

IMPACT OF AGRICULTURAL TRANSFORMATION AGENDA (ATA) ON THE POVERTY STATUS OF RICE FARMERS IN NORTH-CENTRAL ZONE OF NIGERIA

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ABSTRACT

This study examined the impact of Agricultural Transformation Agenda on the poverty status of rice farmers in North Central zone of Nigeria. A multi-stage sampling procedure was used to select 992 rice farmers with 429 respondents from beneficiaries and 563 respondents from non-beneficiaries. Primary data were collected on socioeconomic variables, (age, household size, etc) and household food expenditure using structured questionnaire and interview schedules. Data collected were analyzed using descriptive statistics, Foster, Greer and Thorbeeke (FGT) poverty indices, logit regression model, and propensity score matching. The results revealed that the mean age for the beneficiaries and non-beneficiaries of rice farmers were 51 and 43 years respectively. While the mean farm-size is 2.6hectares and 2.5hectares for beneficiaries and non-beneficiaries respectively. The results revealed that about 12% and 24% beneficiaries and non-beneficiaries respectively were poor. The determinant of poverty status among the beneficiaries' rice farmers shows that income, age, household-size, rice farming experience, access to credit, extension contact and cooperative society were the significant determinants. The impact of agricultural transformation program on beneficiaries' poverty status showed a statistical significant difference between the beneficiaries and non-beneficiaries. It is concluded that the ATA program had an impact on the beneficiaries' poverty status thereby enhanced an increased livelihood. The study recommends that farmer' agricultural organization should train farmers on how to use their farm skills and utilization of resources in order to alleviate their poverty level.

Keywords: Rice Farmers, Poverty Level, Logit Model and Impact

INTRODUCTION

Nigeria is one of the countries of the world that has greater number of poor people living below the poverty and limited to social and infrastructural services.(FAO 2005).The National Bureau of Statistics (NBS,2019) reported that about 40% of the total population or almost 83 million people live below the country's poverty line of 137,430 Naira (\$381.75) per year which according to (World Bank 2003), is the minimum cash and non-cash expenditure needed to be made by a person or household in order to be able to consume the minimum number of calories (food) plus a small number of essential non-food items such as housing, clothing and health care. Okolo and Obidigbo (2015) reported that over 53million Nigerians were living in hunger and they represent about 30percent of the country's total population of roughly 150million.

Nigerian farmers cultivate many staple food crops, but rice is the most important staple food crop in Nigerian diets (Awotide *et al.*, 2015). It is a crop that is highly important in the attainment of national food security and eradication of rural poverty and overall economic growth. For several decades successive Nigerian government have tried to avert any food insecurity crisis that could be engendered by rice scarcity. One of the adopted strategies is the huge importation of rice from other notable rice exporting countries across the globe (Awotide *et al.*, 2015). The Nigerian government over the years has formulated and used various policy instruments and interventions to boost local production, reduce the volume of imports and reduce external shocks. Some of these measures can be discussed under two periods which include- Pre-ATA (GESS) Period: Operation Feed the Nation (OFN) in1976, Green Revolution (GR) in 1980, Also, the inauguration of Presidential Task Force (PTF) (1986-1995). Agricultural Development Projects (ADPs) prior to 1996(Daramola 2005). Thus in 2009, National Rice Development Strategy (NRDS) was set up with the same self-sufficiency goal. It is expected to boost rice production from 3.4million tonnes to 12.8 million tonnes in 2018 (NRDS/FGN 2009).

ATA (GESS) Period: The effort to make the country become rice self-sufficient was again renewed in 2010 which led to the formal launch of the rice transformation strategy, the GESS under the Agricultural Transformation Agenda (ATA). The Growth Enhancement Support Scheme (GESS) is one of the many critical components of the Federal Government's Agricultural Transformation Agenda (ATA). It was designed for the specific purpose of providing affordable agricultural inputs like fertilizers and hybrid seeds to farmers in order to increase their yields per hectare and make it comparable to world standards (Nasta 2013). The system is designed to enable farmers receive fertilizer allocation notices through their mobile phones, which is meant to make the commodity easily accessible and to cut off middlemen (Akinwumi, 2013).

Despite the vast potentials for rice production in Nigeria, the persistence of a demand and supply gap has been attributed to several factors, prominent among which is the fact that nearly half of Nigeria's 140 million people live below the poverty line (NBS 2008); Although several studies have been carried out on the rice sub-sector in Nigeria with little or no much attention has been focused on the performance of rice sub-sectors policies in Nigeria under ATA. For instance: (Awotide *et al.*, 2015) analyzed impact of agro-industrial development strategies on smallholder rice farmers' productivity, income and poverty. In view of the importance of poverty, there is need to analyze the impact of Agricultural Transformation Agenda on the poverty status of rice farmers in North–Central zone of Nigeria. The studies is set out to describe the socioeconomic characteristics of ATA beneficiaries and non-beneficiaries among rice farmers in the study area; determine the poverty levels and analyze the poverty status of ATA beneficiaries and non-beneficiaries among rice farmers in the study area; identify the determinants of poverty among the ATA beneficiaries.

METHODOLOGY

Study Area

This study was conducted in some selected states in North-Central of Nigeria which includes Benue, Nassarawa and Niger State. The temperature throughout the year in the area ranges from 28°C – 34°C and the annual rainfall varies from 1500mm to 1200mm. The rainfall decreases in amount and distribution from the southern to the northern part of the zone. The north-central zone has a total land area of 281,796 km² representing almost 30 percent of the country's total land area. It is situated between latitude 110^o 20'. The zone has a population of 17 million (NPC 2006), with a projected population of 22.3 million (2015) and with an average population density of 99 persons per km². The crops grown include maize, rice, guinea corn, millet, cowpea, soya beans and tuber crops such as cassava, yam, potato, sweet potato and cocoyam. They also keep livestock such as sheep, goat, pigs as well as poultry. Artisanal fishing is also done.

Sampling Technique

A multistage sample technique was used to select the sample size of the beneficiaries and non-beneficiaries in the study area. The first stage involved purposive selection of three states namely Benue, Nassarawa and Niger State because of their relative economic advantage in rice production. The major agricultural zones producing rice was considered in each state. In stage two, 40% of the Local Government Areas in each zone were purposively selected namely Kwande, Katisna-Ala and Ukum (Benue State), Lavun, Badeggi and Gbako (Niger State), Lafia and Doma (Nassarawa State). This gave a total of eight Local Government Areas that were used for the study. In stage three, 30% of the districts in each Local Government Area were selected making a total of 10 district. The fourth stage involved selection of 40% of the villages from each district, giving a total of 51 villages. In stage five, a list of farmers (sampling frame) under the growth enhancement support scheme (GESS) in each state was obtained from the state ministry of Agriculture, which is the ministry mandated to oversee and supervise the implementation of the scheme in the state.

From the list of the population, simple random sampling was used to select 10% of the rice farmers in the selected villages to give a total sample size of 992. The rice beneficiaries comprise 429 farmers while the non-beneficiaries comprise 563 farmers.

Data Collection

Primary data were used for this study. A structured open and closed ended questionnaire and oral interview was used in collecting primary data from the beneficiaries and non-beneficiaries rice farmers.

Analytical Techniques

This study employed the following analytical tool; Descriptive Statistics (percentages, frequency and mean), Foster, Greer and Thorbecke (FGT), logit regression model and Propensity Score Matching (PSM) was used.

The Foster, Greer and Thorbecke (FGT) Poverty Index

The analysis of poverty was based on P-alpha (Pa) measure proposed by (FGT 1984). The use of FGT class of measure requires the definition of poverty line, which was calculated on the basis of disaggregated data on expenditure. The FGT measure was based on a single mathematical formulation as follows:

$$P_{\alpha} = \frac{1}{N} \sum_{i=1}^q \left[\frac{z - y_i}{z} \right]^{\alpha} \dots\dots\dots (1)$$

Where;

z = the poverty line

q = the number of individuals below poverty line.

N = the total number of individual in reference population.

Y_i = the is the per capital expenditure of ith respondent and,

α = the degree of aversion and takes on the values 0, 1,2.

The analysis of the poverty status of the households were decomposed into the three indicators i.e. prevalence of poverty (P0), poverty depth (P1) and severity of poverty (P2).

If $\alpha = 0$, the index become $P0 = q/n$. This gives the head count ratio or the incidence of poverty which is the percentage of respondents in poverty i.e whose per capita expenditure is below the poverty line.

If $\alpha = 1$, it reflect both incidence and depth of poverty or the proportion of the poverty line that the average poor will require to attain to the poverty line.

If $\alpha = 2$, the index measure the severity of poverty which is the mean of square proportion of the poverty gap. When multiplied by 100, it gives the percentage by which a poor household's per capita expenditure should increase to push them out of poverty.

Poverty Line

This is a predetermined and well-defined standard of income or value of consumption. In the study, the poverty line was based on the expenditure of the households. A relative approach was used in which a household was defined as poor relative to others in the same society or economy. Two third of the mean per capita expenditure was used as the moderate poverty line while one third was taken as the line for extreme poverty.

The categories of poverty line were given as:

Extremely poor: Those spending $< 1/3$ of MPCHE

Moderately poor: Those spending $< 2/3$ of MPCHE

Non poor: Those spending $> 2/3$ of MPCHE

$(PCE) = TCE/HHS$

MPCHE: $THHE/TNR$

Where:

PCE-Per Capita Expenditure

TCE=Total Consumption Expenditure

HHS=Household Size

MPCHE = Mean Per Capita Households Expenditure.

THHE=Total Households Expenditure

TNR=Total Number of Respondent

The binary logit model was used to estimate the determinants of poverty status among rice farmers. The dependent variable in this case, poverty status, was a binary variable which took a value of one if a household was poor and zero if not poor. The study employed the binary logit regression model as adapted from Gujarati (2004), the cumulative logistic probability model can be econometrically stated as:

$$P = f(X_i) = \sum \beta_i X_i \dots\dots\dots(2)$$

Where;

P = dichotomous response variable (Yes=1; 0 otherwise); P ranges from 0 and 1

f = the cumulative distribution function for X_i

β_i = regression parameters to be estimated.

X_i = a vector of explanatory variables

For ease of expression, the equation rewritten as;

$$P_i = \frac{e^{(\beta_0 + \beta_i X_{ij})}}{1 + e^{(\beta_0 + \beta_i X_{ij})}} \dots\dots\dots (3)$$

The effect of a set of explanatory variables on the dichotomous response variable is specified as;

$$P_i/1 - P_i = 1 + l^z/1 + l^{-z} = l^z \dots\dots\dots (4)$$

Taking the natural logarithm of the equation (iii) yields;

$$L_i = \ln (P_i/1 - P_i) = Z_i = \alpha + \beta_0 + \sum \beta_i X_i \dots\dots\dots (5)$$

If the error term, u_i is taken into account the equation becomes:

$$Z_i = \alpha + \beta_0 + \sum \beta_i X_i + u_i \dots\dots\dots (6)$$

Where;

$$P_i = \text{probability that a household would be poor } (1 + l^Z) \dots \dots \dots (7)$$

$$1 - P_i = \text{probability that a household would be non-poor } (1/1 + l^Z) \dots \dots \dots (8)$$

β_0 = intercept;

α and β_i = regression parameters to be estimated.

L_i = log of the odds ratio.

For ease of interpretation of the coefficients, a logistic model could be written in terms of the odds and log of odd. The odds ratio is the probability ratio of the dichotomous parameters (P_i) and $(1 - P_i)$. It is called the logit or logit probability model.

ln = represents the base of the natural logarithms.

Z_i = ranges from $-\alpha$ to $+\alpha$ (dichotomous response variable); the value of Z_i is derived by introducing a dichotomous response variable Y_i . This is transformed into the logistic regression model by a linear function of explanatory variables, implicitly expressed as follows;

$$Y_i = \beta_0 + \beta_i X_{ij} + u_i \dots \dots \dots (9)$$

The explicit form of the logit regression function is presented as follows:

$$P_i \{Y_i | X_i\} = \alpha + \beta_{1 \log 1} X_1 + \beta_{2 \log 2} X_2 + \dots + \beta_{n \log n} X_n + u_i \dots \dots \dots (10)$$

Where;

Y_i = dichotomous response variable such that; Yes=1(poor), and 0(non-poor), otherwise;

β_0 = intercept;

$\beta_1, \beta_2, \dots, \beta_n$ = coefficients of the independent variables/estimated parameters;

X_{ij} = Set of independent variables;

u_i = disturbance term or error term.

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + u_i \dots \dots \dots (11)$$

$\log n$ (ln) = natural logarithms.

$X_1, X_2 \dots X_n$ = independent variables.

u_i = disturbance term or error term

Where:

X_1 =Income (₦), X_2 =Age of farmers (years), X_3 =Educational status (years), X_4 =Household-size (number of persons), X_5 =farming experience (years), X_6 =Access to credit (where 1 is access to credit and zero otherwise), X_7 =Extension access (where 1 is extension access and zero otherwise), X_8 = Cooperative Association (where 1 is members of cooperatives and Zero otherwise), X_9 = Agro-input (where 1 is agro input access and zero otherwise) and X_{10} = Market access (where 1 is market access and zero otherwise).

P_r = Probability function (1, 0)

The parameters of the logistic regression model were estimated using the maximum likelihood estimate approach.

Propensity Score Match (PSM)

The most common evaluation parameter of interest is the Average Treatment Effect (ATE) on the Treated, which is defined as;

$$ATE = E (Y_1 - Y_0/P = 1) = E (Y_1/P = 1) - E(Y_0/P = 1) \dots \dots \dots (12)$$

The propensity score is the probability of the beneficiary for farm household, I given a set $X = x_i$ of characteristics $P(X) = Pr (P = 1/X = x_i) \dots \dots \dots (13)$

The propensity scores are derived from the regression models in which these characteristics were compared. The impact of treatment on the treated (causal effect of project on the beneficiaries) was estimated by computing the differences across both groups:

$$ATE = 1/ N_1 (Y_1 - Y_0) \dots \dots \dots (14)$$

Where ATE = Average impact of Treatment on the treated, N_1 = Number of matches (from regression model), Y_1 = Poverty severity index as proxy for poverty status by beneficiaries, Y_0 = Poverty severity index as proxy for poverty status by non-beneficiaries. A positive (negative) value of ATE suggests that farm household beneficiaries in the project have higher (lower) outcome variable than non-beneficiaries.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the Respondents

The result revealed that the mean age for the beneficiaries and non-beneficiaries of rice farmers were 51 and 43 years respectively. This means that both beneficiaries and non-beneficiaries farmers were within energetic middle-age cohort, characterized with strength and commitment and so could be an advantage to the success of ATA programme. This finding agrees with Muhammed-Lawal *et al.* (2009) and Okwuokenye and Onemolease (2010). The result revealed that males constitute 98.8% of the respondents for beneficiaries and 91% non-beneficiaries while the female constitute about 2%(beneficiaries) and 9%(non-beneficiaries) among the respondents. The results showed that for both beneficiaries and non-beneficiaries most of the respondents were married (above 90%), while few respondents were single. The result means that the programme is dominated by married farmers. This assertion is supported by Aigbeakaen *et al.*, (2007) and Okoh *et al.*, (2018), who asserted that married people are prompted to join in order to cater for their households'. However, beneficiaries and non-beneficiaries had a mean of 13 and 10 individuals respectively. The mean years spent on education for the beneficiaries and non-beneficiaries are 8 years and 7 years respectively. The result implies that majority of the respondents are literate and could enhance transformation and innovation. This assertion conforms to similar studies by Okoh *et al.*, 2018. It further revealed that the respondents' average mean of rice farming experience of household heads is 20 years. This implies that farmers could be rightly declared to be well experienced in their farming activities and so obliges the farmers with the necessary skills and knowledge associated with farming operations. The mean farm-size is 2.6 hectares and 2.5 hectares for beneficiaries and non-beneficiaries respectively. This implies that most of the beneficiaries and non-beneficiaries' farmers in the study area were small-holder farmers who either inherited or accessed marginal parcels of land. It was revealed that 61% (beneficiaries) and 62% (non-beneficiaries) had contact with extension agent; this constitutes 261 and 348 respectively.

While 39% (beneficiaries) and 38% (non-beneficiaries) had no contact with the extension agents. This means that most of the respondents had contact with extension agent which can easily help to disseminate innovative information. According to Obwona (2000), extension service is very essential to the improvement of farm productivity and efficiency among farmers. The findings revealed that beneficiaries (91%) and non-beneficiaries (65 %) are members of cooperatives societies while 9% beneficiaries and 35% non-beneficiaries are non-members of cooperatives. This is in line with Idiong *et al.*, (2007) who stated that membership of cooperative affords the farmers opportunities of sharing information on modern rice practices.

Poverty Profiles of Beneficiaries and Non-Beneficiaries of Rice Farmers

As shown in Table2, the mean per capita expenditure per month for the beneficiaries and non-beneficiaries' farmers are ₦25,624.48 and ₦25,459.86 respectively. The poverty line was ₦17,082.98 for the beneficiaries farming household and ₦16,973.24 for the non-beneficiaries farming household. Household spending less than the poverty line is described being poor and spending above the poverty line is described as non- poor. It was revealed that 14% of beneficiaries farming households were poor and 74 % were non-poor, while 12% of non-beneficiaries farming households were poor and 69% were non-poor. The incidence of poverty otherwise called head count ratio was 0.26 and 0.31 representing 26 % and 31% for ATA beneficiaries and non-beneficiaries respectively. This means that farming households were poor because their incomes fell short of the mean household expenditure or the poverty line. The poverty depth was 0.159 and 0.143 respectively of the ATA beneficiaries and non-beneficiaries whose average consumption expenditure was below the poverty line. This implies that the ATA beneficiaries required 15.9 % of the poverty line to get out of poverty. While non-beneficiaries required 14% of the poverty line to get out of poverty. The severity of poverty index was 0.121 and 0.059 representing 12% and 5.9% respectively of the beneficiaries and non-beneficiaries which represents the poorest among the poor farm households who require the attention. This is in line with (Osondu *et al.*, 2015) who observed that the incidence of poverty on fadama 111 non-beneficiaries was higher than the beneficiaries.

Table 1: Socio-Economic Characteristics of the Respondents

Respondents n= 992 Characteristics	Variables	Beneficiaries		Non-beneficiaries	
		Frequency	Percentage	Frequency	Percentage
Age (Years)	20-30	23	5	101	17.9
	31-43	73	17	203	36.1
	41-50	197	46	190	33.7
	51-60	102	24	63	11.2
	>60	34	8	6	0.11
	Total	429	100	563	100
Gender	Mean	51		43	
	Female	5	1.2	49	9
	Male	424	98.8	514	91
Marital Status	Total	429	100	563	100
	Single	4	0.9	56	9.9
Household Size	Married	425	99.1	507	90.1
	Total	429	100	563	100
Household Size	3-10	125	29	306	54.4
	11-18	264	62	221	39.3
	19-26	37	9	32	5.7
	27-34	3	1	4	0.7
	Total	429	100	563	100
	Mean	13		10	
Educational Qualification	Non-formal	50	12	137	24
	Primary	262	61	253	45
	Secondary	26	6	17	3
	Tertiary	91	21	156	28
	Total	429	100	563	100
	Mean	8		7	
Rice Farming Experience	1-10	94	22	173	31
	11-20	204	48	216	38
	21-30	98	23	100	18
	35-45	26	6	57	10
	46-56	4	1	17	3
	57-67	3	1	0	0
	Total	429	100	563	100
	Mean	20		19	
Farm Size	1-3	338	79	425	75.5
	4-6	70	16	126	22.4
	7-9	18	4	10	1.8
	10 above	3	1	2	0.4
	Total	429	100	563	100
Extension Contact	Mean	2.6		2.5	
	No contact	168	39	215	38
Cooperative Societies	Extension contact	261	61	348	62
	Total	429	100	563	100
Cooperative Societies	Non-membership of cooperative	37	9	196	35
	Cooperative membership	392	91	367	65
	Total	429	100	563	100

Source: Field Survey, 2018

Table2: Poverty status of the respondents in the study area

Poverty Category	Beneficiaries		Non-Beneficiaries	
	Frequency	Percentage	Frequency	Percentage
Non-poor	316	74	391	69.4
Moderately poor	52	12	105	19
Poor	61	14	67	12
Total	429	100	563	100
FGT Poverty Indices				
Poverty Incidence (P ₀)	0.263		0.306	
Poverty Depth (P ₁)	0.159		0.143	
Poverty Severity (P ₂)	0.121		0.059	
Poverty line				
MPHE	25624.48		25459.86	
2/3*MPHE	17082.98		16973.24	
1/3*MPHE	8541.49		8486.62	

***MPHE means Total Household Expenditure. Source: Field Survey, 2018

Determinants of Poverty Status of ATA Beneficiaries in the Study Area

Table 3 present the results of logit regression on the determinants of farm household's poverty status among rice farmers beneficiaries in North Central Nigeria. The estimated coefficient of the likelihood ratio chi-square was significant ($p < 0.01$) with a chi square value of 146.37. The model accounted (R^2) for 30% of the variation in poverty status of the farm households in the study area. The marginal effects of the determinants of poverty can be used to assess the impact of explanatory variables. The marginal effect of income from farming activities is significant and one-unit increase in income will increase the probability of a household being poor by 0.2%. This is in contrast with the findings of Amao, Ayantoye and Fadahunsi, (2013). The results showed that the marginal effect of age of the household head is significant at 10 percent level of significance and an increase of one per cent of the age of the household head decreases the probability of the household being poor by about 0.5%. The result is consistent with that of the Khalid *et al* (2005). The marginal effect of household size is significant at 10 % level and a unit increase in household size will increase the probability of that household being poor by 1.2.

This result is consistent with that obtained by Okurut (2002). This is because a larger household will likely have more children, who are unproductive but take a big proportion of the household income in terms of school requirements, medical attention, food and clothing. As the marginal effect of farming experience increases it will increase the probability of a household being poor by about 1.9%. This is attributable to the fact that as farming experience increases, the age of the household head also increases. The marginal effect of access to credit was significant at 1% which implies that a unit increase in credit access will increase household's probability of being poor by 36.6%. This is in consistent with the findings of Adekoya, (2014). The marginal effect of extension contact were significant at 10% level and it implies that a unit increase in the extension contact decreases the probability of the household being poor by about 77.8%, this finding agrees with Umeh and Asogwa, (2011). The marginal effects of cooperative society were significant at 10% and imply that a unit increase in cooperative society will increase household's probability of being poor by 15.6%.

Table 3: Estimates of the Determinant of Poverty Status of Beneficiaries

Variable	Coefficient	Standard error	T-value	Marginal effect
Constant	1.043	0.274	3.809	
Income	0.007	0.002***	3.601	0.0022
Age	-0.018	0.009*	-1.900	-0.0055
Educational qualification	-0.021	0.031 ^{NS}	-0.660	-0.0068
Household size	0.045	0.025*	1.800	0.0124
Rice farming experience	0.065	0.023***	2.820	0.0195
Access to credit	1.427	0.167***	8.530	0.3663
Extension contact	-2.499	1.420*	-1.760	-0.7784
Cooperative society	0.465	0.272*	1.710	0.1561
Agro input access	-0.207	0.253 ^{NS}	-0.820	-0.0661
Market access	-0.125	0.526 ^{NS}	-0.240	-0.0070
Log likelihood function	-174.169			
LR chi ² (11)	146.37			
Pseudo R ²	0.30			
Prob> chi ²	0.0000			

Note: *** and * Significant at 1% and 10% levels, while ^{NS} Not Significant.

Source: Field Survey, 2018

Impact of ATA on Beneficiaries Poverty Reduction

Using the poverty line of about ₦25624.48 per month the rice farming households were classified into poor, moderately poor and non-poor. According to the result in Table 4, both the results of the Nearest Neighbor Matching (NNM) and the Radius Matching (RM) show that ATA beneficiaries reduced poverty severity by 5.6% and 2.4% with a positive sign and significant at 5% and 1% level respectively. This implies that involvement in agricultural transformation impacted more on the life of the poor. Agricultural transformation in nature had a positive impact on the poor households of interest considered in this study. Therefore, the null hypothesis is rejected. This is in agreement with Awotide *et al.* (2015) observed that project/programme had an impact on Contract farming in the study area.

Table 4: Estimate of the Impact of ATA Programme on Poverty Status of Farmers

Estimation	Beneficiaries	Non-beneficiaries	Difference	Std. Error	T-value
Nearest Neighbor Matching (NNM)					
Unmatched	0.120	0.097	0.023	0.012	2.00
ATT	0.120	0.065	0.056	0.024	2.33**
Radius matching					
Unmatched	0.120	0.097	0.023	0.013	1.84
ATT	0.117	0.093	0.024	0.010	2.50***

Note: ***and **Significant at 1% and 5% levels

Source: Field Survey, 2018

CONCLUSION AND RECOMMEDATIONS

The study concludes that the rice farmers during the ATA programme were smallholder farmers having a farm-size of 2.6hectares (beneficiaries) and 2.5hectares (non-beneficiaries). Also the farmers were at their energetic age with a mean of 8years (beneficiaries) and 7years (non-beneficiaries). The results revealed that about 12% and 24% beneficiaries and non-beneficiaries respectively were poor. The determinant of poverty status among the beneficiaries' rice farmers shows that income, age, household-size, rice farming experience, access to credit, extension contact and cooperative society were the significant determinants.

However, the ATA programme had significant impact on the beneficiaries' poverty status. The result of the impact revealed a positive significant. Hence, the null hypothesis with regards to no impact of ATA on beneficiaries' poverty status is rejected. It was recommended that the government should ensure that necessary infrastructures and other utilities in the study areas are readily available. This will go a long way by discouraging the youth from migrating to urban cities and also encourage extension agents to easily disseminate information to the farmers. In other words, agricultural organization who has the mandate of training should train farmers on how to use their farm skills and utilization of resources in other to alleviate them from poverty.

REFERENCES

- Adekoya, O.A,(2014): Analysis of Farm Households Poverty Status in Ogun State, Nigeria. *Asian Economics and Financial Review* 4(93):Pp325-340.
- Akinwumi, A. A. (2013): Press Briefing on Agricultural Reform. In: Acha E., Boosting Food Security through Growth Enhancement Support Scheme. The Road Newspaper.
- Aigbekaen, E. O. Sanusi, R. I. and Ndagi, I. (2007): Constraints to the Use of Global System of Mobile Communication (GSM) by Crop Farming Household in South-West Nigeria. *Journal of Agricultural Communication*.7 (1): 110-118
- Amao, J.O, Ayantoye, K., Fadahunsi, O.D. (2013): Poverty Among Farming Households in Osun State, Nigeria. *International Journal of Humanities and Social Science*. 3(21): 135-143.
- Awotide, B.A. Fashogbon, A. and Awoyemi, T. T. (2015): Impact of Agro-Industrial Development Strategies on Smallholder Rice Farmers' Productivity, Income and Poverty: The Case of Contract Farming in Nigeria. A Paper Presented at the International Conference of the Centre for the Studies of African Economies (CSAE) 22-24th March Catharine College, Manor Road, Oxford, United Kingdom: Pp1 – 33.
- Daramola, A.G. (2005): Government Polices and Competitiveness of Nigerian Rice Economy. Paper Presented at the 'Workshop on Rice Policy and Food Security in Sub-Saharan Africa' Organized by WARDA, Cotonou, Republic of Benin. Pp1-18.
- Fertilizer Suppliers Association of Nigeria (FESPAN) (2012): Working Together to Improve Fertilizer Supply in Nigeria. Newsletter, 2(8).

- Food and Agriculture Organization (2005): The State of Food Insecurity 2004. Food and Agriculture Organization of the United Nations, 2005. Rome pp 1-33. (www.fao.org/docrep/007/y560eo3.htm).
- Foster, J., Greer, J., and Thorbecke, E. (1984): A Class of Decomposable Poverty Measures. *Economia*, 52 (3):761-762.
- Idiong, C. I., Onyenweaku, E.C., Domian, I. A. and Susan, B. O. (2007): A Stochastic Frontier Analysis of Technical Efficiency in Swamp and Upland Rice Production System in Cross River State Nigeria *Medwell Agricultural Journal* 2(2): 299 – 305.
- Muhammad-Lawal, A. Omotesho, O. A. and Falola, A. (2009): Technical Efficiency of Youth Participation in Agriculture Programme in Ondo State, Nigeria. Nigeria.
- National Bureau of Statistics, (2010). "Poverty Profile for Nigeria". NBS Office, Abuja, Nigeria.
- National Bureau of Statistics (2008): Poverty Profile for Nigeria. Nigerian Bureau of Statistics. Abuja, Nigeria.
- National Population Commission (NPC) (2006).
- Nasta, R.T. (2013): Farmers Fault FG's Growth Enhancement Scheme. The Leadership Newspaper July 4th 2013. National Bureau of Statistics, (2010). "Poverty Profile for Nigeria". NBS Office, Abuja, Nigeria.
- National Rice Development Strategy. (NRDS)/ Federal Republic of Nigeria (FGN) (2009): A Document Prepared for the Coalition for African Rice Development (CARD).
- Obwona, M. (2000): Determinant of Technical Efficiency Among Small and Medium Scale Farmers in Uganda: A Case of Tobacco Growers. Final Report at the AERC Biannual Research Workshop, Nairobi, Kenya.
- Okoh, S.O, Okwuokenye, G.F and Urhibo, F.A (2018): Assessment of Growth Enhancement Support Scheme: Paradigm Shift for Poverty Alleviation and Increased Farm Income Among Farmers in Delta State, Nigeria. *European Journal of Physical and Agricultural Sciences*. Vol.6 No 1 Pp 15-27.
- Okolo, C. V. and Obidigbo, C. (2015): Food Security in Nigeria: An Examination of Food Availability and Accessibility in Nigeria. *International Journal of Economics and Management Engineering*. Vol:9 No:9 Pp 3171-3179.

- Okurut, F.N. (2002): The Impact of Foreign Aids Flows on Private Sector Investment in Uganda, 1984–94. A final report submitted to AERC.
- Okwuokenye, G. F. and Onemolease, E. A. (2010): Evaluation of Agricultural and Inputs Supply Programme on Rice Production in Delta State. *International Journal of Agricultural and Rural Development*. 1(4):176-185.
- Osondu, C.K, Ijioma, J.C, Udah, S.C, Emerole, C.O (2015): Impact of National Fadama 111 Development Project in Alleviating Poverty of Food Crop Framers in Abia State, Nigeria. *American Journal Food of Business, Economics and Management*. Vol.3 (4):225-233.
- Umeh J.C, and Asogwa B.C (2011): Econometric Model of Poverty for the Farming Households in Nigeria: A Simultaneous Equation Approach. In: Xuan, L., (Ed.), 2nd International Conference on Agricultural and Animal Science (CAAS 2011), Maldives. International Proceedings of Chemical, Biological and Environmental Engineering. 22:82-87.
- World Bank (2003): Nigeria: Women in Agriculture in Sharing Experiences: *The World Bank Participating Source Book*, Washington DC