, unstable prices of agricultural commodities, the social relations, responsibilities of the borrowers among others. The results also revealed that majority (70%) of the farmers used cash to pay back their loan while 30% of them used farm produce to pay back their loan.

Table 3: Distribution of Beneficiaries According to Amount of Inputs/Loan Received and Mode of Loan Repayment

Variable	Frequency	Percentage
Amount of loan received (₦)		
₦4,500	1	0.8
₦49,500	21	16.8
₦50,000	102	81.6
₦57,000	1	0.8
Total	**125**	**100**
Adequacy of Inputs/Loan		
Very adequate	5	4.0
Adequate	29	23.2
Not Adequate	90	72.8
Total	**125**	**100**
Have you pay back loan		
Yes	80	64.0
No	45	36.0
Total	**125**	**100**
Mode of Repayment		
Full payment	47	37.6
Part payment	78	62.4
Total	**125**	**100**
Reasons for not paying back loan		
Crop failure	15	12.0
Use the loan for something else	105	84.0
Late disbursement of loan	5	4.0
Total	**125**	**100**
Form of payment		
Cash	87	70.6
Farm Produce	38	30.4
Total	**125**	**100**

Source: Field Survey, 2021.

Constraints Faced by Farmers

The results of constraints faced by beneficiary rice farmers in the study area are presented in Table 4. An exploratory factor analysis procedure was employed using the principal factor model with varimax rotation in grouping the constraint variables into major factors. The study adopted the kaiser rule of thumb of 0.4 as minimum loading weight which a factor could have before it can be isolated as positive for selection. Therefore, only variables with constraint loadings of 0.40 and above in the study were used in naming the factors. In addition, variables that loaded high in more than one constraint and those lower than 0.40 were not considered. Based on the variable loadings and responses of the farmers, three (3) major factors were identified, namely constraint 1 (Socio-economic factors), constraint II (Economic factors) and constraint III (Institutional factors).

The results of constraints faced by the beneficiary rice farmers in the study area indicated that constraint variables such as the high interest rate (.913), distance to the collection point (.795), bribe demand by officials (.604), dearth of information (.916), complexity of technologies (.854), enforcing loan repayment (.955) and inadequate training (.489) were loaded high under constraint 1 (socio-economic factors). Constraint II was named economic factors due to the high loading of variables under it. These include constraint factors such as lack of bank account (.690), small loan lending volume (.713), undue government intervention (.712) and high cost of training (.801). Similarly, constraint III was named institutional factors due to the variables that loaded high under it. These include constraint variables such as diversion of loan (.610) and insufficient inputs/loan (.413). The implication of these findings is that the socio-economic, economic and institutional factors are capable of undermining the effectiveness of rice production in the study area. Gona*et al.* (2020) for instance reported that the bureaucratic procedures that are involved in acquiring anchor borrowers programme intervention are the

major challenges of ABP farmers in KebbiState. Mgbakor (2014) opined that the problems encountered by farmers in Nigeria while sourcing for credit includes, high rates of interest, collateral problem, loan time of processing and bureaucracy/formalities involved. We also have smallholder farmers who are knocked out from the credit system for reasons which included high interest rates and lack of collateral security (Mgbebu and Chike, 2017). Furthermore, as reported by Chandio, *et al*. (2018), the residence location or the distance to the credit sources has significantly affected farmers' access to credit in Nigeria. Onumadu and Osahon (2014) also observed that scarcity of inputs, paucity of funds and dearth of information are the major constraints faced by farmers in accessing credit for their farm production.

Table 4: Constraints Faced by Farmers

Constraints	Factor I Socio-economic	Factor II Financial	Factor III Institutional
High interest rate	0.678*	0.232	0.373
Diversion loans	-0.065	0.137	-0.610***
Bureaucratization	0.913*	0.110	-0.057
Distance to Collection Points	0.793*	0.220	-0.202
Bribe demanded by officials	0.604*	-243	0.067
Lack of bank account	0.383	-0.690**	-0.450
Volume of lending very small	-0.460	-0.713**	0.068
Dearth of information	0.916*	0.239	-0.102
Undue government intervention	0.325	0.712**	-0.337
Complexity of technology	0.854*	0.170	-0.046
Insufficient inputs/credit	-0.168	0.051	0.155
Enforcing loan repayment	0.955*	0.140	0.155
Inadequate training	0.498*	0.014	0.497
High cost of transaction	0.252	0.801**	-0.105

Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization. *Socio-economic problems; ** Financial problems and *** Institutional problems.
Source: Field survey, 2021.

Conclusion

The study concluded that the beneficiary rice farmers in the study area were not optimally productive in rice farming. The results of multiple regression analysis revealed that productivity of beneficiary rice farmers in the study area was positively and significantly determined by farm size but negatively influenced by seed and fertilizer. The result of the amount of credit/inputs and mode of loan repayment revealed that beneficiary rice farmers in the study area had mostly received ₦50, 000.00 from the programme and paid back their loan mostly as part-payment in cash. Certain limited factors such as Socio-economic factors (e.g. high interest rates), Economic factors (e.g. high cost of transaction) and Institutional factors (e.g. insufficient credit/inputs) had constrained farmers' access to credit and other inputs from the programme. Hence, policies that will address these issues would be needed in order to go beyond this threshold.What are the research contributions, implications, and future agenda?.

Recommendations

Based on the findings of the study, the following recommendations are made in an attempt to improve the productivity of anchor borrowers programme beneficiary rice farmers.

1. Since increase in farm size increases the productivity of rice production in the study area, farmers should be advised to expand their farm lands to ensure efficient utilization of resources for increased productivity.
2. Policies that will make credit accessible to farmers will go a long way in addressing their inefficiency problems.
3. Given the estimates of productivity in the study area, it is suggested that intensive efforts at expanding the present scope of rice production be encouraged while the significant

factors that influenced the productivity of farmers need to be researched into for optimum productivity.

References

Adewumi, M. O. and Omotesho, O. A. (2002). Analysis of production objectives of small scale rural farming households in Kwara State. Nigeria. *Journal of Rural Development*, **25**: 201-211.

Afolabi, J. A. (2010). Analysis of Loan Repayment among Small Scale Farmers in Oyo State, Nigeria. *Journal of Social Science*, **22**(2): 115-119.

Agbaje, G. O., Ogunsumi, L. O., Olunkun, J. A. and Akilosutu, T. A. (2005). Survey of Yam Production System and the Impact of Government Policies in South Western *Nigeria. Journal of food, agricultural and environment (JFAE),***3**(2): 222-229.

Ajah, J. and Ajah, F. C. (2014). Socio-Economic Determinants of Small Scale Rice Farmers' Output in Abuja, Nigeria. *Asian Journal of Rural Development*, **4**(1):16-24.

Ashley, B., Amber, S. and Anthony, F. (2006). *Education by Nation: Multivariate analysis.* http://www.users.muohio.edu/porterbm/sunj/2006/starts

Ayoola, G. B., Dangbegnon, C., Daudu, C. K., Mando, A., Kudi, T. M., Amapu, I. Y., Adesun, J. O. and Ezui, K. S. (2011). Socio-economic Factors Influencing Rice Production among Male and Female Farmers in Northern Guinea Savanna, Nigeria: lessons for promoting gender equity in action research. *Agriculture and Biology Journal of North America*, **2**(6): 1010-1014

Bommanahalli, S. S. B. and Rangappa, K. B. (2016). Impact of Contract Farming on the Capital Formation at the Farm Level: An empirical investigation in Karnataka. *India Journal of Applied Research*, **6**(2): 663-666.

Chandio, A. A. and Jiang, Y. (2018). Determinants of Credit Constraints: Evidence from Sindh, Pakistan. *Emerging Marketing, Finance and Trade*, **54**: 3401-3410.

Chandio, A. A., Magsi., H., Rahman, A. and Sahito, J. G. M. (2017). Types, Sources and Importance of Agricultural Credit in Pakistan. *Journal of Applied Environmental and Biological Sciences*, **7**(3): 144-149.

Darma, S., Maria, S., Lestari, D. andDarma, D. C. (2020). An agroforestry consortium: a multiderminant in instituting an agrisilviculture system to improve welfare. *Virtual Economics*, **3**(1): 95-111.

Darma, S., Wijaya, A. and Darma, D. C. (2020). Different tests for the existence of agricultural cooperatives in Indonesia: before and after COVID-19. *Asia Life Sciences*, **10**(3): 615-628.

Eboh, E. C. (2008). *State Level Strategies to Achieve Sustainable Agricultural Productivity, Growth and Development.* Paper Presented at the International Conference on Food Security, 23rd - 24th July, 2008, Abuja, pp7-8.

Gona, A., Mohmud, A., Ogolekwu, A. I., Maikasuwa, M. A. and Kaka, Y. (2020). Effects of Anchor Borrowers Programme on Profitability and Income of Beneficiary Rice Farmers

in Kebbi State, Nigeria. *International Journal of Sustainable Development Research*, **6**(3):43-48.

Mgbakor, M. N., Uzendu, P. O. and Ndubisi, D. O. (2014). Sources of Agricultural Credit to Small-Scale Farmers in Ezeagu Local Government Area of Enugu State, Nigeria. *IOSR Journal of Agriculture and Veterinary Science*, **7**(8): 1-8.

Mgbebu, E. S. and Achike, I. A. (2017). Analysis of Loan Requisition and Repayment amongSmall-scale Rice Farmers in Ebonyi State, Nigeria*:* Implication for Effective Credit Delivery. *Journal of Economics and Finance*, **8**(3): 20-26.

Musa, T. A., Enete, A. A. and Okon, U. E. (2011). Socio-economic determinants of cocoyam production among smallholder farmers in Ekiti State, Nigeria. *International Journal ofAgriculturalEconomics and Rural Development*, **4**(2): 1-13.

Nwaru, J. C., Onyenweaku, C. E. and Nwosu, A. C. (2006). Relative Technical Efficiency of Credit and Non-Credit User Crop Farmers. *African Crop Science Journal*, **14** (3): 241-251.

Obasi, P. C., Henri-Ukoha, A., Ukewuihe, I. S. and Hidiebere-Mark, N. M. (2013). Factors affecting agricultural productivity among arable crop farmers in Imo State, Nigeria. *American Journal of Experimental Agriculture*, **3**(2): 443-454.

Obasi, I. O., Nzeakor, F. C. and Igbo, O. (2016). Determinants of productivity among credit beneficiary and non-credit beneficiary farmers in Ikwuano Local Government Area of Abia State. *IIARD International Journal of Economics and Business Management*, **2**(8): 1-7.

Omobolanle, N. M. (2010). *Microcredits and Agricultural Sciences*, **6**(3): 290-296.

Olayide, S. O. and Heady, E. O. (1982*). Introduction to Agricultural Production Economics*. Ibadan University Press, Nigeria, Pp. 154-173.

Onumadu, F. N. and Osahon, E. E. (2014). Socio-economic Determinants of Adoption of Improved Rice Technology by Farmers in Ayamelum Local Government Area of Anambra State, Nigeria. *International Journal of Scientific and Technology Research*, **3**: 308-314.

Osanyinlusi, O. I. and Adenegan, K. O. (2016). The Determinants of Rice Farmers' Productivity in Ekiti State, Nigeria, *Greener Journal of Agricultural Sciences*, **6**(2):49-58.

Philip, D., Nkonya, E., Pender, J. and Oni, O. A. (2008). Constraints to Increasing Agriculture Productivity in Nigeria Strategy Support Program of Interactional Food Policy Research Institute. Brief No. 4, Pp 1-4.

Singbo, A. (2012). *Analyzing Efficiency of Vegetable Production in Benin*. Ph.D. Dissertation, WageningenUniversty.

Tundui, C and Tundui, H. (2013). Microcredit, Micro Enterprising and Repayment Myth: the case of Micro and Small Women Business Entrepreneurs in Tanzania. *American Journal of Business and Management*,**2**(1):20-30.

Wijaya, A., Ilmi, Z. and Darma, D. C. (2020). Economic performance: leading sector, economic structure and competitiveness of export commodities. *Journal of Business, Economics and Environmental Studies*, **10**(3): 23-33.