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IMPACT OF YOUTH RURAL-URBAN MIGRATION ON FARM HOUSEHOLDS ECONOMY IN ORU EAST LOCAL GOVERNMENT AREA OF IMO STATE, NIGERIA

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ABSTRACT
This study analysed impact of youth rural-urban migration on farm household economy in Oru East Local Government Area of Imo State, Nigeria. Multistage random sampling technique was used to select 120 farm households from whom data were collected using semi structured questionnaire. Data collected were analysed using descriptive statistics, paired t-test and ordinary least square regression technique. Results showed 65.0% of the farm households were male headed with mean age, household size, farm size and monthly food expenditure/consumption of 57 years, 6 persons, 0.72 hectares and ₦15,405.00 respectively. Causes of youth rural-urban migration among the farm households include: to improve welfare (76.7%), quest for better job (65.0%) and low level of economic empowerment (53.3%). Mean rate of youth rural-urban migration among the households was 63.7%. Mean annual remittance received by the households from youth migrants in urban areas was ₦62,000. Result of paired t-test analysis revealed that youth rural-urban migration had negative significant effect on farm income and positive significant effects on household gross income and household expenditure level at 1.0% risk levels respectively. The OLS regression analysis with exponential function as lead equation posted R^2 value of 0.5659, significant F-value of 37.78 and showed that education level (0.0803), household size (0.2003) and household asset endowment (-0.8316) were significant determinants of rate of youth rural-urban migration at varied alpha levels. The study recommends that remittances received by farm households from youth migrants should be saved and invested in projects that would create jobs and provide sustainable income for the families.
Key words: Farm household, household welfare, migration, rural, urban, youth

INTRODUCTION
Migration is generally, a process in which individuals or groups shift their residence from one location to another for the purpose of taking up permanent or semi-permanent residence, usually across a political boundary (National Geographic Xpeditions, 2013). According to United Nations (2013) migration is the movement of individuals from one geographical space to another, involving permanent or temporary residence or settlement due to certain reasons such as natural disasters; physical conditions; worry of insecurity; differences in economic opportunities; differences in social amenities and change in social standing such as high level of education and wealth. Migration occurs at a variety of scales, such includes inter-continental; intra-continental and inter-regional and may exist as rural-rural, rural-urban, urban-urban or urban-rural migration (Ango et al*., 2014; Osondu & Ibezim, 2013). Rural-urban migration which is predominant in most parts of Africa including Nigeria, more often than not involves a movement from low-order to high-order central place (Osondu & Ibezim, 2013). The process of people migrating to other areas in search of a better life is not new (Ajaero & Onokala, 2013). According to United Nations (2013), despite the lack of reliable data on internal migrants, it is assumed that 40% of migrants originated from rural areas and many of them are youths with high propensity to migrate. According to Federal Republic of Nigeria (2001), youth comprise all young persons of ages 18 to 35, who are citizens of the Federal Republic of

Nigeria. The United Nations definition of youth argued that youth start with a lower age of 15 years and upper age limit of 39 years. In this study, youth comprise of persons between the age of 15 years and 39 years. The youth constitute the major resource base for any country which is committed to sustainable agricultural and rural development policies (Umeh & Odom, 2011). This category represents the most active, the most volatile and yet the most vulnerable segment of the population. People in this age bracket definitely constitute a sizeable chunk of a nation's population on which the burden of nation building falls. The youth also constitute the major resource base for any country that want to embark on any meaningful rural development projects.

According to Governance Social Development Humanitarian and Conflict (2013), youth rural-urban migration can act both as a way of moving out of poverty, and a cause of social exclusion and food insecurity. On one hand, youth rural-urban migration has been identified as a survival strategy utilized by poor youths (Ajaero & Onokala, 2013). Rural-urban migration is often a strategy adopted by youths to diversify farm household income sources and cope with natural and man-made risk. Some rural households encourage younger members (youths) to migrate, purposely to have higher earnings potential and also the likelihood to remit money to household members at home (Herreri & Sahn, 2013). On the other hand, household labour which rural farm households depends for farm labour supply is reduced due to migration of youths to urban centres. This situation consequently results to high cost of production, low productivity and reduction in annual income and a fall in the standard of living and food security of the rural populace (Akangbe, Adesiji & Akinpelu, 2006). The increasing flow of labour and man power away from rural areas in form of youth rural-urban migration has placed a great burden on the agricultural sector because a decreasing proportion of the rural population now feed an increasing proportion of non-agricultural urban population without a significant improvement in the tools and method of farming used (Osondu & Ibezim, 2013). Aromolaran (2013) reported that in most rural areas in Nigeria, the potential labour force that could have contributed to the improvement of the rural economy have moved into the cities in search of better standards of living and benefits they presumed could exist in urban centres.

Globally, the complicated connections between migration and development has remained an issue under vigorous academic debate. Youth rural-urban migration has continually been a challenging issue for policy makers and governments especially in developing countries. The impact of out-migration of youths on rural livelihoods is a debatable case. Out-migration may result in drastic decrease in the labour which in turn reduces total cropped area and quality of work giving rise to reduced food production and reduced household wealth leading to increased vulnerability in many rural areas which may, bring about food insecurity (Anaglo et al., 2014). On the other hand youth rural-urban migration may have positive impact on household welfare through remittances sent by migrant youths to their households in rural areas.

One significant source of development for the rural populace as a result of increasing migration towards the cities is remittances. Recently, migrants' remittances and the income multipliers they create are becoming critical resources for the sustenance strategies of receiving farm households as well as agents of regional and national development (World Bank, 2005). Farm households that receive these remittances tend to use the proceeds primarily for current consumption (food, clothing) as well as investments in children's education, health care, improvement in household food security, water and sanitation. Nevertheless, the ability of remittances to compensate the labour shortage in rural areas is still a function of the amounts and value of remittances received by migrants' households at home, especially in the developing countries (World Bank, 2005). The effect of a loss of labour as a result of migration

and the effect of migration remittances are likely to lead to changes in agricultural production in terms of income from agriculture, though, these two effects can offset each other (Osondu *et al.,* 2014).

Consequently, the effects of rural-urban migration in the rural places of origin of migrants may manifest in three ways. First, the rural-urban migrants send remittances to their relatives in the rural areas and these remittance-receiving households use the remittances for various purposes. Secondly, these rural-urban migrants execute various rural developmental projects in their rural areas of origin. In Nigeria, most migrants coming from a particular rural community to live in an urban area usually form rural community associations in the urban area. These community associations in the urban areas articulate, from time to time, the developmental needs of their rural communities of origin and contribute resources to execute projects such as construction of roads, drilling of bore-hole water supply, building of town halls, electrification and the award of educational scholarships to students in the rural areas. Thirdly, there is reduction of youths in rural areas which lead to shortage of agricultural labour supply needed for agricultural production (White, 2000). Bull (2001) pointed out that rural-urban pattern of migration takes younger farmers out of the rural areas, resulting in older people being responsible for agricultural production.

Various studies (Ajaero & Onokala, 2003; Adesiji, *et al.,* 2009; Angol *et al.,* 2014; Osondu & Ibezim, 2013) had been done on issues relating to rural-urban migration in different parts of Nigeria. Specifically, Ajaero & Onokala (2003) investigated effects of rural-urban migration of youth on rural communities of South-eastern Nigeria. Adesiji *et al.* (2009) studied factors associated with youths' rural-urban drift in Kwara State and Ango *et al.* (2014) determined socio-economic factors that influenced youth rural-urban migration in Sokoto State, while, Osondu & Ibezim (2013) studied the effect of migration on rural farm labour supply in Umuahia North LGA of Abia state. None of these studies determined impact of youth rural-urban migration on rural farm households economy, especially as it pertains to farm households in Oru East LGA of Imo State. This study not only intends to fill the gap in literature but also seeks to contribute enormously to the current debate on rural to urban migration in Nigeria. The specific objectives of the study were to: describe socio-economic characteristics of migrant youth farm households in the study area, ascertain causes of youth rural-urban migration in the study area, determine the rate of youth rural-urban migration in the study area, estimate volume of remittance by youth migrants to their households in the study area, determine impact of youth rural-urban migration on farm output, household gross income and household expenditure levels in the study area and to determine socio-economic factors influencing youth rural-urban migration in the study area.

METHODOLOGY
This study was carried out in Oru East Local Government Area (LGA) of Imo State, Nigeria. The LGA has an area of 136km^2 and a population of 111,822 persons (National Population Commision, 2006). The LGA is bounded to the West by Oru West LGA, to the East and South-east by Njaba and Mbaitolu LGAs respectively, to the North by Orsu LGA and to the South by Oguta LGA, all in Imo State. It lies approximately within latitudes 06^0 45´ and 07^0 15´ North of the Equator and longitudes 06^0 50´ and 07^0 25´ East of the Greenwich meridian. The LGA is made up of six communities namely Akatta, Akuma, Amagu, Amiri, Awo Omamma and Omuma.

The population for this study consist of all farm households of youth migrants in the LGA. Multi-stage random sampling technique was used to select sampling locations and respondents.

First, three communities in Oru East LGA were randomly selected. Secondly, four villages were randomly selected from each of the three communities, to give twelve villages. At the village level, list of farm households with youth migrants were formulated, to serve as the sampling frame. From each village, ten farm households of youth migrants were randomly selected from the list, to give 120 farm households that were used for the study. The respondents for the study were heads of households of youth migrants.

The study made use of primary data for its analysis. Data were collected from the selected sample following a field survey conducted with a pre-tested semi-structured questionnaire. The study employed services of four (4) trained enumerators who are indigenes and familiar with the areas to assist in data collection. Data were collected from 120 youth migrant farm households. Data collected include socio-economic variables of farm households, remittance received by migrant youth households in the area, farm income, gross income and expenditure levels of the households before and after migration of youths.

Data were analysed using descriptive statistics such as mean, frequencies and percentages. Data were also analysed using paired t-test and Ordinary Least Square (OLS) regression technique.

The paired t-test is specified as follows:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\dfrac{S_1^2}{n_1} + \dfrac{S_2^2}{n_2}}} \qquad \cdots (1)$$

$n_1 + n_2 - 2$ degrees of freedom.
Where:
t = Student "t" statistic
$\overline{X}_1$ = Sample mean of farm income/gross income/expenditure level of youth migrant farm households after migration of youth;
$\overline{X}_2$ = Sample mean of farm income/gross income/expenditure level of youth migrant farm households before migration of youth;
S_1^2 = Sample variance of farm income/gross income/expenditure level of youth migrant farm households after migration of youth;
S_2^2 = Sample variance of farm income/gross income/expenditure level of youth migrant farm households before migration of youth;
n_1 and n_2 = Sample size;

The Ordinary Least Square (OLS) regression model used for this study is implicitly stated below as:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, ei) \ldots \qquad (2)$$

Where:
Y = Youth rural-urban migration rate (%)
X_1 = Education level of migrant youth (Years in school)
X_2 = Marital status of migrant youth (Married =1; single =0)
X_3 = Household size of migrant youth (Number)
X_4 = Household asset endowment of migrant youth (Naira)
X_5 = Age of migrant youth (years)
X_6 = Farm size (hectare)
ei = Error term

It is expected *a priori* that $X_1, X_2, X_3, X_5 > 0$; $X_4, X_6 < 0$

RESULTS AND DISCUSSION

Socio-economic Characteristics of Farm Households

Table 2: Distribution of farm households according to socio-economic characteristics

Variables	Mean
Age (Years)	57.43
Farm size (hectare)	0.72
Household size	6.43
Monthly food expenditure/consumption	15,405.00
Education Level	**Percentage**
No formal education	12.5
Primary school	38.3
Secondary school	47.5
Tertiary school	1.7
Leadership structure	**Percentage**
Male headed	65.0
Female headed	35.0
Total	100.00

Source*: Field Survey, 2017*

Distribution of the farm households based on socio-economic characteristics is shown in Table 2. The table shows that the mean age of the farm household's heads was 57 years. This shows that the heads of the youth migrant households were ageing, and may not be energetic enough to cope with the rigours and stress involved in farming. Without more energetic farm hands to help in agricultural production activities, household farm output could decrease. This result has a lot of negative implications for agriculture as aging farmers cannot cope better with the daily challenges of farm enterprises nor readily accept new innovation (Onyebinama, 2004; Onu, 2006). This finding corroborates result of Ajibefun & Abdulkadiri (1999) that small scale farmers in Nigeria are old and ageing. Meanwhile, mean farm size of the farm households was 0.72 hectares. The paucity of available lands for farming in the area could have contributed to drifting of many youths to urban centres. Furthermore, mean household size of the households was 6 persons. This implies that farm households could rely on members for farm labour supply and this is expected to influence labour supply for their agricultural production positively. However, Waliu (2003) and Ango *et al.* (2014) noted that rural households with large household size produced food that is insufficient for their living, thus, prompting the able bodied youths in such households to migrate to urban areas in search of better livelihood opportunities. Mean monthly food expenditure/consumption of the farm households was ₦15,405.00. Value of monthly food consumption of households is a good indicator of food security status of farm households and has implication on household welfare. With respect to education level Table 2 shows that 47.5% of the farm households heads had secondary school education. While, 38.3% and 1.7% of them had primary and tertiary education respectively. Cumulatively,87.5% of the heads of farm households in the study area were literate with divers formal education levels ranging from primary school education to tertiary education. Literacy (ability to read and write) would enable the household heads to better utilize effectively and efficiently available resources in the area. Higher education enhances business ideas, skills, innovation and managerial ability for business sustainability. According to Nwibo & Okorie (2013) as an individual increases his educational attainment, his managerial ability for business sustainability also increases. Good proportion (65.0%) of the

farm households are male headed, indicating that male headed farm households were more predominant in the area. According to Kassie, Ndiritu & Stage (2014) female headed households arise from the death of the male heads, divorce or migration of male heads. The finding compare favourably with finding obtained by Mgbakor, Uzendu & Usifo (2014) that male headed farm households were more predominant in Delta State.

Causes of Youth Rural-Urban Migration

Table 3: Causes of youth rural-urban migration in Oru East LGA of Imo State,   Nigeria as perceived by respondents

Causes of Youth Rural-Urban migration	* Frequency	Percentage
Absence of social amenities	41	34.2
Lack of interest in farming	40	33.3
For better education	52	43.3
Search for better job	78	65.0
Low level of economic empowerment	64	53.3
To join spouse	8	6.7
To learn trade/craft	42	35.0
Change environment	10	8.3
Look for money through labour	22	18.3
To improve welfare	92	76.7

Source: *Field Survey, 2017*
* Multiple responses recorded

The reasons given by the farm household heads for the movement of youths out of the study area to urban areas are shown in Table 3. As presented in the table, these include absence of social amenities (34.2%) and lack of interest in farming (33.3%). According to Adesiji *et al*. (2009) one of the main causes of youth rural-urban migration is absence of social amenities in rural areas. The farming system in Nigeria has remained traditional and farming is still done through the use of traditional method. Farmers still use traditional farming implements such as hoes and cutlasses for farming at subsistence level. These make farming difficult, small scale and unrewarding. Thus, causing the youths to lose interest in farming and migrate to urban areas in search of better means of livelihood.

Other causes of youth rural-urban migration in the area include search for better education (43.3%), the quest for a better job (65.0%), low level of economic empowerment (53.3%) and to improve welfare (76.7%) among others. Urban centres are known to have better facilities for education and employment than rural areas which help migrant youths better able to improve their welfare and that of their family members. Thus, according to Koko & Abdullahi (2012), through migration, the capabilities of individuals are improved in view of the fact that the migrant acquires some form of education and brings back home new ideas and new skills which could in some circumstances improve productivity in agriculture. Also, due to the concentration of industries, government offices, organizations and markets in the urban centres, youths are moving to urban centres in search of jobs and trade/craft apprenticeship as a means of improving welfare.

Rate of Youth Rural-Urban Migration

Table 4: Distribution of respondents based on rate of youth rural-urban migration

Rate of migration (%)	Frequency	Percentage	Mean
< 21	18	15.0	63.7%
21 – 40	14	11.7	
41 – 60	22	18.3	
61 – 80	42	35.0	
> 80	24	20.0	
Total	120	100.0	

Source: *Field Survey, 2017*

Table 4 shows that 15.0% of the farm households experienced less than 21% rate of youth rural-urban migration, while 11.7% of the respondents households experienced between 21% and 40% rate of youth rural-urban migration. Table 4 further shows that 35.0% of the respondents' households had between 61% and 80% rate of youth rural-urban migration. The mean rate of youth rural-urban migration among the households was 63.7% indicating that majority of the youths in the area have migrated to urban centres. This result suggests the decline of available labour for agricultural production in the study area and is in agreement with Dehaan (2002) and Osondu *et al*. (2014) that the rate of migration in rural areas of Nigeria was high with two thirds of households estimated to have migrants. The result also compares favourably with findings obtained by Osondu & Ibezim (2013) who reported mean migration rate of 61.0% among sampled farm households in Abia State.

Volume of Remittance by Youth Migrants to their Households

Table 5: Amount remitted by youth migrants to their households annually in Oru East   LGA of Imo State, Nigeria

Amount of Remittance (₦)	Frequency	Percentage	Mean
< 40,000	42	35.0	62,045.8
41,000 – 80,000	46	38.3	
81,000 – 120,000	20	16.7	
> 120,000	12	10.0	
Total	120	100.0	

Source: *Field Survey, 2017*

Table 5 shows that 35.0% of the respondents' households received less than ₦40,000 annually as remittance from their family members (youths) who migrated to urban centres. About 38.3% of them received between ₦41,000 to ₦80,000 annually as remittance from youths while 16.7% of the respondents received between ₦ 81,000 to ₦ 120,000 as annual remittance. The mean annual remittance received by the respondent's households from youth migrants in urban areas was ₦62,000. The prime motivator for youth migrants is economic. The youth migrants usually send money to their family members. These remittances are used to buy fertilizers and other farm inputs. It is also used for paying school fees and medical bills. According to International Fund for Agriculture (2007), global remittances are growing quickly and steadily and in some locations, have overtaken agriculture as the main source of income for rural households. The result posits remittances are inherently linked with migration and agrees with Sander & Maimbo (2003) who stated that whether for economic or other reasons migrants from rural areas leave their homes to improve their own livelihood and opportunities as well as to financially support their families back home.

Impact of Youth Rural-Urban Migration on Farm Income, Gross Income and Household Expenditure Levels

Table 6: Paired t-test result of difference on the farm income, gross income and expenditure levels of farm households before and after youth rural-urban migration

Variable	Individual mean	Mean difference	Standard error	t-value
Mean annual farm income before youth migration	71843	-8503	84.698	3.828***
Mean annual farm income after youth migration	63340			
Mean annual household gross income before youth migration	92655	58658	51.116	3.912***
Mean annual household gross income after youth migration	151313			
Mean monthly household expenditure level before youth migration	16452	7235.6	6.256	5.124***
Mean monthly household expenditure level after youth migration	23687.6			

Source: *Field Survey, 2017.*

Table 6 shows the paired t-test result of difference on the annual farm income and monthly household expenditure levels of farm households before and after rural-urban migration of youths. As shown in Table 6 there was a decline in farm income of the farm households after migration of youthful members to urban centres as evidenced by the negative mean difference of -8503 which was statistically significant at 1.0%. Therefore, it is concluded that migration of youths to urban centres had significant negative effect on the households' farm income and thus, agricultural production in the study area. This may be due to decline in available farm labour, which increases the cost of farm labour. All things being equal increase in production cost would reduce profit margin of farmers. The result agrees succinctly with Wuni (2013) who posits that migration results in decreased farm incomes as a result of low agricultural productivity and the general poor performance of agriculture in the area. This finding compares favourably with findings of Mgbakor *et al.* (2014) in Aniocha South LGA of Delta State, Nigeria that migration significantly reduced farm income.

As seen in Table 6 there was a significant increase in gross income of the farm households after migration of their youth members to urban centres as evidenced by the positive mean difference of 58658 which was statistically significant at 1.0%. Therefore, it is concluded that migration of youths to urban centres had significant positive effect on the households' gross income in the study area.

In relation to household expenditure levels before and after rural-urban migration of youths, Table 6 showed that the mean monthly household expenditure level before rural-urban migration of youths was ₦16452, and the mean monthly household expenditure level after rural-urban migration of youths was ₦ 23687.6. The mean difference was ₦ 7235.6. The t-

calculated result for mean difference of household expenditure level before and after youth rural-urban migration was 5.124 and was statistically significant at 1.0%. Hence, it is adduced that youth rural-urban migration had a significant positive impact on household expenditure level. By implication of these results, youth rural-urban migration had positive impact on farm household economic welfare.

Socio-Economic Factors that influenced rate of Youth Rural-Urban Migration

Table 7: Multiple regression estimates of socio-economic factors that influence rate of youth rural-urban migration in Oru East LGA of Imo State, Nigeria.

Variable	Linear	Exponential+	Semi log	Double log
Constant	305583.4	-1.67e+07	14.9094	-287983.2
	(0.5103)	(-0.7556)	(0.7638)	(-0.9532)
Education level	0.0178***	0.0803**	1.470**	0.9836***
	(2.7937)	(1.9892)	(2.2541)	(3.3407)
Marital status	1.3431	0.2334	0.0014	22.1108
	(1.48)	(0.3102)	(0.1111)	(0.7207)
Household size	0.05833**	0.2003*	28.731**	282.4464
	(2.5523)	(1.7126)	(2.4814)	(-0.0204)
Household asset endowment	-0.9355	-0.8316***	-0.6492	-1.7741
	(-2.0000)	(-3.3330)	(-0.8152)	(-0.9207)
Age	0.1924	0.2225	1.9289	1044816
	(1.5166)	(1.0087)	(1.4324)	(0.9331)
Farm size	0.7824	5.2611	2.4145	20.6462
	(1.5447)	(0.89)	(0.0117)	(0.7240)
R square (R^2)	0.5367	0.5659	0.4943	0.4532
Adjusted R^2	0.5077	0.5403	0.4624	0.4091
F-ratio	5.84***	37.78***	1.79*	19.37***

Source: *Computations from Field Survey data, 2017.*
***, **, *: Indicate variables that are statistically significant at 1.0%, 5.0% and 10.0% risk levels respectively; Figures in parenthesis are t-ratios; + lead equation.

The result of the multiple regression analysis of the socio-economic factors that influenced the rate of youth rural-urban migration in Oru East Local Government Area of Imo State, is shown in Table 7. The table shows that all the functional forms of the regression were statistically significant at 1.0% probability level, implying that any of the functional forms was adequate in estimating and explaining the variations in the rate of youth rural-urban migration. However, the rate of migration was best estimated and explained using the exponential functional form which explained 56.59% of the total variation in the dependent variable. Furthermore, other statistical and econometric considerations such as the number of significant coefficients and their conformity to *a priori* expectations were in favour of the exponential functional form. The F-statistic value of 37.78 is statistically significant at 1.0 alpha level, suggesting that the data fit the model and that the independent variables were important explanatory factors of the variations in the dependent variable.

Specifically, the coefficient of education level of youth migrants (0.0803) was positive and statistically significant at 5.0% alpha level. This implies that the higher the education level of youths the higher their rate of migration from rural areas. The sign of the variable is in consonance with *a priori* expectation. According to Ango *et al.* (2014) level of education of migrants has influence on their search for better employment in cities. Better educated youths

may not wish to remain in villages and take to farming, when better opportunities abound in cities. Essang & Mabawonku (1994) obtained a similar finding in South-western Nigeria.

The coefficient of household size (0.2003) was positive and statistically significant at 10.0% alpha level. The sign of the variable is in accordance with *a priori* expectation and implies that the higher the household size, the higher the rate of rural-urban migration of youths. This result supports the assertion by Waliu (2003) and Ango *et al.* (2014) that rural households with large household size produced food that is insufficient for their living, thus, causing able bodied youths in such households to migrate to urban areas in search of better opportunities.

The coefficient (-0.8316) of household asset endowment was negative and statistically significant at 1.0% alpha level. This suggests that the lower the asset endowment of a rural farm household the higher the rate of rural-urban migration of youths in such households. This result makes sense, as youths have been known to migrate to urban centers for fulfilment of economic needs.

CONCLUSION
Youth rural-urban migration is a challenge to agriculture and rural development in Nigeria. Youth rural-urban migration has taken away the energetic population of rural areas, leaving behind the children and aged who are not actively engaged in agriculture. But despite this negative impact, rural-urban migration has created an opportunity for migrants to secure non-agriculture jobs and in turn send remittances to their families which improved their household economy back home. Main causes of rural-urban youth migration in the area are need to improve welfare, search for better job and low level of economic empowerment. Although youth rural-urban migration significantly reduced farm income, it exerted an overall significant positive effect on welfare of migrant youths households. Education level, household size and household asset endowment were significant determinants of youth rural to urban migration in the study area.

RECOMMENDATIONS
Based on findings of the study the following recommendations suffice:

i. Remittances received by farm households from migrant youths should be invested in a project such as farming that will create jobs and provide sustainable income for the families.

ii. Youths that migrate to cities should form unions and pull resources together and embark on rural community development projects such as building of schools and health centres and provision of water and other basic facilities that will enhance the development of rural areas.

iii. Government and non-governmental bodies should address the causes of rural-urban migration and make effort to educate the masses on the negative effect of rural-urban migration.

iv. The state government should invest more of its resources on rural infrastructure development to facilitate the development of non-agro sector of rural areas to reduce youth rural-urban migration and enhance investment potential in rural areas.

v. The state government should partner with the private sector to establish more agro-allied industries or agriculture processing industries in the rural areas in order to provide jobs for the teaming youths who are moving out of the rural areas.

REFERENCES

Adesiji G.B., Omoniwa V., Adebayo S.A., Matanmi B.M & Akangbe J.A (2009). Factors associated with theyouths' rural-urban drift in Kwara State, Nigeria. *Interdisciplinary Journal of contemporary Research in Business,* 1 (8), 69-77.

Ajaero, C. K & Onokala, P. C. (2013). The effects of rural- urban migration on rural communities of Southeastern Nigeria. *International Journal of Population Research*, (2), 1-11.

Ajibefun, I.A & Abdulkadri A.O. (1999). An investigation of technical inefficiency of production of farmers under the National Directorate of Employment in Ondo State, Nigeria. *APP Economics Letter*, 6, 111 – 114.

Akangbe, J. A., Adesiji, G & Akinpelu, O. I. (2006). Effects of youth migration on farmers agricultural production in Egbedore Local Government Area of Osun State, Nigeria. Proceedings of 8th National Research Conference and Network Meeting of CYAP in Nigeria, held in University of Illorin, Kwara State, November, 2006.

Anaglo, J. N., Sakyi-Dawson, O., Boateng, S. D & Mahama, W. B. (2014). Perceived Impacts of Rural-Urban Migration on Agricultural Productivity in Nanumba South District of Northern Region of Ghana. *Research on Humanities and Social Sciences*, 4 (4), 126-133.

Ango, A.K., Ibrahim, S.A., Yakubu, A.A & Usman, T. (2014). Determination of Socio-economic factors influencing youth rural-urban migration in Sokoto State, Nigeria. Nigeria. *Journal of Human Resource,* 45(3), 223-231.

Aromolaran, A.K. (2013). Assessment of benefits associated with rural-urban migration among non-migrants in Odeda Area, Ogun State, Nigeria. *International Journal of Pure and Applied Sciences and Technology,* 14(2), 31-38.

Bull, K. (2001). *Migration from rural areas, the evidence from village studies.* Delhi. Oxford University press.

Dehaan, A. (2002). Migrants livelihood and rights: The relevance of migration in Development Policies" Social Development working paper No. 4 Department for international Development, London.

Essang, S. M & Mabawonku, A. F. (1994). Determinants and Impact of Rural-Urban Migration: A Case Study of Selected Communities in Western Nigeria. African Rural Employment Paper No. 10, p. 16.

Federal Republic of Nigeria (2001). National Youth Development Policy, Programmes and Implementation Strategies, Nigeria, Abuja.

Governance Social Development Humanitarian and Conflict (2013). Applied Knowledge Services: Governance, Social Development, Humanitarian and Conflict. From <<www.GSDRC.org/go/topic-guides/socialinclusion/causes-and-forms-of social inclusion-spatial-conflicts- and- migration> (Retrieved on 15th February 2014).

Herreri, C & Sahn D.E. (2013). Determinants of Internal Migration among Senegalese Youth. Sponsored by CERDI- Centre d´etudeset de recharchessur le Development International, Documents No. 08, France. From http://www. Cerdic.org/ed (Retrieved on 12th October 2015).

International Fund for Agriculture, IFAD (2007). Migration and rural employment. Proceeding of Round Table on Migration and Rural Employment, in conjunction with the thirtieth section of IFAD"s Governing Council, February 2007. Retrieved on November 29, 2013 from www.ifad.org

Kassie, M., Ndiritu, S. W & Stage, J. (2014). What determines gender inequality in household food security in Kenya? Application of exogenous switching treatment regression. *World Development,* 56, 153-171.

Koko, I. S & Abdullahi, D. (2012). Effects of migration of farmers on sustainable Livelihood in Nigeria. *Journal of Business and Management*, 3 (3), 13-18

Mgbakor M. N., Uzendu P. O & Usifo I. J. (2014). Effects of Rural–Urban Migration by Youths on Agricultural Labour in Aniocha South Local Government Area of Delta State, Nigeria. *Journal of Research in Agriculture and Animal Science, 2 (6), 14-22.*

National Geographic Xpeditions (2013). Human Migration Guides (6-8). From <www. Nationalgeographic.com/expeditions/lessons/09/g68/migrationguidestudents.pdf> (Retrieved on 14th April 2013).

National Population Commission (2006). The population census of the Federal Republic of Nigeria analytical report at the National Population Commission. Abuja.

Nwibo, S U & Okorie, A. (2013). Determinants of entrepreneurship among agribusiness investors in South-East, Nigeria. *European Journal of Business and Management,* 5(10), 115-123.

Onu, D.O. (2006). Socio-economic factors influencing farmers' adoption of alley farming technology under intensified agriculture in Imo state, Nigeria. *The Philippine Agricultural Scientist,* 89 (2), 45-52.

Onyebinama, U.A.U. (2004). *Farm business management for smallholder farm firms in Nigeria.* Owerri, Imo State, Nigeria. Alphabet Nigeria Publisher.

Osondu C. K., Ibezim G. M. C., Obike K & Ijiomah J. C. (2014). Rural-urban migration, remittance economy and agricultural investment among small scale farmers in Umuahia south local government of Abia State, Nigeria. *Sky Journal of Agricultural Research,* 3(4), 062 – 066.

Osondu, C.K & Ibezim, G.M.C. (2013). Determinants of rural-urban migration and its effect on rural farm labour availability in Umuahia North Local Government Area of Abia State, Nigeria. *Research WebPub*, 1(3), 29-35.

Sander, C & Maimbo, S.M. (2003). Migrant Labour Remittances in Africa: Reducing Obstacle to Developmental Contribution. Africa Region Working Paper Series No. 64.

Umeh, G.N & Odom, C.N. (2011). Role and Constraints of Youth Associations in Agricultural and Rural Development: Evidence from Aguata L.G.A of Anambra State, Nigeria. *World Journal of Agricultural Sciences*, 7 (5), 515-519.

United Nations (2013). Rural Youth and Internal Migration, 2013 Report Prepared by the Decent Employment Team, ESW, FAO. From <www.Unworld.youthreport.org> (Retrieved on 13th February 2014).

Waliu, U. (2003). Factors associated with youth Rural-Urban drift in Zamfara State. *Interdisciplinary Journal of Contemporary Research in Business,* 1(8), 57-63.

White, A. (2000). *Urban and social chase in West Africa*. New York: NY. Cambridge University press.

World Bank (2005). Empowering People by Transforming Institutions, Social Development in World Bank Operations.

Wuni B. M. (2013). Perceived impact of Rural-Urban Migration on Agricultural Productivity in Nanumba South District of Northern Region.M.Phil Thesis Submitted to the Department of Agricultural Extension, University Of Ghana.

PERI-URBAN WOMEN PARTICIPATION IN GROUP COMMUNITY DEVELOPMENT ACTIVITIES IN OVIA NORTHEAST LOCAL GOVERNMENT AREA OF EDO STATE, NIGERIA

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ABSTRACT
The study assessed peri-urban women's participation in group community development activities. A sample size of 120 respondents was randomly selected for this study. Data were collected using structured questionnaire administered through interview schedule and analyzed with descriptive statistics while Pearson Product Moment Correlation was used to ascertain the relationship between respondents selected socio-economic characteristics and participation in community development activities. Less than half (30.8%, 28.3%) of the respondents were between 51- 60 and 31-40 years respectively. A majority (76.7%) of the respondents had formal education with fairly large (63.3%) household size. The majority (70.8%) of them also played care-giving role and made financial contributions towards community development activities despite their inadequate access to funds (mean=3.29) and medical services (mean=2.36) which were serious constraints to their participation. These may have accounted for respondents' passive participation in group activities geared towards developing community. Pearson correlation coefficient results indicated that educational level (r= -0.184, p<0.05), occupation (r=-0.299, p<0.01) and income (r=-0.205, p<0.05) had negative significant relationship with respondent participation in community development activities. The study recommends that women education, occupation and income should be promoted to enable peri-urban women participation in community development activities.
Keywords: Peri-urban women, participation, community development activities, Edo state

INTRODUCTION
The development of community, a group of people that share common geographical location, common cultural traits and traditional affinity otherwise known as a village or village group (Ogunna, 2007 cited in Nasiri and Nwanchukwu, no year), requires collective efforts not minding sex, gender, location of individual or group in and outside the community. Collective efforts are basic to development worldwide especially in sub-Saharan Africa (SSA) countries that are in all respect grossly underdeveloped and incidence of rural urban migration is high. According to Apantaku and Lawal-Adebowale (2011), community development is a conscious and deliberate effort aimed at helping communities recognize their needs and assume responsibilities for solving the problems to enable them increase their capacity to participate fully in the life of their nation. Women, particularly in Africa have long tradition of participating in activities that geared towards community development like marketing and mutual aid organizations. It had been asserted that the role of women in community development implies social position, functions or series of activities (Ogunna, 2007).

Women are indispensable members of the community that have participated actively in projects aimed at developing community like roads construction, electrification, building of health clinics and schools, markets, and establishment of farm settlements among other that have contributed to community development (Kishor, 1999; Ozor & Nwankwo, 2008; Musa, Tafida & Gloria, 2009). The roles of women including those in urban periphery who are mainly from

diverse ethnic backgrounds in meeting the challenges of agricultural production and in community development are quite dominant, prominent, relevant and significant. If given the opportunity as earlier noted, women can easily participate in policy making, governance and their contributions can lead to steady advancement in nations' development (Ogunlela & Mukhtar, 2009). In Nigeria women are active participant in agricultural practices and household activities which have enhanced their contributions to household and community food security. Their level of contribution varies depending on the region (World Bank, 2003). This corroborated the assertion that estimated 200 million urban residents, mainly those that dwell in urban periphery, produce food for urban market and they also are said to be responsible for up to 20 percent of the world's food (Food and Agriculture Organization, 1999; Armar–Klemesu, 2000). The United States Agency for International Development (2011) emphasized the need for development assistance providers to recognize the persuasive additional obstacles women face in development and also to give serious attention to those impediments which acts as road blocks to both women from active involvement in effective national development.

Study showed that much of the women's overall decision making power in developing countries is concentrated at the community level (Malombe, 1996). The foregoing view is very much true of women in the study sampled area that had now homes for women and their families who hailed from different ethnic background. The main broad objective of the study was to assess women participation in group community development activities in Ovia Northeast local government area of Edo state. Specifically, to:

   i. describe the socio-economic characteristics of respondents in the study area

   ii. identify community development activities and the role of respondents in the development activities in the study area;

   iii. ascertain extent of respondents' participation and constraints to their participation in the community development activities; and

   iv. ascertain if relationship exist between respondents' socioeconomic characteristics and constraints to participation in group community development activities

METHODOLOGY
The study was conducted in Peri-urban (PU) area of Ovia Northeast local government area of Edo state in south-south region of Nigeria. Ovia North East local government area is in the southern district of Edo state. Its headquarters is Okada. It occupies a total land area of 2,301km² and a population of 153,849 (National Population Commission, 2006) The area is lowland and rises up to about 100 metres above sea level. It falls within the rainforest zone with tall trees and oil palm trees and also possesses freshwater swamp forest. The vegetation favour the production of cereal crops like maize, tuber crops like cassava, tree crops like oil palm and fish farming. The major occupations of the people in the peri-urban are farming especially poultry and piggery, hunting, fishing, and trading. The population for this study included women in Iyowa, Okhunmwun, Ora and Ovbiogie, major peri-urban communities in study local government area that people from different places had come to settle. A 2-stage sampling procedure which combined purposive and simple random sampling was used to get sample size. First, a purposive sampling method was used to select four communities from Ovia Northeast local government area: Iyowa, Okhunmwun, Ora and Ovbiogie. These communities were purposively selected because of high population of indigenes and non-indigene settlers and the nearness of these communities to Benin metropolis. Second, random sampling technique was used to select 120 respondents who have been in each of these selected

community not less than 10 years from the sampled frame generated during pre-survey for each of the above-named community; thirty from each of the 4 communities. One hundred and twenty (120) respondents were used for the study.

Data were collected from primary and secondary sources. Primary data were collected using questionnaire administered through interview schedule while secondary data was collected from articles, published journals, relevant journals and other secondary sources. A list of community development activities was provided for respondents to tick against the community development activities going on or completed in the community and for them to add the ones that are not on the list provided. Similarly, they were asked to indicate the role they played in the activities geared towards their community development. Measurement was in percentage. Constraints faced in community development activities was measured on a 5-point rating scale of 'very serious' coded 5, 'serious' coded 4, 'little serious' coded 3, 'not serious' coded 2 and 'undecided' coded 1. And level of their participation was measured with dummy variables, yes (active) and no (passive). Analysis of data was done using simple descriptive statistics such as frequency counts, percentages and means. The Pearson Product Moment Correlation (PPMC) was used to ascertain relationship between independent and dependent variables.

RESULTS AND DISCUSSION

Socio-economic characteristics of respondents

Table 1: Distribution by socio-economic characteristics of the peri-urban women in the study area. (n = 120)

	Frequency	Percentage (%)
Age		
≤ 20	1	0.8
21-30	14	11.7
31-40	34	28.3
41-50	30	25.0
51-60	37	30.8
61-70	4	3.3
Educational level		
No formal education	28	23.3
Primary	36	30.0
Secondary	41	34.2
Tertiary	15	12.5
Marital status		
Single	7	5.8
Married	105	87.5
Widowed	8	6.7
Occupation		
Farming	36	30.0
Trading	61	50.8
Civil service	5	4.2
Others	18	15.0

Household size		
≤ 5	38	31.7
6-10	76	63.3
11+	6	5.0
Income (annual)		
≤ 100000	6	5.0
100001-200000	31	25.8
200001-300000	43	35.8
300001-400000	9	7.5
400001-500000	14	11.7
500001-600000	9	7.5
600001-700000	2	1.7
700001+	6	5.0

Source: Field survey, 2017

Table 1 shows that 30.8% and 28.3% of the respondents were between 51- 60 years and 31-40 years respectively. These showed the heterogeneity in ages in rural communities which is in contrast to the popular belief of the young fleeing to urban areas in search of greener pastures leaving the old to carry out farming activities in rural communities. This majority could participate actively in community development activities if given the opportunity as earlier stated (Ogunlela & Mukhtar, 2009). A majority (76.7%) of the respondents had formal education background. This is expected to have positive effects on the women participation in community development activities. The majority (87.5%) of the women were married. This implies that marriage is an honorable institution in the study area. This can attract the role of care-giving and a good level of responsibility in community development activities by the respondents and their interest in community development projects. The result showed that 50.8% of respondents had trading as their occupation. This can positively influence the participation of women in community development activities. According to Fischler (2000), women in trading often have the added advantage of awareness and knowledge of local needs, as well as special interpersonal and communication skills which can enhance community development.

Furthermore 63.3% of the respondents have household sizes of 6 to 10 persons. This is an indication that members of household could be of assistance and could allow younger ones to have a flare for community development. Since 35.8% of the respondents had an estimated annual income of between ₦200,000 and ₦300,000 per annum (Table 1), this could encourage more women to engage in such ventures for financial ability for respondents to participate in community development activities (Ahiasu & Chibor, 2015).

Community development activities
Table 2 Community development activities (n = 120)

Activities	Frequency	Percentage (%)
Road construction	103	85.8
Farming	120	100.0
Market	85	70.8
Electricity	119	99.2
School rehabilitation	118	98.3
Borehole (pipe-borne water)	120	100.0
Health care	40	33.3
Environmental sanitation	71	59.2

Source: Field survey, 2017

Farming (100%), rural electrification projects (99.2%), school rehabilitation and construction (98.3%), road construction (85.8%) and building of markets (70.8%) are major community development activities (Table 2). This implies that farming is the major community development activity in the study area. This may be due to the fact that large expanse of land is available in the area and farming seem to be the readily available to most people who have lower formal educational background like most (87.5%) of these respondents as previously shown in Table 1 which support earlier finding by Allahyari *et al*. (2013). Similarly, all (100%) respondents are actively involved in borehole project. This may be due to the fact that water is an indispensable resource for man's existence.

Respondents' roles in community development activities

Table 3: Respondents roles in community development activities (n = 120)

Roles	Frequency	Percentage
Advisory	46	38.3
Training	11	9.2
Financial	80	66.7
Direct services/labours	65	54.2
Information	24	20.0
Leadership	13	10.8
Care-giving	85	70.8
Adding value to farm produces	62	51.7

Source: Field survey, 2017

The majority (70.8%) of the respondents play the role of care-giving in their respective community (Table 3). Other roles that they play include financing (66.7%), directing services/labours (54.2%) and adding value to farm produces (51.7%). This implies that respondents majorly contribute financially to community development activities and are also caregivers. This result supports the finding of Ogunlela & Mukhtar (2009) that women make significant contributions in production and processing and Sneyder & Tadesse (1995) who reported that women role are not just central and crucial to social progress but also to economic progress of their society.

Constraints to respondents' participation in community development activities

Table 4: Constraints encountered by respondents in developing their communities

Constraints	Mean	Std. Deviation
Inadequate access to funds	3.29*	0.541
Inadequate access to medical services	2.36*	1.027
Inadequate recognition in government policy	1.80	0.875
Inadequate access to land	1.74	1.104
Inadequate access to school/formal education	1.64	0.818
Inadequate access to skill acquisition services	1.56	0.765
Inadequate access to farm inputs	1.43	0.837
Inadequate recognition in decision making process	1.10	0.738

Cultural position of women	1.06	0.598
Inadequate access to extension agents	0.95	0.314

Source: Field survey, 2017   *serious (Mean =2.0), not serious (mean < 2.0)

Table 4 shows the constraints encountered by respondents in participating in their respective community development activities. The results showed that only inadequate access to funds (3.29) and inadequate access to medical services (2.36) were serious constraints to respondents. The health of every individual is a critical input and a determinant in his or her participation in any life endeavors. On the other hand, inadequate access to extension agents was indicated as the least serious constraint (0.95). This implies that women do not get enough incentives for community development activities, which validate the findings by World Bank (2003) that women received minimal assistance from micro finance institutions. This result also supports Malombe (1996) who noted that women's overall decision making power is concentrated at the community level hence decision making (1.10) is not a serious constraint because the mean is less than 2.0. It also negates Fischer obsolete findings that women everywhere are in a minority in decision making and planning particularly at regional and national levels partly due to their multiple roles and workload.

Respondents level of participation in community development activities

Table 5: Respondents level of participation in community development

Level	Frequency	Percentage (%)
Passive	96	80.0
Active	24	20.0
Total	120	100.0

Source: Field survey, 2017

Table 5 shows that 20% of the respondents were passive participants in group community development activities. This may be due to constraints to their participating in community group development activities (Abubakar *et al.*, 2010).

Relationship between respondents' socioeconomic characteristics and the constraints to their participation in community development in the study area

Table 6: Relationship between socioeconomic characteristics of respondents and
         constraints to their participation in community development

	Correlation coefficient (r)	Probability level
Age	0.040	0.663
Marital status	−0.051	0.580
Household size	0.115	0.212
Educational level	−0.184*	0.045
Occupation	−0.299**	0.001
Income	−0.205*	0.025

Source: Field survey, 2017   *significant at 0.05 level **significant at 0.01 level

Table 6 show that educational level (r=-0.184, p<0.05), occupation (r=-0.299, p<0.01) and income (r=-0.205, p<0.05) had significant negative relationship with participation in community development activities in the study area. For educational level, it means that less educated respondents are likely to face more constraints than the educated ones, because

participation obviously requires communicative and human relational skills which are better learned. It is expected that those who attained higher educational level are likely to have more access to training and empowered to tackle constraints to her participation in community development activities. Furthermore, it is expected that women who are gainfully employed are likely to participate in community development activities than those that are not gainfully employed as they may not be willing to participate in community development activities as earlier study by Abubakar *et al.* (2010) revealed. This is also true of those with lower income as they may face more constraints than those with higher income.

CONCLUSION
This study assessed peri-urban women participation in community development activities in Ovia north-east local government area of Edo state. The results showed that the majority of the respondents are within the age range of 50to 60 years, had former education with poor estimated annual income. They participated in several community development activities especially farming and providing the communities with borehole for portable water for the community people needs. The key constraints to women participation in community group development activities in the study area are majorly inadequate access to fund, that is, finance and health services. The test result showed that educational level, respondents' occupation and income have negative significant effect on their participation in community development activities.

RECOMMENDATIONS
It is recommended that women education should be promoted as it enables women to have access to better education which would boost their income level, encourage and enhance women's ability to contribute to the community development especially those in rural areas.

REFERENCES
Abubakar, B.Z., Ango, A.K., & Hashirn, A. (2010). Role of Non-Governmental Organizations (NGOs) in Community Development   in Gusau Local Government Area of Zamfara State, Nigeria. *Proceedings of the 15th Annual National Conference of the Agricultural Extension Society of Nigeria (AESON),* pp. 39-46.
Ahiauzu, B. & Chibor, O.C. (2015). Women participation in community development in Nigeria. *Journal of Gender Studies* 63-73
 www.researchgate.net/publication/280105537 on 23/5/2019.
Allarhyari, M.S., Poshtiban, A. & Koundinya, V. (2013). Effective factors on agricultural land use change in Guilan province, Iran. *Mediterranean Journal of Social Science*, 4(11), 745-751
Ogunlela, Y.I. an & A.I. Mukhtar (2009). Gender Issues in Agriculture and Rural Development in Nigeria: the role of women. *Journal of Human and Social Sciences*4(1), 19-30
Fischler, F. (2000). Women active in rural development. *Luxembourg official publications of the European communities.*
Kishor, R., Gupta, B., Yadav, S.R.an & Singh, T.R. (1999). Role of rural women in decision-making process in agriculture in district Sitapur (Uttar Pradesh). *Indian Journal of Agricultural Economics* 54: 282-286
Malombe, J. (1996). Women's group and shelter improvement in Kenya. In Ann S. (ed). A place to live. *Gender Research on Housing in Africa*, Wardistic African Institute, Uppsala 167.
National population census (2006). Federal Republic of Nigeria population census retrieved 2011-08-07. www.nigerianstat.gov.ng

Nasiri, U.D. & Nwanchukwu, E.C. (nd). Analyzing the People's Perception on the Role of Community Government Council in Community Participation and Development in Rural Communities of Imo State. Sourced on 20th April from www.academicexcellencesociety.com/analyzing_the_peoples_perception.pdf

Ogunna,A.E.C.(2007).BasicIssuesinCommunityDevelopmentandLocalGovernment,Umuahia: Versatile Publishers. Owerri

Ogunlela,Y.I. & A.I. Mukhtar. (2009). Gender Issues in Agriculture and Rural Development in Nigeria: The role of women. *Journal of Human and Social Sciences* 4(1): 19-30

Snyder, C.M. & Tadesse, M. (1995). *African women and development*. Witwatersrand University Press, South Africa. P.87

United State Agency for International Development (USAID,2011). Women in development. http://ezinearticles.com

World Bank (2003). Nigeria: Women in Agriculture, In: Sharing Experiences Examples of Participating Approaches. The World Bank Group. The World Bank Participation Sourcebook, Washington, D.C. http://www.worldbank.org/wbi/publications.html

SPATIAL ANALYSIS OF FRESH AND SMOKED FISH MARKETS IN EBONYI STATE, NIGERIA

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ABSTRACT

This study determined the market integration and market share of fresh and smoked fish marketers in Ebonyi State, Nigeria. Simple random sampling technique was used in selecting the marketers while purposive sampling technique was used in the selection of the markets. A total of 120 respondents were used for the study. A set of well-structured questionnaire was used in data collection. Descriptive statistics such as means, percentages, marketing performance indices and correlation analysis were used to analyze the data. The result showed that31% and 28% of the respondents were between 40-49 years of age. The mean years of education for the two groups were 8.62 and 9.12 for smoked and fresh fish marketers respectively. The markets in the area were spatially integrated. Smoke fish marketers controlled larger share of the market in terms of income. This implication of this is that the more the value the marketers add to fish, the higher the profit.
Key words: Market, Marketers, Market integration, Market share, Ebonyi

INTRODUCTION

Fish is also an important part of the diet and the culture of the region, especially in coastal and riverine areas. Inland water bodies like rivers, lakes, streams and ponds are abound with fish. Animal protein sources such as beef, mutton and chicken are beyond the reach of an average income earner, he therefore settles for fish, being the cheapest animal protein source (Samson, 1997). It is also stated that fish contributed 6 – 8 percent of agricultural sector's total contribution to GDP. By this, the fishery sub-sector provides employment opportunities for many Nigerians including those involved in direct fishing, processing and marketing (Bryceson & King, 1993). The handling, processing and marketing of fish products are therefore essential complementary functions of all food production systems (Al-jufaili & Opara, 2006). In marketing fish passes through various market participants and exchange points before they reach the final consumers.Thus market intermediaries are the wholesalers and retailers and both play important roles in the marketing system (Barett, 2002).

Fish deteriorates easily, hence as soon as it is caught from the water; it requires adequate processing and handing if it is to remain in acceptable form before being sold to consumers (Njai, 1998). Fish processing is therefore an important aspect of fish marketing. Processing is very important in tropical countries like Nigeria. The prevailing high temperature causes fish to deteriorate more rapidly than in the cooler countries (Njai, 2000). This poses a serious challenge to fish marketers in Nigeria (Ikeme, 1991). Many of the problems and constraints encountered in handling, processing and marketing of fish are common to both men and women. Apart from these problems common to both, women often face an extra set of gender-specific problems (Tetteh, 1988). Limited access to resources, insufficient credit facilities, inadequate transportation, bad roads, poor processing, marketing facilities, price policies and many others are all factors constraining the marketing of fish by women (Ikeme, 1991).The objective of this study was to determine the market integration and market share of both fresh and smoked fish marketers in Ebonyi state.

METHODOLOGY
This study was carried out in Ebonyi State, Nigeria. Ebonyi Sate is situated in the South Eastern part of Nigeria and has 3 agricultural zones with 13 Local Government Areas. The state shares boundaries with Benue State to the North, Enugu State to the West; Abia State to the South and Cross River State to the East. Generally, Ebonyi state has the population of 2.4 million according to 2006 census (National Population Commission, 2006). The state is characterized by evenly distributed rainfall, with a relative humidity that favours large scale rice production. Most of the fish farming activities in Nigeria is carried out by small scale operators in small fresh water ponds, while capture fishing from the wild takes place in rivers, lakes and seas. Purposive sampling method was used in the selection of the markets because fish marketing is predominant in the selected markets (Ndibe , Eke, Ozziza, Akpoha, Onueke, Nkwo Alike, Orie, Afor, kpiri kpiri, oriegbe and Ezza Ngbo Markets) while random sampling method was used to select the marketers. Four markets were purposively selected from each agricultural zone, giving a total of 12 markets. From each of the markets, 5 smoked fish marketers and 5 fresh fish marketers were randomly selected as well, giving a total of 60 smoked fish marketers and 60 fresh fish marketers. In all, 120 respondents were interviewed. Both primary and secondary data were utilized for the study. Primary data was collected using a set of well-structured questionnaire. Statistical tools like means frequency distribution, percentages, tables and charts were utilized in data analysis. Correlation and market integration models were also used for data Analysis. Market integration and market share of both smoked and fresh fish marketers was achieved using a correlation coefficient model as used by Njoku (2005) and Obasi (2008).

The model is specified as follows:
$$R = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.1$$
Where

x = adjusted price value for fish in Abakaliki, and

y = adjusted price value for fish in Afikpo

Market Share
According to Anyaegbunam (2010) market share is the size distribution of sales and purchases of sellers and buyers in the market. The market share of smoked and dry fish marketers was achieved using a simplified market share model. The model is specified as follows:

$$MS_i = \frac{A_I}{\sum A_I} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 2$$
Where

MS_i = Market share of the sellers

Ai = Value of sales of ith fish seller (value in Naira)

$\sum$Ai = Total value of sales of all fish sellers in the market (value in Naira)

Sales made by sellers were determined and the frequencies and the percentages compared the larger the sale of a particular group of sellers the higher the percentage and reflects the group of traders that dominates the market.

RESULTS AND DISCUSSION

Socioeconomic characteristics of the fish marketers

Table 1: Socioeconomic characteristics of the fish marketers in the study area.

	Smoked fish marketers		Fresh fish marketers	
	Frequency	Percentage	Frequency	Percentage
Age in years				
20-29	7	11.67	4	6.67
30-39	17	28.33	14	23.33
40-49	19	31.67	17	28.33
50-59	12	20.00	13	21.67
60-69	5	8.33	12	20.00
Total	60	100	60	100
Mean	42.23		46.55	
Marital status				
Single	7	11.67	9	15.00
Married	34	56.67	31	51.67
Widowed	13	21.67	13	21.67
Separated	6	10.00	7	11.67
Total	60	100	60	100
Education attainment in years				
0	2	3.33	3	5.00
1-6	16	26.67	11	18.33
7-12	30	50.00	33	55.00
13-18	12	20.00	13	21.67
Total	60	100	60	100
Mean	8.62		9.70	
Marketing experience in years				
1-5	5	8.33	12	20.00
6-10	18	30.00	17	30.00
11-15	8	13.33	14	23.33
16-20	20	33.33	6	10.00
21-25	4	6.67	1	1.67
26-30	1	1.67	1	3.33
31-35	3	1.67	7	10.00
Total	60	100	60	100
Mean	15		13.15	
Household size(no of persons in a household)				
1-3	8	13.33	13	21.67
4-6	26	43.33	26	43.33
7-9	19	31.67	16	26.67
10-12	7	11.67	5	8.33
Total	60	100	60	100
Mean	6.23		5.53	
Source of credit				
Personal	12	29.27	9	29.03
Informal	18	43.90	18	58.06
Formal	11	26.83	14	12.90
Total	41	100	31	100
Income in Naira				
<100	4	6.67	37	61.67
100-200	14	23.33	18	30
201-300	14	23.33	2	3.33
301-400	10	16.67	1	1.67
401-500	2	3.33	2	3.33
501-600	7	11.67	0	-
601-700	4	6.67	0	-
701-800	5	8.33	0	-
Total	60	100	60	100
Mean	260.23		96.88	

Source : Field survey 2011

The result in Table 1 shows that the mean ages of the two groups were 42.23 and 46.55 years respectively. Majority of the marketers may be considered still in their productive years and could be considered strong enough to carry out their marketing activities without difficulty. Although fish whether in its fresh or smoked form is bulky and heavy, the strength that goes with youthfulness enhances the ability of the marketers to carry out their marketing activities with ease. The mean number of years of education for the two groups was 8.62 and 9.12 years for smoked and fresh fish marketers respectively. About (65%) of smoked fish marketers and (75%) of fresh fish marketers had at least seven (7) years of formal education. This is good for these women because education creates the awareness in individuals the need for responsible behaviour and livelihood pattern that would ensure sound wellbeing. Ogbe (2009) reckons that education exposes one to the right methods of utilizing resources. From the foregoing, therefore, it is obvious that the marketers by virtue of their education attainments are equipped to carry out their marketing activities more effectively. However, this result disagrees with that of Lawal & Idega (2004) who reported lower literacy level for fish marketers.

Also, 85% of smoked fish marketers and (83%) of fresh fish marketers had at most twenty (20) years of marketing experience. The mean years of marketing experience of the two groups of marketers were 15 and 13.72 years respectively. Marketing experience is important in determining the level of profit made by the marketers in that as the marketers put in more years in marketing, the marketers will have more bargaining power and also be conversant with market information that enables him/her to cut down costs and hence make more profit. The more the number of years in marketing, the more the knowledge and profit the marketer gets since she would use her understanding of marketing system, market condition, market trend and market price and bargaining power to maximize profit Lawal & Idega (2004). The mean ages of the two groups were 42.23 and 46.55 years respectively. Although fish whether in its fresh or smoked form is bulky and heavy, the strength that goes with youthfulness enhances the ability of the marketers to carry out their marketing activities with ease. Majority of the respondents; (56.67%) of smoked fish marketers and (51.67%) of fresh fish marketers were married. Marriage confers some amount of stability to the individual and household putting them in a better position to practice their occupation (Adaigho *et al.,* 2009). For the fish marketers, their spouses and children should provide extra help and support thus enabling them carry out their marketing activities much more easily.

Majority of the marketers (56.66%) of smoked fish marketers and (65%) of fresh fish marketers had household sizes of at least six (6) persons. The mean household size for the two groups of respondents were 6.23 persons and 5.53 persons respectively. This agrees with Kudi *et al*., (2008) who reported same in their study. The fairly large household size of the respondents is an advantage for the marketers as members of the household could help in providing labour while also carrying out some of the marketing functions. This should reduce the cost of marketing and increase profit. Informal credit sources provided the most credit for the marketers. 43.90 percent of smoked fish marketers and 58.06 percent of fresh fish marketers received credit from this source. The inability of most petty traders to provide collaterals and meet other loan conditions make it difficult for them to access credit from formal credit sources like commercial banks. Credit provides much needed fund for investment and expansion of the business. The women fish marketers thus use these funds as capital for their business.

Table 1 also shows the income obtained from marketing by smoked and fresh fish marketers within the marketing season. The mean income was ₦260,000.33 and ₦96,000.88 for smoked and fresh fish marketers respectively. The income of the smoked marketers was relatively high and this may be due to their higher volume of sales as a result of high demand for smoked fish by consumers. The fresh fish marketers also made good income from their marketing activities.

The income of fresh fish marketers was also relatively high and also reflects the great demand for fish as a source of protein by majority of low and medium income earners. The table also shows the income gotten from marketing by smoked and fresh fish marketers within the marketing season. The mean income was ₦260,000.33 and ₦96,000.88 for smoked and fresh fish marketers respectively. The income of the smoked marketers was relatively high and this may be due to their higher volume of sales as a result of high demand for smoked fish by consumers. ICSF (2002) notes that consumers prefer smoked fish because of its longer shelf life. The fresh fish marketers also made good income from their marketing activities. The income of fresh fish marketers was also relatively high and also reflects the great demand for fish as a source of protein by majority of low and medium income earners (Eyo,1992).

Market Integration

The result for the analysis of market integration among fresh and smoked fish marketers is presented in Table 2.

Table 2: Correlation result of market integration of fresh and smoked fish markets

Descriptive statistics			Correlations			
Mean	Standard Deviation		FMKTA	FMKTB	SMKTA	SMKTB
526.00	73.47	FMKTA	1.000	0.775**	0.841**	0.968***
681.83	74.88	FMKTB	0.775**	1.000	0.462*	0.791**
1159.00	347.21	SMKTA	0.841**	0.462*	1.000	0.869**
1263.00	266.01	SMKTB	0.968**	0.791**	0.869**	1.000

Source: Field survey 2011 ** implies that the correlation is significant at 0.05 level (2-tailed). r> 0.8 = strong correlation, r = 0.5- 0.8 = moderate correlation, r < 0.5 = weak correlation. FMKTA = Fresh fish market in Afikpo, FMKTB =
Fresh fish market in Abakaliki, SMKTA = Smoked fish market in Afikpo, SMKTB = Smoked fish market in Abakaliki.

Table 2 shows the matrix of correlation coefficients for prices of fresh and smoked fish in two markets (Afikpo and Abakaliki). The result indicates a strong correlation (r = 0.80) between smoked fish markets in Afikpo and Abakaliki. There was moderate correlation (r =0.7) between Fresh fish markets in Afikpo and Abakaliki and weak correlation (r = 0.4) between smoked and fresh fish markets respectively. According to Anyanegbunam (2011), the implication is that for markets that are strongly and moderately correlated, there are positive price movements across the markets which tend towards identical price movement, which is 1.000. This means that the price change in the same direction and indicates that the markets in the stated areas are spatially integrated though not perfectly. It also means these markets are competitive and the price of the commodities is the same apart from transfer costs. Thus, the more strongly correlated the markets, the more competitive they are. The markets with weak correlation coefficients imply that these markets are not spatially integrated and non-competitive. Price movements in these markets are thus very poor.

Market share of smoked and fresh fish marketers

Table3: Result of market share of smoked and fresh fish marketers in the study area.

Marketer	Income	Market Share	Percentage
Smoked fish marketers	131665000	0.7490	74.90
Fresh fish marketers	44126500	0.2510	25.10
Grand Total	175793000		100

Source: field survey 2011

The result in Table 3 shows that the smoked fish marketers controlled a larger proportion of the income accruing to fish marketing in the study area.

This may be due to a high preference for the smoked fish by customers especially those in medium to low income categories majority of who use smoked fish in preparing a wide range of dishes and as a cheap source of protein for their families. ICSF (2002) noted that smoking is a preferred method of processing fish because it extends the shelf life of the fish thereby endearing it to the customers most of whom would prefer to buy in bulk and keep at home to use whenever the need arises. The high perishability of fresh fish does not allow for long periods of storage. The epileptic nature of power supply does not also encourage storage of fresh fish for long periods using cold storage. This implies that fresh fish has shorter shelf life than smoked fish and hence attracts lower market share.

CONCLUSION
The study revealed that majority of the marketers were middle-aged. The markets for smoked and fresh fish were highly correlated indicating spatial efficiency of the markets selected markets in the study area. Smoked fish marketers also controlled a higher proportion of the income in the markets. There was a positive price movement of fresh fish and smoked fish in the two markets. This reveals a strong correlation between Fresh fish market in Afikpo and Smoked fish market in Afiko. There was also strong correlation between the Smoked fish markets in Afikpo and Abakaliki. The study also showed a moderate correlation between Fresh fish markets in Afikpo and Abakaliki. Moreso, fresh fish market in Abakaliki and Smoked fish market in Abakaliki were moderately correlated.

RECOMMENDATION
Government and private stakeholders of fish should provide suitable and affordable storage facilities which are imperative to reduce spoilage and thus increase the market shares of fresh fish marketers in the study area.

REFERENCES
Al-Jufaili,M.S & L.U. Opara. (2006). "Status of Fisheries Post Harvest Industry in the Sultanate of Oman: Part 1 Handling and Marketing of Fresh Fish". *Journal of Fisheries International* 1 (2-4), 144-149.b

Anyanebgunam, H.E. (2011). "Structure, Conduct and Performance of Sweet Potato Market in South East Agro Ecological Zone, Nigeria". An unpublished Ph.D dissertation, Department of Agricultural Economics, Michael Opara University of Agriculture, Umudike, Nigeria.

Barret, C.B. (2002). "Factor and product Market Tradability and Equilibrium in pacific rim por industries."*American Journal of Agricultural Economics 25:68 – 87.*

Lawal, W. L & T. O. Idega, (2004). "Analysis of fish marketing in Borno State. A paper presented at the 2004 National association of Agricultural EconomicsAnnual conference, held at Ahmadu Bello University, Zaria Nigeria 2-4 November 2004.

National Population Commission (2006). National Population CensusFigures.NPCAbuja.

Obasi, I.S. (2008). "Market Structure, Conduct and Performance of Rice Market in Abia State, Nigeria".UnpublishedMsc thesis, Michael Okpara University of Agriculture, Umudike, Nigeria.

Ogbe, S.E. (2009). "Determinants of Credit Demand and Microfinance Outreach in Abia State, Nigeria".MSc. Thesis, Department of Agricultural Economics, Michael Okpara University of Agriculture, Umudike, Nigeria.

Samson, Y.A. (1997). "Introduction to Agriculture and Fishery Management in Nigeria".Goal Educational Publishing, Abeokuta, Nigeria. Pp 10-24.

Scarboraugh, V & J. Kydd, (1991). "Economics Analysis of Agricultural Markets": Manval. Chatham, U. K. Natural Resource Institute, O D A, 166p.

EFFECT OF CLIMATE CHANGE ADAPTATION STRATEGIES ON FARMERS INCOME IN KWARA STATE, NIGERIA

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ABSTRACT
Farming is the key to income, livelihood and food production in most part of Africa especially Nigeria but poor and smallholder farmers are hit by climate change which adversely affect their livelihood status. This study is designed to assess the sources of income among farming households; identify the perceptions of farming household to climate change; identify various adaptation strategies to climate change used; determine the effect of climate change adaptation strategies to farmer's income. A three-stage sampling technique was used to select 140 crop farmers. Primary data were collected using a structured interview schedule. Descriptive statistics and Ordinary Least Square regression were used for data analysis. The study found that majority (77.8 percent) of rural dwellers depends largely on farming activities as a means of livelihood to sustain their family. It was also revealed that 63.6 percent of the households witnessed change in weather conditions as reflected in unusual downpour of rain. Also, it revealed that 51.7 percent of the households adopted early planting as most preferred and 2.9 percent of the households adopted increased irrigation as the least preferred adaptation strategies against climate change. The results of the Ordinary Least Square Regression revealed that education and irrigation had a positive significant effect on farmer's income in the study area. The study recommended that farmers should be trained and supported on the use of more adaptation strategies.
Keywords: Adaptation strategies, income, farming households, Kwara State, Nigeria

INTRODUCTION

Agriculture is an important sector of the Nigeria economy, employing about 70% of the total active labour force and contributing about 42% of Gross Domestic Product (GDP) (Ajibefun, 2004; Ademiluyi, 2014). Agriculture on which we all depend on for our food is under the threat of climate change. In developing countries, consumers' livelihood is being affected by these changes. Nigeria farmers have been described as been very poor with low income, especially in the rural area where the farmers are facing low agricultural production (Ijere, 1992; Ademiluyi,2014). Change in climate will relate with other form of pressure associated to famers with agricultural production in different ways (Watson et al.,2005; Muhammed-Lawal et al, 2012). The main direct effects causes unpredictable and extreme weather events impact and gradually affect crop growth, availability of soil water, forest fires, soil erosion, with prevalent infection of diseases and pest infestations which invariably make farmers more vulnerable, especially in Africa (Adejuwon, 2004; Ziervogel et al., 2006; United Nations Framework Conventions on Climate Change, 2007; Zoellick & Robert 2009).

Welfare though not observable could be said to represent the people's standard of living. In theory, household's consumption expenditure on food and education is used as proxy for welfare indicators (Quartey, 2005; Ademiluyi, 2014). Many household's in Nigeria especially in rural area find it difficult to spend their income on coping mechanism from the effects of climate change and the magnitude of climate stress. In light with the aforementioned, an investigation of the effect of climate change adaptation strategies on the income of farmers in

Kwara State is therefore necessary. To meet the above broad objective, the following specific objectives were assessed. They are to: assess the sources of income among farming households in the study area; identify the perceptions of farming household to climate change in the study area; identify various adaptation strategies in the community of the study area and to determine the effect of climate change adaptation strategies on farmers income

METHODOLOGY

The research work was carried out in Kwara state of Nigeria. Kwara state lies within the North central geopolitical zone of Nigeria. Kwara State with a total of sixteen Local Government Areas has a population of 1,566,469 and a total land size of 3,682,500 hectares (National Population Commision,2010). It is located between latitudes $7^0$45'N and $9^0$30'N and longitude $2^0$30'E & $6^0$25'E. The state is bounded in the south by Oyo, Ekiti and Osun State. It is bounded in the West by Benin Republic while in the North and the East, it is bounded by River Niger, and Kogi State, respectively. (Kwara State ADP,1996).

A three-stage sampling technique was used for the study. Kwara State is divided into four zones by the Kwara State Agricultural Development Project (KWADP) in consonance with ecological characteristics, cultural practices and project's administrative convenience. The first stage involved a random selection of zone C and zone D out of the 4 agricultural zones in Kwara State which was purposively selected due to the availability of crop farmers therein. The second Stage: Two Zones were randomly selected in the two Agricultural Development zones of the State. A total of Seven (7) selected local government area (LGAs), out of the sixteen (16) Local government`s areas in the state were selected for the study. The third stage involved the selection of twenty farmers from each of the selected local government areas, giving a total of one hundred and forty respondents.

Descriptive statistics, including frequency counts, percentages were used and OLS regression model was used in estimating the variables associated with income and climate change adaptation strategies adopted.

The implicit model used for the analysis is given as follows:
$Y_i = F (X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, U_i)$ ………………………(1)
Where,
Y_i = Farmers income (Naira)
X_1 = Age of the farmer (years)
X_2 = Number of years of formal education (years)
X_3 =Farm size (ha)
X_4=Household size (number)
X_5 = Crop diversification (dummy, X_5= 1 if yes, 0 if otherwise)
X_6=Early Planting (dummy, X_6= 1 if yes, 0 if otherwise)
X_7=Use of Seed Variety (dummy, X_7= 1 if yes, 0 if otherwise)
X_8=Cover crop (dummy, X_8= 1 if yes, 0 if otherwise)
X_9=Crop rotation (dummy, X_9= 1 if yes, 0 if otherwise)
X_{10}=Irrigation (dummy, X_{10}= 1 if yes, 0 if otherwise)
U_i = Error term

RESULTS AND DISCUSSSION

Assessing the sources of income among farming households

Table 1: Sources of income among farming households in the study area.

Sources of income	Frequency	Percentage
Farming alone	109	77.8
Civil Servant	10	7.1
Trading	2	1.4
Others	19	13.6
Total	**140**	**100**

Source: Field survey (2015)

The results in Table 1 shows that the job which gave the highest income is farming and it accounted for 77.8 percent of the respondents in the households, while 7.1 percent of the respondents are civil servants, 1.4 percent of the respondents are traders. Also, 13.6 percent of the respondents in the households, accounts for various occupations in the household which includes teaching, transport business, driving, charcoal making, shoe repairing, security guards respectively. This implies that majority of the rural dwellers depend largely on farming activities as a means of livelihood to sustain their family. This is an indication that agriculture is a mainstay of the state's rural economy (Ologbon et al, 2015)

Perception of Farming Households to Climate Change

Table 2: Perception of farming households to climate change

Perceived Changes	Frequency	Percentage
Increasing Rainfall	89	63.6
Decreasing Rainfall	32	22.8
Increasing Temperature	10	7.1
Decreasing Temperature	9	6.0
Total	**140**	**100**

Source: Field Survey, 2015

Based on the result in Table 2, it was revealed that 7.1 % of the respondents in farming households observed that increase in temperature is climate change noticed, 63.6 % of the respondents noticed increase in rainfall during climate change, 2.1 % of the respondents noticed a decrease in temperature during climate change, 22.8 % of the respondents   noticed an decrease in rainfall during climate change. This implies that the increase in temperature has the tendency to inflict more harm not only on agricultural production but also on the ecosystem. (Adebayo., Onu., Adebayo & Anyanwu, 2012).

Adaptation Strategies adopted by Households

Table 3: Adaptation strategies used by farming households against the effects of climate change

Adaptation strategies employed	Frequency	Percentage
Early planting	72	51.4
Use of Tolerant Seed variety	29	20.7
Cover crop	10	7.1
Increased irrigation	4	2.9

Crop rotation	18	12.8
Crop diversification	8	5.7
Total	**140**	**100**

Source: Field survey, 2015

The results in Table 3 found that almost all households adopted at least one of the adaptation strategies to improve their livelihood. The adaptation strategies can be referred to adopted methods and approaches that are peculiar to farming households in their quest to improve efficiency and enhance agricultural productivity. These ranges from early planting, use of tolerant seed variety, cover crop, increased irrigation, crop rotation, crop diversification among several others strategies. These practices are considered important to this study as it is likely to explain how farming households in the study are respond to climate change. Pangapanga et al. (2012) reported that households adopted a number of strategies to adapt to climate change. In addition, most strategies have been into practices over decades ago. Although, the use of these strategies have been intensified in the recent time due to prolonged droughts and flood occurrences that have exasperated by variability in climate and weather (Olasheinde 2015). Household adopted strategies such as crop diversification, adjustment of planting date, use of tolerant seed variety, cover crop, increasing irrigation, and crop rotation. It was revealed that large proportion (51.4 percent) of the farmers preferred early planting as an adaptation strategy method. However, use of tolerant seed variety (20.7 percent), cover crop (7.1 percent), Crop rotation (12.8 percent), increase irrigation (2.9 percent), crop diversification (5.7 percent) were the least preferred adaptation measure by the farmers in the households.

Determine the effect of Climate Change Adaptation Strategies on Farmers Income

Table 4: Determinants of climate change adaptation strategies on farmers income

Variables	Coefficient	Standard error	T-value	V-value
Age	-722.64	240.81	-3.00	0.003*
Education	1270.60	423.98	3.00	0.003*
Farm size	-366.09	1449.88	-0.25	0.801
Household size	795.08	864.06	0.92	0.359
Early Planting	-4486.03	6646.69	-0.67	0.501
Tolerant seed	3639.39	6320.77	0.58	0.566
Cover crop	-4227.87	7993.45	0.59	0.598
Irrigation	17764.2	7905.80	2.25	0.026**
Crop diversification	1470.44	2243.71	0.66	0.513
Constant	43798.4	12391.06	3.53	0.001
R^2	0.225			

Source: Computer Print Out, 2015 * and ** mean significant at 1 and 5 percent level respectively

The R^2 on Table 4 was 0.225 indicating that about 22% of the total variations in the effect of adaptation strategies to climate change on farmers income is explained by the fitted model, the remaining 88% which remained unexplained is due to error or other factors not captured by the model. Educational status of the farmers has a positive coefficient and significant at 1 percent level. This implies that the higher the farmers' level of education, the more enlightened they would be in terms of environmental issues affecting their farming activities and will lead to naira increase in the income of the farmer in the study area. Irrigation has a positive coefficient and significant at 5 percent

level. This implies that the more the farmer used irrigation, the more they minimize devastating effect of extreme climatic conditions affecting their farming activities and will lead to naira increase in the income of the farmer in the study area. The result corroborates the finding of (Mulatu, 2013).

CONCLUSION
The study found that majority of the farming households adapted in various ways to climate change and more than half of the number of farmers studied has taken steps to adjust their farming activities. Also, majority of rural dwellers depend largely on farming activities as a means of livelihood to sustain their family households. It was also revealed that majority of the households witnessed change in weather conditions as reflected in unusual downpour of rain. Education and irrigation have a positive effect on household welfare.

RECOMMENDATIONS
It is suggested that farmers should be trained and supported on the use of adaptation strategies.

REFERENCES
Adebayo, A. A., Onu, J. I., Adebayo, E. F., and Anyanwu, S. O. (2012). Farmers Awareness, Vulnerability and Adaptation to Climate Change in Adamawa State, Nigeria. *British Journal of Arts and Social Science,* 9(2), 104-115.

Ademiluyi I.O. (2014): Determinants of Smallholder Farmers' Welfare on Plateau State, Nigeria. *International Journal of Innovative, Agriculture & Biology Research, 2 (4),* 11-16.

Ajibefun I.A. (2004). Determinant of Technical Efficiency and Policy Implication on Traditional Agricultural Production. Empirical Study of Nigerian Food Crops farmers. A final Research Reports Admitted to African Economic Research Consortium, Nairobi, Kenya.

Ijere M.O (1992). *Leading Issue in Rural Development ACENA P*ublishers, Enugu; Pp3.

IPCC (2001). "*Climate change 2001: Impacts, Adaption and Vulnerability Working Group Contribution to the Third Assessment Report of the Intergovernmental Panel on Climate Change; "chapter 18: Adaptation to Climate Changing the contest of Sustainable Development and Equity*" Cambridge University Press, Cambridge, PP.877-912.

Muhammad-Lawal, A., Salau, S.A & Saka, A.Y. (2012). Assessment of Vulnerability of Farming Households to Climate Change in Ekiti State, Nigeria *Ethiopian Journal of Environmental Studies and Management,* 5(2), 174-178

Mulatu,N.D (2013). Determinants of farmers preference for adaptation strategies to climate change: evidence from north shoa zone of Amhara region Ethiopia. MPRA (Munich personal RePEc Archive) Paper No.48753

National Population Commission (NPC) (2010). Kwara State Population

Olasheinde T.S (2015). Climate risk and adaptation strategies among farm household in southwest, Nigeria. An unpublished M.Sc. thesis in Department of agricultural economics, University of Ibadan, Nigeria.

Ologbon O.A.C; Oyebanjo O; Akerele E.O; Oluwasanya O.P and Olowu F.A. (2017). Multiple job holding among households members in Ikorodu area of Lagos State, Nigeria. A Proceedings of the 18th Annual National Conference of the Nigeria Association of Agricultural Economists Held at Federal University of Agriculture, Abeokuta, Nigeria 16[th]=19th October,2017

Pangapanga, P.I., Jumbe, C.B.L., Kanyanda, S. and Thangalimodzi, L. (2012). Policy

implication   of Droughts & Floods adaptation on household crop production and food security in Southern Malawi. *British Journal of Environment & Climate Change,* 2(3), 245-258

Quartey P. (2005). The Impact of Migrant Remittances on Households Welfare Ghana, University of Legon. A Paper Submitted to the African Economics Resources Consortium (AERC) Nairobi, Kenya

Santiago, O., (2001). Vulnerability and adaptation to climate changes concepts and issues, assessment methods. http://www.cckn.net/pdf/va_foundation_final.pdf.

Ukoha,O.O, Mejeha,R.O & Nte,I.N. (2007). Determinants of Farmers Welfare in Ebonyi State, Nigeria. *Pakistan Journal of Social Science,* 4 (3), 351-354.

United Nations Framework Conventions on Climate Change (2007). *Climate Change: Impacts, Vulnerability and Adaptation in Developing Countries Indigenous agricultural adaption to United Kingdom, (3), 67-88. htpp//* www.unfccc.int.

VEGETABLE FARMERS' PERCEPTION ON RECORD KEEPING IN AKINYELE LOCAL GOVERNMENT AREA, OYO STATE, NIGERIA

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ABSTRACT
This study was carried out to investigate vegetable farmers' perception on record keeping in Akinyele Local Government Area, Oyo State. The specific objectives of the study were to describe the socioeconomic characteristics of the farmers; identify the various types of farm records kept by the vegetable farmers; and assess the benefits derived from record keeping in the study area. A multi-stage sampling technique was used 120 from the farmers' register giving a sample size of 120 respondents. Structured questionnaire was employed to elicit data from the respondents out of which only 112 were found useful for the final analysis. Descriptive statistics (Likert-type scales, frequency counts, percentages and mean scores) while Pearson Product Moment Correlation (PPMC) was used to analyze the data collected. Findings from the study showed that a typical vegetable farmer was aged 50 years with an average farming experience of 16.2 years. More than half (54.5%) of the respondents had secondary education. Majority (63.4%) of the respondents keep record, 69.6% indicated informal writing using symbols while only 4.4% used computer. Also, respondents ranked "aids account preparation" 1st as their reason for keeping records. Result of PPMC analysis revealed significant relationship between age (r = 0.387, p<0.05), farming experience (r = 0.121, p<0.05) and educational level (r = 0.412, p<0.05) and their perception of record keeping. The study concludes that farmers keep more financial records than that of farm operations. Extension agents should therefore enlighten vegetable farmers in the study area on the importance of keeping comprehensive records of farm operations.
Keywords: Vegetable farmers, Perception, Record keeping, Akinyele Local Government Area

INTRODUCTION
Vegetable farming in Nigerian remains traditional and dominated by small farmers despite the fact that the industry is a very important source of livelihoods for most rural communities. It provides ready cash for emergency needs, supplies the fast-growing human population with adequate dietary fibre and vitamin, contributes significantly to food security, and poverty alleviation (James, Ahowe, Godono, Baimey, Georgen, Sikirou & Toko, 2010). In the face of the recent global economic crunch and the rapid pace of the farming industry, it is important for producers to manage their farms as an enterprise (Arzeno, 2004). Modern farming is a business and requires business methods. To make an accurate and efficient farm management decisions, extensive information concerning past costs of production, input use, and production returns are required (Appiah, 2018). This information can only be acquired through farm records. The successful farmers in any community does not only keep records but also look upon them as a means of increasing their operating efficiency (Dudafai, 2013). Better management means greater profits. Without records the farmers knows little about the effects of his various enterprises on the total profit or loss from his farm and may be unable to predict the outcome.

Dudafai (2013) mentioned that one possible approach to improving small-scale farming is through the use of farm records. Without farm records, a farmer may find it difficult to succeed in today's business environment. This is because a farmer who maintains an adequate set of records can usually handle problems better than the one who does not (Poggio, 2006). Despite the importance of farm records to the growth of farm business, farmers often consider it as a difficult task (Poggio, 2006) and therefore the decisions they make are guided by vague estimates and guesses based on their past experience of farming (Johl & Kapur, 2001). This state of affairs warrants a situation where policy formulation, planning agricultural programmes, monitoring and evaluation becomes difficult because data collection from the records of farmers is practically impossible (Tham-Agyekum, Appiah & Nimon, 2010). It is against this background that this study investigated vegetable farmers' perception of record keeping in Akinyele Local Government Area of Oyo State, Nigeria with the view to investigate the perception of the vegetable farmers on record keeping; describe the socioeconomic characteristics of the farmers; identify the various types of farm records kept by the vegetable farmers; and assess the benefits derived from record keeping in the study area.

Hypothesis formulated stated there is no significant relationship between selected socio-economic characteristics and respondents' perception on record keeping.

METHODOLOGY
The study was conducted in Akinyele Local Government Area of Oyo State. Oyo State has 33 Local Government Areas (LGAS) with State Capital in Ibadan. It has about 5,591,589 people as at the last census of 2006, which are mostly small-scale farmers. Agriculture is the major source of income for the larger number of the people of the State. It is bounded in the south by Ogun State and in the north by Kwara State, in the west; it is bounded partly by Ogun State and partly by the Republic of Benin and in the East by Osun State. The state lies in the equatorial rainforest belt and the rainfall around this area varies from 155mm to 1800mm per annum. There is distinct wet season from April to late October and dry season from November to March, the areas have a mean annual temperature of 26.2 degree Celsius, and the humidity is high between July and December and low between December and February. The luxuriant forests are arranged in two or three layers consisting of undergrowth, medium higher trees and tall tree. The variety of plant species found here is one of the richest in the world (CDU Bulletin, 2007). The good soil caused by the forest zones with high humidity favours the cultivation of tree crops, arable crops and vegetables. Oyo State Agricultural Development Project (OYSADEP) has grouped the state into four zones on ecological basis. The four zones are (1) Ibadan/Ibarapa zone, (2) Ogbomosho zone, (3) Saki zone and (4) Oyo zone. The study concentrated on Ibadan/Ibarapa zone (Akinyele Local Government Area) where vegetable farming is popular.

A multi-stage sampling technique was used for this study. First stage involved a purposive selection of Ibadan/Ibarapa Zone due to the high concentration of vegetable farmers in the zone. Akinyele Local Government Area was randomly selected from the LGAs that make up Ibadan/Ibarapa Zone. Four villages were also randomly selected from the list of the villages in the LGA obtained from Oyo state Agricultural Development Project (OYSADEP) in Ibadan. They are: Alabata, Ajeja, Ijaye and Moniya. Thirty farmers were randomly selected from each the villages using the farmers' register giving a sample size of one hundred and twenty (120). However, out of the 120 questionnaires that were administered, only 112 were found useful for the final analysis.
The data analysis employed descriptive statistics (Likert-type scales, frequency counts, percentages and mean scores) while Pearson Product Moment Correlation (PPMC) was used to test the hypothesis.

RESULTS AND DISCUSSION

Socio-economic Distribution of the vegetable farmers

Table 1: Socio-economic Distribution of the vegetable farmers in the study area.

Variables	Frequency (n=112)	Percentage	Mean
Age			
30 – 45 Years	35	31.3	
46 – 60 Years	67	59.8	50 years
Over 60 years	10	8.9	
Gender			
Male	83	74.1	
Female	29	25.9	
Farming Experience			
≤ 10 years	28	25.0	
11-20 years	67	59.8	
21-35 years	17	15.2	16.2 years
36 – 50 years			
Educational Level			
Primary	31	27.7	
Secondary	61	54.5	
Tertiary	3	2.7	
Informal	17	15.2	
Preferred Method of Record Keeping			
Informal writing using symbols	78	69.6%	
Formal Writing	29	25.9%	
Computer	5	4.4%	

Source: Field Survey (2019)

Table 1 show that the average age of the respondents was 50 years. This reveals that most of the famers in the study area were in their active years. These findings corroborate the report of Mgbada (2010) who had reported that the mean age of Nigerian farmers was between 40 and 50 years. Also, 74.1% of the respondents were males and 25.9% females. This could be attributed to the tediousness attached to farming. Adisa & Okunade, (2005) reported that most farm activities are energy demanding, hence men tend to be more involved in the production aspect while marketing and processing of food crops are often the responsibilities of women. Furthermore, the mean years of farming experience was 16.2 years. This implies that the respondents had been in farming for quite a long time and they were full of experience. Length of experience in farming activities could probably make farmers to be more predisposed to adopt innovations and new technology. About 69.6% of the farmers preferred informal writing using symbols as method of record keeping while 25.9% and 4.4% preferred formal writing and use of computers respectively. With regards to their educational status, only (15.2%) of the respondents had informal education. A reasonably good percentage (84.8%) of the respondents had formal education ranging from primary to tertiary education. This implies that majority of the respondents were literate and could incorporate their educational background into their farming activities. Adejo, Edok & Adejo (2012) reported that the more educated farmers are, the more they become willing to accept innovations.

Perception of Vegetable Farmers on Record Keeping

Table 2: Perception of Vegetable Farmers on Record Keeping

Perceptions	Strongly Agreed	Agreed	Undecided	Disagreed	Strongly Disagree	Mean	Rank
Exhaustiveness	42(37.5%)	65(58.0%)	4(3.6%)	1(0.9)	0(0.0%)	4.29	1st
Time consuming	32(28.6%)	78(69.6%)	2(1.8%)	0(0.0%)	0(0.0%)	4.28	2nd
Enhances access to credit	33(29.5%)	69(61.6%)	10(8.9%)	0(0.0%)	0(0.0%)	4.21	3rd
Facilitates preparation of achievable plans and budget	45(40.2%)	42(37.5%)	12(10.7%)	13(11.6)	0(0.0%)	4.06	4th
Only meant for large firms	12(10.7%)	87(77.7%)	13(11.6%)	0(0.0%)	0(0.0%)	3.99	5th
Few benefits to be gained	24(21.4%)	67(59.8%)	10(8.9%)	11(9.8%)	0(0.0%)	3.93	6th
Can facilitate farm development	33(29.5%)	44(39.3%)	10(8.9%)	25(22.3%)	0(0.0%)	3.76	7th
Enhances farm performance measurement	11(9.8%)	79(70.5%)	12(10.7%)	0(0.0%)	10(8.9%)	3.72	8th
Requires good financial skills	0(0.0%)	88(78.6%)	13(11.6%)	11(9.8%)	0(0.0%)	3.69	9th
It is expensive	33(29.5%)	22(19.6%)	45(40.2%)	12(10.7%)	0(0.0%)	3.68	10th
Facilitates preparation of final accounts	11(9.8%)	76(67.9%)	0(0.0%)	25(22.3%)	0(0.0%)	3.65	11th

Source: Field Survey, (2019)

From the list of the perception statements itemized in Table 2, A very high proportion of the respondents (n=107, 95.5%) agreed with the statement that 'farm record keeping is exhaustive', 'time consuming' (n=110, 98.2%) and 'expensive' (n=55, 49.1%). They also agreed that farm record keeping could enhance access to credit (n=102, 91.1%) and 'facilitates preparation of achievable plans and budget (n=87, 77.7%). Furthermore, they indicated agreement with the statement that 'record keeping is only meant for large farms (n=99, 88.4%) and that 'few benefits can be derived from keeping fam records (n=91, 81.3%). Additionally, the farmers believed that farm record keeping 'can facilitate farm development' (n=77, 68.8%) 'enhances farm performance measurement (n=90, 80.4%) and requires good financial skills (n=88, 78.6%). In terms of ranking, exhaustiveness of record keeping ranked 1st, time consuming ranked 2nd while facilitation of preparation of final accounts was the least ranking perception. The implication is that the respondents have positive perception to a great extent but the fact that time consuming ranked 2nd could mean that they are not all positively disposed to keeping farm record.

Types of Farm Records Kept by Vegetable Farmers

Table 3: Types of Farm Records Kept by Vegetable Farmers

Types of Farm Record	*Frequency	Percentages (%)
Harvest Record	69	97.2
Daily Farm Records	24	33.8
Transportation Records	56	78.9
Sales Record	58	81.7
Farm Expenditure Records	39	54.9
Production Records	43	60.6
Labour Records	53	74.6
Record for Farm Implements and Equipment	53	74.6
Weather Records	38	53.5

Source: Field Survey, (2019). *Multiple Responses Applied

Results on Table 3 indicated that most of the farmers (97.2%) keep harvest records, 81.7% keep sales records, 78.9% keep transportation records, 74.6% keep labour and farm implements' records while 60.6%, 54.9%, 53.5% and 33.8% keep production, farm expenditures, weather and daily farm records respectively. This finding disagreed with the findings in the studies carried out Minae, Baker and Dixon (2003) and Mahiyu (2008) who noted that small-scale farmers rarely keep record of their farm business.

Reasons for Record Keeping

Table 4: Reasons for Record Keeping

Benefits	Strongly Agreed	Agreed	Undecided	Disagreed	Strongly Disagree	Mean	Rank
Aids Accounts' preparation	71(63.4%)	29(25.9%)	0(0.0%)	12(10.7%)	0(0.0%)	4.409	1st
As a tool to measure farmers financial position	64(57.1%)	11(9.8%)	20(17.9%)	12(10.7%)	5(4.4%)	4.34	2nd
As aid to understanding costs and revenue	37(33.0%)	31(27.6%)	24(21.4%)	17(15.2%)	3(2.7%)	4.21	3rd
Increases accessibility to credit	48(42.9%)	42(37.5%)	12(10.7%)	7(6.3%)	3(0.3%)	4.20	4th
Aid financial decision-making	11(9.8%)	69(61.6%)	18(16.0%)	12(10.7%)	2(1.8%)	3.88	5th

Source: Field Survey, (2019).

In terms of respondents' reasons for keeping farm records, Table 4 showed that farm record has potential for accounts' preparation was ranked 1st (highest) with a weighted mean score of 4.41. Farm records as a tool to measure farmers financial position was ranked second (WMS=4.34), As aid to understanding costs and revenue was ranked third (WMS=4.21), Increase in accessibility to credit was ranked fourth (WMS=4.20) while farm records' potential as aid for financial decision-making was ranked fifth (WMS=3.88). Omoruyi, (1999) and Poggio (2006) classified farm records into resource inventories, production records, financial records and supplementary records.

Test of relationship between selected socioeconomic characteristics and perception of the farmers on farm record keeping.

Table 5: Relationship between selected socioeconomic characteristics and perception of the farmers on farm record keeping.

Variable	r-value	p-value	Decision
Age	0.387	0.000	Significant
Farming experience	0.121	0.078	Significant
Gender	0.075	0.951	Not Significant
Educational Level	0.412	0.000	Significant

Source: Field Survey, (2019).

The result of the Pearson Product Moment Correlation (PPMC) analysis revealed significant relationship between age (r = 0.387, p<0.05), Farming experience (r = 0.121, p<0.05) and educational level (r = 0.412, p<0.05) and their perception of record keeping. The implication is that the older the vegetable farmer the higher the chances of his/her interest to keep farm

records. Also, the positive correlation between farming experience and farmers' perception on record keeping means that the higher the respondents' experience in vegetable production the more the drive to keep farm records. The positive relationship of educational level confirms the fact that educational level could influence farmers' behaviour (positively) and to a large extent their interest to keep farm records.

CONCLUSION
The farmers have positive perception towards record keeping even though they show more interest in keeping records of their harvest and sales than that of important farming operations like weather and production records. Vegetable farmers keep records because they consider it as an important aid for account preparation. Farmers' age, farming experience and educational level have positive correlation with record keeping perception.

RECOMMENDATIONS
The study recommends that extension agencies should embark on sensitization campaign to assist small-holder farmers including vegetable farmers on the need for keeping comprehensive farm record for the purpose of securing facilities and technical support as well as expanding their production.

REFERENCES
Adejo, P. E., Edoka, M. H. & Adejo, S. O. (2012). Indigenous Practices and the Challenges of Climate Change among Small-Scale Farmers in Dekina Local Government Area of Kogi State Nigeria. Proceeding of 17th Annual National of the Agricultural Society of Nigeria (AESON), held at University of Nigeria, Nsukka, 11-14th March, 70-77.

Adisa, B. O. & Okunade, E. O. (2005). Women-In-Agriculture and Rural Development. In. S. F., Adedoyin (ed). Agricultural Extension in Nigeria Agricultural Extension Society of Nigeria (AESON). Agricultural and Rural Management Training Institute (ARMTI), Ilorin, 69-77.

Appiah C. (2018). Analysis of Sources of Market Information for Farmers in Saskatchewan. MSc. thesis: Department of agricultural and resource economics, University of Saskatchewan, Saskatoon.

Arzeno, A. (2004). Record Keeping in Farm Management, College of Agriculture and Biological Sciences, South Dakota State University, Brookings.

Dudafa, U. J. (2013). Record Keeping Among Small Farmers in Nigeria: Problems and Prospects. *International Journal of Scientific Research in Education*, 6(2), 214-220.

James, B., Ahowe A. C., Godono, U. I., Baimey, H., Goergen, H., Sikirou, R. & Toko, M. (2010). Integrated Pest Management in Vegetable Production. A guide for extension workers in West Africa IITA Ibadan Nigeria. 120pp.

Johl, S. S., & Kapur, T.R. (2001). Fundamentals of Farm Business Management, Kalyani Publishers, pp 253-259.

Mahiyu, A. (2008). Financial management for small-holder farmers, Farm Radio International Script of the week, Issue 16, Reviewed by: Rex Chapota.

Mbanaso, E.O. (2010). Adoption and disadoption of Yam minisett technologies by small scale farmers in south east of Nigeria. *Agrosearch*. 1(1),1-6.

Minae, S; Baker, D & Dixon, J. (2003). Status of Farm Data Systems and Farmer Decision Support in Sub-saharan Africa, FAO, Rome, 2008.

Omoruyi, S. A., Orhue, U. X., Akerobo, A. A &Aghimien, C. I. (1999). Prescribed Agricultural Science for Senior Secondary Schools, Revised Edition, Idodo Umeh Publishers Limited, Benin City.

Poggio, M. (2006). Farm Management Records, [Online] Available: www.srdc.gov.au, retrieved on 4th November, 2008, 9:20 GMT.

Tham-Agyekum, E.K., Appiah P & Nimon F. (2010). Assessing Farm Record Keeping Behaviour among Small-Scale Poultry Farmers in the Ga East Municipality. *Journal of Agricultural Science*, 2(4)

ANALYSIS OF PROJECT INFRASTRUCTURE AND DETERMINANTS OF INCOME OF BENEFICIARIES IN THE NATIONAL FADAMA DEVELOPMENT PROJECT IN IMO STATE, NIGERIA

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ABSTRACT
The challenge of agricultural and rural infrastructural development in developing countries has been a major issue in the design and implementation of agricultural projects. Project failure and underperformance are also major issues these countries contend with. This paper looked at the provision of productive and facilitative agricultural infrastructure by the National Fadama Development Project in Imo State, Nigeria. Data were collected from both beneficiaries and non-beneficiaries by means of structured questionnaire and personal interview. Analytical tools such as descriptive statistics and z test were used to analyze data collected in the study area. The result of the study revealed that Fadama households had a mean age of 19.8 years. Also, the mean of means for years of formal education and farming experience was 11.3 and 9.31years respectively. Comparative analysis of the incomes of the beneficiaries and non-beneficiaries showed that the former earned significantly higher incomes than the latter (Zcal =3.771). The infrastructure provided by the projects included tangible productive infrastructure facilities like tube wells, motor pumps, sprayers, and fish ponds. Facilitative infrastructure included roads, culverts, market stalls, storage facilities and electricity which complement the productive activities of the beneficiaries. The intangible benefits accruing from the project include training and conflict resolution. The infrastructure enhanced the productive capacity of the project beneficiaries and non-beneficiaries who live in the same communities. Level of education, farm size and household size significantly influenced farm income of beneficiaries of the project. The Study recommended the inclusion of project beneficiaries in project planning and implementation so as to enhance sustainable use of project infrastructure.
Key Words: Fadama, Project, Beneficiaries, Benefits,

INTRODUCTION
It has become increasingly difficult in the face of dwindling resources for many developing countries to meet up with the demands of rural and agricultural infrastructural development as a requirement for improved agricultural production. A number of developing countries have embarked on ambitious agricultural programmes and projects aimed at improving income generation and rural infrastructure, tackling poverty and generally raising the standard of living and overall socioeconomic status of farming households. According to Todaro & Smith (2009) in Otto & Ukpere (2014), the central objectives of rural development revolve around the productivity, welfare and quality of life of the rural dwellers. Successive governments in Nigeria have pursued the issue of rural and agricultural development through the establishments of numerous programmes and projects, some of which include: The Operation Feed the Nation (OFN), Green Revolution and the establishment of the River Basins Development Authorities (RBDAs), the Agricultural Development Programmes and the

National Fadama Development Project and the more recent Agricultural Transformation Agenda. The government executed these programmes and projects with the aim of transforming agriculture in the Country from the rudimentary subsistence level to a more organized and highly organized commercial sector thereby making the sector a major player in the economy of the country (Otto & Ukpere , 2014). These projects and programmes were also intended to uplift the standard of living of the rural farmers, and address such issues as unemployment, lack of access to credit, and rural gender dimensions of poverty (The National Economic Empowerment Development Strategy (NEEDS) 2004; Daneji, 2011). However, so many of the programmes and projects either failed or hardly met project targets when compared to benchmarks. The result is the underdeveloped agricultural sector in the Country. According to Daneji (2011) the agricultural sector in Nigeria still experiences precarious crises, especially since the withdrawal of the World Bank funding for the Agricultural Development Projects in the country.

The National Fadama Development Project was introduced to tackle the issues of rural development and the upliftment of the rural farming households. Fadama is a Hausa word which refers to low-lying swampy and seasonally flooded area composed of deposited sediments and contains extensive exploitable aquifers or water tables (Baba, 1993). According to Abdurrahman (1998), Fadamas are alluvial low lands formed by erosional and depositional actions of the rivers and streams. Ingawa *et al*. (2004), reports that Fadama lands are regarded as very rich agricultural areas and they encompass land and water resources that could be easily developed for irrigation agriculture. Fadama farming is popularly practiced in different ecological zones of Nigeria from the coastal swamps in the South, to the Sahel in the extreme North (Adeoti *et al*.,2008). The National Fadama Development Project (NFDP) is a partnership between the World Bank, the Federal Government and the benefiting States. The project was negotiated between the Federal Government of Nigeria and the World Bank in 1992. However, the actual take off was in 1993.The first phase of the project lasted for six years (1992-1998) (Oredipe, 2005). The Second National Fadama Development Project (SNFDP) was also designed to last for six years 2004-2010. This second phase did much to improve on the performance of the previous phase. From the initial nine participating states in the first phase, the project was spread to include four additional states thus bringing the total to 12 States. In the first phase concentration was on crop farmers but in the second phase livestock farmers, fisher folks, pastoralists, artisans among others were included.

The SNFDP had as one of its aims, the alleviation of the scourge of poverty among the rural farmers which is in line with the thrusts of the National Economic Empowerment Development Strategy (NEEDS) and the Millennium Development Goals (MDGs), (Ingawa, 2009). It focused on empowering farmers, fisher folks, pastoralist, and other requisite stakeholders to take care of their development agenda and it proactively supported gender participation and empowerment. The project intervention also supported production investment in the delivery of inputs and downstream activities in marketing, storage and processing infrastructure. Due to the problems associated with large scale irrigation projects which Onyemauwa (2005) enumerates to include cost ineffectiveness and adverse environmental impact, Fadama irrigation farming is a preferred agricultural practice since it adopts the small-scale irrigated farming system as a viable option to large scale irrigation projects in Nigeria.

The overall project objective which was to be met at the end of six years was to substantially increase the income of participating rural communities. The specific objectives include firstly to increase food output through expanded cultivation using simple small-scale irrigation facilities and appropriate technologies; second, to provide an all year round cropping of

marketable high valued crops such as rice, maize, tomato and other vegetables; thirdly, to raise farmers living standard through increases in incomes arising from higher productivities of the various crops; and fourth, to serve an insurance against crop failures which occur in rain-dependent agriculture. The project direct beneficiaries are put at about 2.3 million Fadama resource user households in the 12 participating States, while total project cost was US $ 125 million Ingawa (2009). However, the attainment of the project objectives were hindered by challenges which according to Onyemauwa (2005), include the non-provision of important irrigation facilities like water pumps, wash bores and tube wells which would have enabled the Fadama farmers undertake dry season farming; a major target of the project. There are also issues of high cost of production and high prices of farm inputs, and small farm sizes which do not allow for the much needed commercialization of arable crop production envisioned in the project. The Imo State Fadama Development Office also lists some of the factors affected that militated against the project objectives to include: poor development of rural infrastructure, low investment in irrigation technology, poor organization of fadama farmers and limited access to foreign exchange for the importation of agricultural equipment (Imo SFDO, 2006). This paper therefore seeks to describe the socioeconomic profile of the beneficiaries of the project; determine the non-financial benefits accruing to beneficiaries from the project; compare the income of beneficiaries and non-beneficiaries of the project, and estimate the determinants of farm income of beneficiaries of the project.

METHODOLOGY
The study was carried out in Imo State, South-East, Nigeria. The choice of Imo State was informed by the fact that it is the only State in the South-East region that participated in both the first and second phases of the National Fadama Development Project. As such, there is an organized structure of Fadama community Associations (FCAs) and Fadama User Groups (FUGs) in the State. Imo State is located in the South-Eastern region of Nigeria, an area that falls almost completely within the tropical rain forest ecological zone. The State lies between latitudes 5º 40' and 6º 35' north of the Equator as well as between longitudes 6º 35' and 7º 31' east of the Greenwich meridian (www.ngex.comnigeria, 2019). The climate is characterized by two distinctly marked seasons; the dry season which lasts from October to March, and the rainy season whose duration is from April to September with annual rainfall ranging from 2000mm to 2500mm. The Harmattan-the cold, dry and dusty wind blows from the North and is experienced between December and February. The dry season is the period when most Fadama activities are carried out (Nwachukwu and Onyenweaku, 2007). The mean daily temperature is about 28ºc while relative humidity reaches a maximum of 90% during the night and 72% during the day (Imo ADP, 1998).

The population is estimated at 3.2million people (NPC, 2006). The State is administratively divided into three agricultural zones: Okigwe, Orlu and Owerri. According to Cochita (1998) there are 303,333 farm families in the State with 89,471 of these being in Okigwe zone, 105,156 in Orlu zone and 108,706 farming families in Owerri zone. Onyemauwa (2005) reported that Fadama areas are evenly distributed among the three zones. Nwachukwu and Onyenweaku (2007) also reported that most Fadama activities take place around Oguta and Abadaba lakes. Emeziem (2004) reported that the major crops grown by Fadama farmers include maize, rice, various vegetables, plantain and yam. Animals reared include goats, sheep, poultry and fishery.

In order to have a representative sample, respondents were selected from the major Fadama farming communities. Out of the three agricultural zones in the State, two zones (Orlu and Owerri) with the highest concentration of Fadama beneficiaries were purposively selected. Two Local Government Areas were randomly selected from each of the two zones. This gave

a total of four local government areas for the study. Two Fadama Community Association (FCAs) were randomly selected from a list of FCAs in each of the four Local Government Areas, giving a total of eight FCAs. The second stage was the selection of Fadama User Groups (FUGs) from each of the eight FCAs. Two FUGs were randomly selected from a list of FUGs making up the eight FCAs, thus giving a total of sixteen FUGs. The third stage was the random selection of four households from a list of members of each of the Sixteen FUGs; this gave a total of sixty-four Fadama households.

Similarly, four Non-Fadama households were randomly selected from among the Non-Fadama user households in each of the sixteen communities that yielded the sixteen Fadama Users Goups (FUGs) in the four local government areas selected for the study. This yielded a total of sixty-four respondents for Non-Fadama households; giving a total of one hundred and twenty-eight respondents for the study. Primarily, cross sectional data were used for the study. Data were collected using structured questionnaire administered to both Fadama and Non-Fadama farming households. Information on socioeconomic characteristics was collected from respondents and included those on age of household, household educational status, household size and farm size. The data collected were subjected to both descriptive and inferential statistical analysis such as statistics such as percentages, frequency distribution and means as well as Z-test.

The z- test is given as:

$$Z_{cal} = \frac{(\overline{X}_1 - \overline{X}_2)}{S\overline{X}_{1} - \overline{X}_{2}} \qquad . \qquad . \qquad . \qquad 1$$

$$= S_{\overline{X1} - \overline{X2}} \qquad \sqrt{\frac{S^2_{X1}}{n_1} + \frac{S^2_{X2}}{n_2}} \qquad . \qquad 2$$

Where

$\overline{X}_1$ = mean farm income of SNFDP households
$\overline{X}_2$ = mean farm income of Non SNFDP household
S^2_{X1} = variance of the farm income
S^2_{X2} = variance of the farm income
n_1 = number of SNFDP households.
n_2 = number of Non-SNFDP households.
$S_{\overline{X1} - \overline{X2}}$ = sample standard error of the means of farm income

The ordinary least squares multiple regression was used to estimate the determinants of farm income of beneficiaries of the project. The model is specified below:
$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, e)$$

Where
Y = Farm income (Naira)

X1 = Cost of labour (Naira)

X2 = Age of the household head (Years)

X3 = Educational level attained by household head (Years)

X4 = Farming experience (Years)

X5 = Farm size (Hectares)

X6 = Household size (Number of persons in household)

X7 = Marital status (Marital =1, otherwise = 0)

X8 = Depreciated value of assets (Naira)
e   = Error term

RESULTS AND DISCUSSION

The result of the socioeconomic analysis is presented in Table 1.

Table 1: Socioeconomic characteristics of respondents in the study area

Variable	Frequency	Percentage
Age of households	Frequency	Percentage
1-10	20	32.8
11-20	18	29.5
21-30	6	9.8
31-40	17	27.9
Total	61	100
Mean	19.8	
Years spent in school	Frequency	Percentage
6-11	33	54.1
12-17	28	45.9
Total	61	100
Mean	11.3	
Farming experience (Years)	Frequency	Percentage
1.0 -10.99	44	72.10
11.0-20.99	11	18.00
21.0-30.99	5	8.20
31.0-40.99	1	1.60
Total	61	100
Mean	9.31	
Farm income (Naira)	Frequency	Percentage
1-100	5	8.20
101-200	12	19.7
210-300	15	24.5
301-400	10	16.4
401-500	4	6.6
501-600	3	4.9
601-700	2	3.3
Total	61	100
Mean	248181.56	
Household size (Number)		
1-5	14	23
6-10	47	77
Total	61	100
Mean	6.77	
Farm size (Ha)		
0.1-0.5	39	63.93
0.6-1.0	16	26.23
1.1-1.5	5	8.20
1.6-2.0	1	1.64
Total	61	100
Mean	0.54	

Marital status		
Single	10	16.39
Married	38	62.30
Widowed	13	21.31
Total	**61**	**100**

Source: Field survey

Table 1 shows that about 62% of the households were at most 20 years old. The mean of means for age of households was about 20 years indicating these households have been in existence for a reasonable length of time. The distribution of ages of the household members will influence its disposition to adoption or otherwise of new technologies and innovations. Farming households within such age bracket will typically be composed of the household head, his spouse and their young and adolescent children. They may therefore be described as youthful households and would be more disposed to participating in project activities.   The mean (mean of means) of years spent in school was about 11 years. All households had attained some level of formal education. Majority of the households had between 6-11 years of formal education and may therefore be considered literate. The implication of this is that these households are better positioned to take advantage of new techniques and technologies that could lead to increased agricultural output. Ogbe (2009) noted that education exposes an individual to the right methods of utilizing resources. This is an advantage for these beneficiaries of a project as their educational status will enhance their ability to understand and derive necessary benefits accruing from the project. Onyebinama (2001) asserted that higher levels of literacy increase the ability of farmers to cope with the complexities of new technologies and the intricacies of new product and factor markets. Amangbo *et al*., (2006) posited that beneficiaries of agricultural projects benefit more when they have basic education such that they can appreciate the importance of these projects and the benefits they would derive from them. The attainment of higher educational status also makes individuals aware of the need for responsible behavior and livelihood pattern that would ensure sound wellbeing.

Majority of the households heads had been into farming for several years and may be considered quite experienced. The mean years of farming experience was about 9 years. About 72% of households had household heads with farming experience of at most 11 years. As managers of the household farm firm, the household head farming experience is an important factor for the success of the household farming business. Farming experience affects the income of farm households and this may be due to the fact that farmers rely a lot on their farming experience for increased productivity (Iheke, 2010). Nwaru (2004) agrees with this position, adding that the number of years a farmer has spent in the farming business may give an indication of practical knowledge he has acquired on how he could overcome certain inherent farm production challenges. The result also showed that about 8 percent of households had annual farm incomes of more than ₦500, 000.00. The mean farm income of the households was about ₦248182. Ingawa (2009) and Nkonya *et al*. (2008) have noted that Fadama farming has led to increased productivity and output, and thus increased income among the participating farming households. The increased income provides more funds for capital investment especially since personal fund is a major source of credit for the respondents. It should also translate into better standard of living for this group of households because as noted by Aigbokhan (2000), there is an assumption by economists that a person with higher income is deemed to enjoy a higher living standard. This result agrees with the findings of Faden (2004) and Onyemauwa (2005) who both reported higher farm incomes for Fadama beneficiaries than the non-beneficiaries in their study area.

The mean house size was about 7 persons. About 77% of households had household size of at least 6 persons. This large household size may have positive implications for these rural farming households since it has been found that most rural households depend on their family members to provide labour on the farm (Nwaru, 2004 and Iheke, 2010). Also, pooling of resources among members of large households may also ensure they enjoy a high living standard. About 90% percent of households had farm sizes of at most 1 hectare. This is in agreement with Onyemauwa (2005) who reported same in his study. It however disagrees with Faden (2004) who reported smaller farm sizes for Fadama beneficiaries in Plateau State. Participation in the National Fadama Project has led to increased productivity among beneficiaries, and thus need for expansion of total area of land under cultivation (Nkonya *et al.,* 2008). Larger farm size should translate into greater output and higher revenue generation for the owners of such farms (Onyebinama & Onyejelem, 2010). The fragmentation of farmland in the area is however a major setback to the practice of mechanized commercialized agriculture which is a major goal of the National Agricultural Policy (NAP, 2001) and the National Fadama programme in particular. Fragmentation of farmland also affects the income of farm households. The result also shows that 62.30% of the households were married. This is an indication that the farmers were more settled and thus better positioned to participate and benefit from the various packages of the Fadama project. Spouses and other household members will also help in the activities on the farm thereby increasing output and income.

Comparative analysis of farm incomes of beneficiaries and non-beneficiaries
The z-test was used to compare and investigate for significant difference in the farm incomes of sample farming households. The result is presented in Table 2 below.

Table 2: Test for difference in the farm incomes of beneficiaries and non-beneficiaries.

Household	Obs.	Mean Difference	Std. error	Std. dev	z value
SNFDP benefitting households(a)	61	248181.56	57532.81	449345.64	3.771***
Non benefitting households (b)	61	117749.26	25811.49	201594.17	
(a-b)		130432.3	34589.37	270151.58	

Source: Field survey. *** indicates 1% level of significance

The test in Table 2 indicates a significant difference in the farm incomes of the two households with the SNFDP households earning higher farm income than the non SNFDP households. The higher incomes earned by Fadama II households could be attributed to the increased output arising from their larger farm sizes and also the incentives they derive from their participation in the programme. As noted by Ingawa (2009) and Nkonya *et al*. (2008), Fadama farming has led to increased productivity and output, and thus increased income among the participating farming households. The increased income means more funds for capital investment especially since personal fund is a major source of financial capital for the rural household. It should also translate into better standard of living for this group of households because as noted by Aigbokhan (2000), there is an assumption by economists that a person with higher income is deemed to enjoy a higher living standard.

Provision of infrastructure
The SNFDP provided some facilities for the benefiting Fadama User Groups (FUGs) and communities. The facilities are presented in Table 3.

Table 3: Tangible benefits of SNFDP in the study area

Items	No. provided by SNFDP	No. available before SNFDP	Total	Percentage provided by SNFDP
Feeder roads	31	67	98	31.60
Bridges/culverts	1	10	11	9.10
Boreholes	24	79	103	23.30
Pump water	7	39	46	15.20
Storage facility	18	2	20	90.00
Fish pond	5	3	8	62.50
Market stalls	12	42	54	22.20
Electricity	-	43	43	-
Conflict resolution	15	2	17	88.20
Training	17	-	17	100
Tube wells	2	-	2	100
Motor pumps	2	-	2	100
Sprayers	26	9	37	70.30

Source: Field survey

The result in Table 3 showed that training, tube wells and motor pumps which were unavailable before the project were provided (100%) by the Fadama project. The provision of these facilities is beneficial not just to the immediate beneficiaries but also to the community. The tube well and motor pumps are to enable irrigation of farmland and ensure dry season cultivation of crops. Development and strengthening of irrigation systems and water shed management is essential if the shift from rainfed agriculture is to be realized. The challenge of climate change and other erratic weather patterns as well as a rapidly growing population which puts much pressure on land make the practice of and dependence on rain-fed agriculture unreasonable. Strengthening of irrigation farming through the provision of these facilities therefore supports the government policy objective of food security and employment creation and ensures its realization.

The storage facilities (90%) will allow for farm produce to be kept in a clean, hygienic and secure environment until the farmer is ready to sell them. It also serves to add value to the product before it is marketed. The storage facilities also make it possible for farmers in the area to store the surplus from the farms after the harvest when there is a glut and prices are low. This reduces postharvest losses and makes it possible for them sell their produce at a time when they would attract higher prices. Cold storage provided makes it possible for fish and other perishables to be stored properly. It also adds value to the produce which would translate into higher profit margin.

Conflict resolution (88.2%) is an intangible aspect of the project and it is aimed at ensuring that conflicts arising from competition for resources are amicably settled. The peaceful environment resulting from amicable conflict resolution is conducive for the pursuance of productive livelihood activities by members of the community. Training provided helps to build the capacity not just of the immediate benefitting farmers, but also other farmers within the community through knowledge transfer. It also exposes them to modern technology and techniques useful for increasing their productivity.

The provision of sprayers (70.30%) would help the enhancing crop protection from pests and diseases thereby increasing output and income. The provision of fish pond (62.50%) would also reduce the cost on investment in the fish farming as well as increase household income through diversification. The feeder roads (31.60%) should open up new farm layouts thus

making it possible to bring more land under cultivation. This should enhance agricultural output and improve food security. Amadi (1998) reported that construction of rural roads lead to enlargement of farm sizes. The feeder roads should also make it easier and cheaper for farmers within the area to travel to and from factor and produce markets where they could get inputs for their farming activities while also been able to processed, stored or sell their produce. Haruna (2010) noted that provision of feeder roads gives farmers in the rural areas direct access to markets and prevents their being exploited by middlemen. Amadi (1998) also asserted that provision of good rural roads leads to rapid increases in market-price for farm produce and increased adoption of modern farming techniques.

Income of Beneficiaries

The Ordinary least squares multiple regression result of the determinants of farm income of beneficiaries is presented in Table 4.

Table 4: Determinants of farm income of beneficiaries of the project in the study area

Variables	Linear	Exponential	Semi log+	Double log
Constant	-17727.302	319624.803	10.067408	11.254
	(-.279)	(1.134)	(19.893)***	(5.088)***
Cost of labour	-4467.964	2579.316	0.027619	.086
	(-.281)	(159)	(0.218)	(.679)
Age	-1542.958	-49491.022	-0.014118	-.430
	(-1.374)	(-.765)	(-1.581)	(-.849)
Education	7914.024	71994.122	0.084010	.866
	(3.085)***	(2.780)***	(4.117)***	(4.261)***
Farming exp	1066.105	13228.334	0.011685	.147
	(.807)	(.620)	(1.112)	(.882)
Farm size	53662.494	22751.670	0.405046	.123
	(2.807)***	(2.214)**	(2.664)***	(1.525)
Household size	13985.963	42012.151	0.100022	.363
	(3.369)***	(2.256)**	(3.030)***	(2.484)**
Marital Status	-8438.489	538.088	-0.401953	-.334
	(-.212)	(.012)	(-1.273)	(-.976)
Value of assets	-.081	-24385.750	-3.5719E-7	-.118
	(-1.263)	(-2.080)**	(-0.703)	(-1.280)
R2	0.381	0.311	0.449	0.403
Adj R2	0.315	0.238	0.390	0.340
F-stat	5.766	4.240	7.626	6.333

Source: Field survey. ***significant at 1%, **significant at 5%, *significant at 10%, +lead equation

The results in Table 4 showed that the coefficient of education was significant (p<0.01) and positive thus indicating a direct relationship with income of the beneficiaries. As the education level of the farmer increases, his income also increases. This may be attributed to the adoption of new innovations and farming practices which have resulted in increased output and hence income from the farm firm. Education enhances farm productivity directly by improving the quality of labour, by increasing the ability to adjust to disequilibria, and through its effect upon the propensity to successfully adopt innovations thereby also increasing income (Weir, 1999). Ferreira (2018) and Daud *et al.,* (2018) also reported a positive relationship between education and income.

The coefficient of farm size was significant (p<0.01) and positive. This indicates a direct relation between income and farm size with the two increasing in the same direction. This result

may be attributed to increased output the beneficiaries obtained as more land was brought under cultivation probably due to the availability of better farm equipment and or inputs which the project provided. Anupama and Falk (2016) reported a positive relationship between farm size and productivity and hence income of farmers. Das & Ganesh-Kumar (2017) also reported a positive relationship between farm size and income of farmers.

The coefficient of household size was significant (p<0.01) and positive. This also indicates a direct relationship between household size and income. This may be because these farmers have household members who provide labour on the farm and thereby reducing the cost of production while also increasing output and hence income. Daud *et al.,* (2018) reported a negative insignificant relationship between household size and income of farming households.

CONCLUSION

The paper has shown that the provision of infrastructure strengthened the productive capacity of resource poor farmers who were beneficiaries of the project. It also revealed that the project beneficiaries earned significantly higher income than the non-beneficiaries and this arising from higher output. The level of education attained by the farmer, household size and farm size positively affect the income of beneficiaries of agricultural development projects.

RECOMMENDATIONS

Based on the findings the following recommendations are made:

i. The provision of productive and facilitative agricultural project infrastructure is a catalyst for boosting agricultural production and should be executed in a comprehensive and well organized way to enable more persons benefit from them.

ii. The inclusion of the beneficiaries in project planning as well as proper training of the beneficiaries on the proper use of the infrastructure provided will help in checking abuse while also enhancing sustainability of such infrastructure.

iii. Improvement in training and education of farmers who participate in agricultural projects will help in increasing the benefits they derive from such projects.

REFERENCES

Abdurrahman, S. (1998). "Economic Evaluation of World Bank Assisted National Fadama Development Project: A Comparative Study of Loan Beneficiaries and Non-beneficiaries in Bauchi and Gombe State Nigeria". An MSc. Thesis,University of Nigeria, Nssuka, Nigeria.

Adeoti,A.I., J.K.Olayemi, T.T & Awoyemi (2008)."Optimal Plans for Fadama Farming in the Derived Savannah Zone of Nigeria: Dynamic Programming of Tropical and Subtropical Agroecosystems". *Ano/vol.8 numero 001*Universidad Autonomade Yucatan, Yucatan Mexico pp 34-38.

Amadi, B.C. (1988). "The Impact of Rural Road Construction on Agricultural Development: An Empirical Study of Anambra State in Nigeria". *Agricultural Systems 27 (1): 1-9*

Amamgbo L.E.F. ,A.O. Akinpelu, M.C. Okwusi & S.E. Tolubanwo (2006). "Analysis of factors influencing the utilization of Sweet Potato Flour for Confection in the South-east Agroecological Zone". Proceedings of the 40th Conference of the Agricultural Society of Nigeria. Pp. 268 – 269.

Aigbokhan, B.E. (2000)." Poverty and Growth and Inequality in Nigeria: A case study".African Economic Research Consortium (AERC) Research paper 102, Nairobi, November, 2000

Baba, K.M. (1993), "Irrigation Development Strategies in Sub-saharan Africa: A Comparative Study of Traditional and Modern Irrigation Systems in Bauchi State", *Nigeria Agricultural Ecosystem Environment*45:47-45. Canberra group (2001). "Expert

Group on Household Income Statistics. Final Report and Recommendations". Ottawa. ISBN 0- 9688524-0-8.

Cochita Nigeria Limited (1998). "Performance Assessment of the National Fadama Development Project in Imo State".

Daneji, M.I. (2011). Agricultural Development Intervention Programmes in Nigeria, 1960 to Date: A Review. Savanna Journal of Agriculture Volume 6(1):101-107.

Das, V. K & A. Ganesh-Kumar (2017). Drivers of farmers' income: The role of farm size and diversification Indira Gandhi Institute of Development Research, Mumbai September 2017 WP-2017-013

Daud, A.S.,B.A. Awotide,A.O. Omotayo &Omotosho, A.T. (2018). Effect of Income diversification on household's income in rural Oyo State, Nigeria. Acta Oeconomica, 14(1), 155-167

Emeziem, P. N. (2004), "Comparative Resources use Analysis of Fadama Rice Farming and Traditional Dry Season Vegetable Production Systems in Imo State". An unpublished Undergraduate project, Michael Okpara University of Agriculture, Umudike, Nigeria.

Eyo, A.A., (1992). "Utilization of freshwater fish species in Nigeria". Proceeding of the 10th Annual Conference of the Fisheries Society of Nigeria, pp: 32–818:341-378.

Faden, K. L. (2004), "Comparative Analysis of Fadama and Non-Fadama Farmers in Poor Agricultural Communities of Plateau State, Nigeria". An Msc dissertation, University of Nigeria Nssuka.

Ferreira, T. (2018). Does education enhance productivity in smallholder agriculture? Causal evidence from Malawi. Stellenbosch Economic Working Papers: WP05/2018 March 2018. Pp 1-40.

Haruna, G. (2010). "How Rural Roads Drive Cross River Economy". Thisday Newspaper Nigeria. P6.

Iheke R.O. (2010). "Migrant Remittances, Resource Use Efficiency and Welfare among Rural Smallholder Arable Crop Farm Households in South Eastern Nigeria". A PhD Dissertation Research; Department of Agricultural Economics, Michael Okpara University of Agriculture, Umudike, Nigeria. Imo Agricultural Development Programme (1998). "Technologies Extended to Fadama Farmers", 1996-1998.P.M.E. unit..

Ingawa, S.A. (2009), Implementation Completion Report (ICR)of the World Bank Assisted 2nd National Fadama Development Project Food Reserve Agency (NFRA) Federal Ministry of Agriculture and Water Resources, Abuja.

Ingawa, S.A., A.A. Oredipe, K. Idefor, and C. Okafor (2004), "Facilitators Project Implementation manual". Second National Fadama Development Project (Fadama2) Federal Ministry of Agriculture and Water Resources.

Krieger, N & Williams, D.R (1997)."Measuring Social Class in US Public Health Research: Concepts, Methodologies and Guidelines". *Annual Review of Public Health*

NEEDS (2004), National Economic Empowerment, Development Strategy Publication.

Nkonya E., T. Mogues, J. Pender, M.K. Yahaya, G. Adebowale, T. Arokoyo, E. Kato (2008). "From the Growing Up", Impacts of a Pro- Poor Community-Driven Development Project in Nigeria. IFPRI Discussion Paper, 00756, March, 2008.

Nwachukwu, N & C.E. Onyenweaku (2007). "Economic Efficiency of Fadama *Telfairia* Production in Imo State Nigeria: A Translog Profit Function Approach". MPRA Paper No. 13469, February 2009.

Nwaru, J.C. (2004)."Rural Credit Markets and Resource Use in Arable Crop Production in Imo State of Nigeria". Ph.D dissertation, Michael Okpara University of Agriculture, Umudike.

Ogbe, S.E (2009). "Determinants of Credit Demand and Microfinance Outreach to Farmers in Abia State: a case study of National Special Programme on Food Security". MSc. Thesis, Michael Okpara University of Agriculture, Umudike.

Onyebinama U.A. U. (2001)."An Analysis of the Prospect for Commercialization of Smallholder Agriculture in Imo State. *Journal of Agricultural Technology* 9(2), 50-58.

Onyemauwa, C.S. (2005). "Comparative analysis Fadama and Non-Fadama Project Farmers in Imo State". An MSc thesis at Federal University of Technology Owerri, Nigeria.

Oredipe, A.A. (2005)."Poverty Reduction and Increased Productivity Through Empowerment". Project Coordinating Unit- National Fadama Development Office. Abuja, Nigeria. October, 2005.25 pages

Otto, G & Ukpere W.I. (2014). Rural Development Projects in Nigeria; A case of Rivers State. Mediterranean Journal of Social Sciences 5(3), 604-612.

Weir, S. (1999). "The effects of Education on Farmer productivity in Rural Ethiopia". CSAE Working Paper series 99-7 (Oxford: Centre for the study of African Economies.)

EFFECTS OF DEFICIT FINANCING AND SOME MACROECONOMIC VARIABLES ON THE OUTPUT OF AGRICULTURAL SECTOR IN NIGERIA (1981 – 2017).

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ABSTRACT
This study analyzed the effect of deficit financing and some macroeconomic variables on the output of agricultural sector in Nigeria (1981 -2017). Secondary data was used for this study. Data analysis was done using Multiple Regression analysis. Finding showed that in the long-run, deficit financing, value of aggregate agricultural guaranteed loan, food imports, rainfall, labour force in agricultural sector and the trend variable significantly determined the output of agricultural sector based on the model specified. The results showed that the coefficient of multiple determinations (R^2) for output of agricultural sector was 0.8916. This indicates that the independent variables included in the model explained about 89.2% of the variations in output of agricultural sector in the long-run. In the short run, agricultural output was influenced by one-year lag of deficit financing, inflation rate, value of loan, agricultural output, real exchange rate and labour force in agriculture. The coefficient of multiple determinations (R^2) of 0.9354 showed that the independent variables included in the model explained about 93.54% of the variations in agricultural output in the short-run. The rate of adjustment to equilibrium by the short-run model of the responses of agricultural output to deficit financing and selected macroeconomic variables is fast. The study concluded that deficit financing should be avoided on the economy as it affects the level of investment in the agricultural sector. The study recommended that deficit financing should only be applied in a situation of true economic recession to reduce the incidence of inflation as unguided application of deficit financing hampers agricultural performance in Nigeria.
Keywords: Deficit financing, macroeconomic variables, debt financing, agricultural output.

INTRODUCTION

The agricultural sector in Nigeria has being playing a significant role of ensuring availability of adequate food and raw materials (Nnameremwa, 2012). Finance is a vital factor in agricultural development in Nigeria. Agricultural financing facilitates the adoption of improved technologies and access to other factors employed in the production of crops, livestock and agricultural raw materials. Adequate finance is basic to the achievement and sustenance of food security through crop and livestock production. Finance forms an integral part of the process of modernization of agriculture and commercialization of the rural economy (Abdullahi, 2000), by providing farmers with ample opportunity to increase their income and improve their living standard. In the recent past, agriculture was the mainstay of the economy and the primary concern of any Government in Nigeria was to achieve and sustain food security through improved agricultural production. Adequate allocation of finance to the agricultural sector was perceived as an essential strategy to curb the menace of poverty. With the advent of crude oil, the focus on agricultural development diminished. Onyebinama (2001) observed that despite the huge investment in science and technology, agricultural production in Nigeria has remained at a subsistence level because farmers lack the financial capital necessary to exploit and apply the developments in science and technology to agricultural production. The shortage of capital to finance crop and livestock investments therefore, remains a major factor constraining crop and livestock development for increased food production in Nigeria.

Inadequate funding of the agricultural sector has remained an obstacle to increased agricultural output. It is evident that in Nigeria, government spending on agriculture has not been adequate and agricultural sector could be said to be experiencing undercapitalization (Nwanna & Umeh, 2019; Onyebinama & Nnamerenwa, 2013; Adesuyio & Falowo, 2013). According to Monogbe et al. (2015), government believes that one way of solving social and economic problems is by increasing spending. Thus, to solve the problem of undercapitalization of the agricultural sector and other sectors of the economy, government resorts to borrowing externally in other to increase the investment level in these various sectors of her economy. The decision to borrow externally was due to the inability of the domestically generated revenue to solve the financial needs of the various sectors of the economy. Therefore, the recourse to deficit financing is to fill the gap between expenditure needs and revenue availability.

Nigeria's budget deficit experience dates back to 1961, and appeared justified during the immediate post-independence era, and since then till now 85% of Nigeria's budget runs in deficit (Nwanna & Umeh, 2019). Okoro (2013) stated that deficit financing arises largely because of the need to expand the economy, government's inability to execute capital projects that expands the economy births deficit. This ignites the need for Government to finance these projects either through internal borrowing, external borrowing or implementation of monetary instrument to increase the flow of fund in the economy. However, there is a repel effect on the economic performance of any country whom the state of its economic activities is financed through the prolonged debt from foreign countries because it frustrates sole investors due to the high interest rate. Deficit financing can be seen as the practice of seeking to stimulate a nation's economy by increasing government expenditures beyond revenue sources (Central Bank of Nigeria, 2012). Budget deficit as a phenomenon emanated due to the imbalance in the budget of a country which could either be a surplus or a deficit. For Nigeria budget deficit has commonly being linked to deficit.

Deficit financing seems to present a negative impact on investment on developing economies especially Nigeria. When there is a budget deficit, government finds ways of financing the deficit through borrowing from commercial banks or from non-banking public and through the issue of short-term bonds and monetary instrument. The use of these forms of deficit financing for the pursuit of fiscal policies often leads to crowding out of private investment, inflation as well as future debt crisis. Thus, fiscal policy is essentially used in fine-tuning the economy, this is why Keynes (1930) advocated deficit such macro-economic policies involved the deliberate manipulation of policy instruments, such as monetary policy, government fiscal operations, exchange rate and trade policies, pricing and environmental policies for the purpose of achieving broad macro - economic of relative price stability, high level of employment, economic growth, equitable distribution of the national income and balance of payment equilibrium. These are macro - economic indicators upon which investor's confidence, expectation and decisions on whether to invest or not are based. Macro-economic variables could, therefore, be regarded as the economic fundamentals or preconditions that must be fulfilled without which investment cannot take place (Keynes, 1930).

Deficit usually occurs as a result of government inability to match the fax revenue and expenditure. The deficit is financed either through borrowings (domestically or foreign) or use of foreign reserve to settle the deficit. By borrowing it means the government has to agree on the terms payments which usually are attached with strange regulations. Hence, this will perpetrate the deficit as more money will be spent by government on servicing the debt which creates more expenditure and deficit. Thus, excessive and prolong deficit financing through the creation of high-powered money may negate the attainment of macro - economic stability,

which may in turn affect the level of desired investment in an economy and thereby stripe growth (Akinmulegun, 2014). The need for adequate public expenditure program and management has therefore become paramount, particularly at this period when the country is in recession and when various arms of government and the private sector are experiencing several financial constraints (Eze & Nwambeke 2015).

In Nigeria, like the rest of the developing world, examining the productiveness of the various components of public spending has always been given less attention. This is borne out of the observation that the primary objective of fiscal policy is management of aggregate demand (Diamond, 1990). Generally, this view places emphasis on aggregate government expenditure and appears reluctant to differentiate between or among the various components of public expenditures. Research has shown that some studies have been done on deficit financing in Nigeria, however, a presentable framework for the dynamic changes on agricultural performance in Nigeria have not been completely dealt with in these studies. Probably due to the various estimation techniques that have been used for the studies. So, the question of the extent to which deficit financing modes affects agricultural performance still lingers in the heart of many. If deficit financing affects economic growth in general, does its pose a negative or a positive influence on the agricultural sector? Are there other macroeconomic variables that influence the agricultural sector performance alongside deficit financing? Providing answers to these questions is imperative. It is for this reason therefore, this study aimed at estimating the effect of deficit financing and some macro-economic variables on agricultural performance in Nigeria between 1981 and 2017, which covers a period of 36years. The time period incorporated is essential because it captures most policy reforms and changes over time and the current economic recession in the country. The study estimated the effect of deficit financing and some macroeconomic variables on the performance of the agricultural sector in Nigeria in both the long-run and short-run. The hypothesis that guided that study is stated thus;

H_O: Deficit financing and some macroeconomic variables do not significantly influence agricultural performance in Nigeria within 1981-2017.

H_A: Deficit financing and some macroeconomic variables significantly influence agricultural performance in Nigeria within 1981-2017.

METHODOLOGY
Research Design
The researchers employed an expo-facto research design as the data been used are historical in nature. The data for the study is collected from the CBN statistically bulletin vol. 27 (2017). This research also intended the period of study from 1981 to 2017.

Model Estimation Techniques
The analysis was done using econometric tools such as Ordinary Least Square (OLS)Multiple Regression technique to estimate the parameters of our regression models combined with co-integration technique to confirm the long run relationship among the modeled variables, the Augmented Dickey Fuller (ADF) unit root test to hedge against spurious regression. The regression model which estimated the response of the performance of agricultural sector to short-run and long-run changes in deficit financing and some macro-economic variables is specified below. The regression model which was used to explain the response of aggregate of agricultural sector output performance in Nigeria in the long-run is specified, and in its explicit form, is given a

$$LogTQA_t = \beta_0 + \beta_1 logDF_t + \beta_2 logACGSF_{t,,} + \beta_3 logGEA_t, + \beta_4 logFIMP_{t-1,} + \beta_5 logRF_t, +$$
$$\beta_6 logRER_t, + \beta_7 logPOP_t, + \beta_8 logINF_t, + \beta_9 T_t + e_i \ldots\ldots\ldots\ldots (1)$$

Where,

TQA_t = value of aggregate agricultural output in period t,

DF_t = deficit financing in naira in period t.

$ACGSF_t$ = value of aggregate guaranteed agricultural loan (₦'million),

GEA_t = government capital expenditure on agriculture (₦'million) in period t, and

$FIMP_{t-1}$ = value of aggregate food imports (₦'Million) in period t-1.

RF_t = average annual rainfall (mm) in period t,

RER_t = real exchange rate (₦/$) in period t,

POP_t = Nigeria's population (Millions) in period t,

INF_t = Nigeria's inflation rate (%) in period t.

T_t = linear trend time (T = 0, 1,...,37), a proxy for technology, which measures productivity effect.

$\beta_0 - \beta_9$ = parameters to be estimated

log = natural logarithm.

ei = error term.

On *a priori* ground, it was expected that the coefficient estimates for $ACGSF_t,, GEA_t$ RF_t $,POP_t$ $T_t > 0$; and DF_t $,FIMP_t$ $,RER_t$ $INF_t < 0$

DF_t will be the focus variable.

The model which was used to explain the response of aggregate of agricultural sector output performance in Nigeria in the short-run is specified, and in its explicit form, is given as;

$$LogTQA_{t-1} = \beta_0 + \beta_1 logDF_{t-1} + \beta_2 logACGSF_{t-1} + \beta_3 logGEA_{t-1} + \beta_4 logFIMP_{t-2,} + \beta_5 logRF_{t-1} + \beta_6 logRER_{t-1} + \beta_7 logPOP_{t-1} + \beta_8 logINF_{t-1} + \beta_9 ECM_{t-1} + e_i .\ldots\ldots \ldots\ldots.\ldots (2)$$

Where

ECM_{t-1} = error correction factor

t-1 = lag values of the variables.

All variables as earlier defined.

To avoid spurious effect of the regression of the data, transformation into stationary was done using Augmented Dickey- Fuller test. The choice for the ADF test is informed by its reliability, popularity, ability to allow one specify how lagged difference terms are to be included in the ADF test equation, inclusion of a constant in the test regression and employment of automatic lag length selection using a Schwarz Information Criterion (BIC) and a maximum lag length of 14 which are not so easy to do with the other approaches. Durbin-Watson test would be used to test for the presence of autocorrelation in the variables. Four functional forms of linear, exponential, semi-log and double-log were fitted. Ordinary Least Square was used in analyzing the data obtained.

Diagnostic Tests: Stationary Properties of the Variable used in the Analysis

Estimation of the economic model specified in this study were preceded by examination of the statistical properties of the series, including tests of stationary state of the individual series. The Augmented Dickey Fuller (ADF) unit root test results for the logged variables used in the analysis are presented in Table 1.

Table 1 Result of unit root test for logged variables used in the analysis

Transformed Variables	Level	First Difference	Order of Integration

Value of Aggregate Agricultural output (TQA$_t$)	-2.098	-5.363**	I(1)
Deficit Financing (DF)	-1.428	-4.842**	I(1)
Value of Aggregate Guaranteed Agricultural Loan (ACGSF$_t$)	-2.371	-5.432**	I(1)
Government Capital Expenditure on Agriculture (GCEA$_t$)	-2.153	-6.121**	I(1)
Value of Aggregate Food Imports (FIMP$_{t-1}$)	-2.109	-4.931**	I(1)
Average Annual Rainfall (RF$_t$)	-1.237	-5.505**	I(1)
Real Exchange Rate (RER$_t$)	-2.131	- 5.330**	I(1)
Labour Force in Agriculture (LFA$_t$)	-1.479	-4.838**	I(1)
Nigeria's Inflation Rate (INF$_t$)	-1.318	-5.394**	I(1)

Note: At level, critical value at 1% = - 4.235, and at 5% = -3.540; at first difference, critical value at 1% = - 4.253, and at 5% = -3.548. Asterisks ** represent 1% significance level. These tests were performed by including a constant and a deterministic trend in the regressions.

The result in Table 1 shows that average annual rainfall (RF$_t$), Value of aggregate agricultural output (TQA$_t$), real exchange rate (RER$_t$) and Inflation rate (INF$_t$) were stationary at level. All the other variables were found to be stationary at order one, I(1). Therefore all the logged variables used for the study were integrated of order one, I(1) except for the average annual rainfall (RF$_t$), Value of aggregate agricultural output (TQA$_t$), real exchange rate (RE R$_t$) and Inflation rate (INF$_t$)which was used at level, I(0). The difference- stationary values for the variables found to be stationary at order one, I (1) were generated and used for analysis.

RESULTS AND DISCUSSION

The estimation of the response of agricultural sector to short and long run changes in deficit financing and some macroeconomic variables in Nigeria (1981 – 2017) followed the error correction model (ECM) approach. The co integration test was performed in a bid to ascertain the existence of a long-run and short-run relationship between agricultural sector, deficit financing and some macroeconomic variables. The multiple regression results of the response of agricultural sector to deficit financing and other selected macroeconomic variable in Nigeria within the period under review are presented in Tables 2, 3 and 4 respectively.

Long-run influence of deficit financing and some macroeconomic variables on the performance of agricultural sector in Nigeria.

The estimated multiple regression results of the influence of deficit financing and selected macroeconomic variables on the performance of agricultural sector in Nigeria in the long-run is presented in Table 2

Table 2: Regression result of influence of deficit financing and some macroeconomic variables on the performance of agricultural sector in the long – run in Nigeria (1981 – 2017).

Variable	Coefficient	Std error	t-statistic
LOG(DF)	-1.4311	0.3008	-4.758***
LOG(ACGSF)	0.8704	0.2839	3.066***
LOG(GCEA)	0.2038	0.1329	1.533
LOG(FIMP(-1))	-0.7118	0.2737	-2.601**
LOG(RF)	1.8172	0.7674	2.368**
LOG(RER)	0.3411	0.4323	0.789
LOG(LFA)	-1.3441	0.3821	-3.518***
LOG(INF)	1.8432	1.3045	1.413

@TREND	1.5029	0.3753	4.005***
Constant	4.1043	0.4762	8.619***
R-Squared	0.8916		
Adj. R-Squared	0.8721		
F-statistic	47.6330***		
DW Statistics	2.0114		

Note: *** and ** represents 1% and 5% significance levels.

The results in Table 2 showed that the coefficient of multiple determinations (R^2) for output of agricultural sector was 0.8916. This indicates that the independent variables included in the model explained about 89.2% of the variations in output of agricultural sector in the long-run. The F-statistics was significant, confirming the significance of the entire model. The Durbin-Watson (DW) value of 2.0114 indicates that auto-correlation was not a problem in the models. Deficit financing, value of ACGSF loan, food imports, rainfall, labour force in agricultural sector and the trend variables were the only significant determinants of output of agricultural sector in the long-run. Deficit financing which is the focus variable in this study had a negative relationship with output of agricultural sector and was statistical significantly at 1%. This implies that increase in deficit spending (financing) of the government due to budget deficit leads to a decrease in the output of the agricultural sector and vice versa. This relationship is country to *a priori* expectation. This is because an increase in deficit financing should lead to an increase in the output of the agricultural sector. But the inconsistency of the relationship may be adjudicated to be due to the high cost of obtaining loan from commercial bank for agricultural investment purposes especially when the government made such borrowing from commercial banks. The level of investment in agriculture under such condition of deficit financing of the economy will reduce in that fund rationing will probably set in government allocation of fund to the principal sectors of the economy. Agriculture being highly risk averse may not receive enough funds that it requires and as such may have low level of output in the long-run. Value of loans, average annual rainfall, and the trend variable were positively related to the output agricultural performance. This implied that output agricultural performance increased as the value of loans, rainfall, and trend in production over time increased. Agricultural sector production is credit dependent. The extent of access to credit a firm has will influence its decision of how much land, labour, inputs and equipment required for agricultural production (Nnamerenwa, 2012). As a result, Agricultural sector output increased with increased value of loan granted for agricultural production.

Nigerian agricultural is rainfall dependent. Increase in adequate and timely annual rainfall enables crops to grow and produce fruits (Nnamerenwa, 2012), grasses to grow for livestock and conducive environment for fishes to lay eggs. This will increase the output of the agricultural sector. Labour force in agricultural was negatively related to agricultural output an indication that agricultural output decreased as labour force in agricultural increased and vice versa. This relationship which is contrary to a priori expectation is probably an indication of the prevalence of redundant workers in the subsector. According to Obadan & Odusola (2010), the agricultural sector constituted the largest sectoral employment in the country. Thus, given the subsistent nature of production in the sector, the tendency of diminishing marginal productivity seems operative. This may further lead to desertion of agricultural by a large section of the population for alternative and more profitable non-agricultural businesses. Thus, increased agricultural output may not require additional employment of labour provided by increase in population, but rather an optimal utilization of the existing under-utilized labour resource.

A change in current level of technology (total factor productivity) is brought about by such factors as increased knowledge about production methods and education. An increase in the

adoption of new methods of production by agricultural operators will lead to an increase in agricultural output. The value of food imports in the previous year was negatively related to aggregate agricultural output. This implies that a reduction in food imports will lead to an increase in the aggregate agricultural output. This result is consistent with the findings of Onyebinama Chidebelu & Nwagbo (2005) who found value of food imports to be negatively related to aggregate domestic output of agriculture, and posited that the value of food imports decreased as the value of the output of aggregate agriculture increased and vice versa. The regression coefficients of deficit financing, the value of ACGSF loan, rainfall, labour force in agriculture, food imports and trend variable were -1.4311, 0.8704, 1.8172, -1.3441, -0.7118 and 1.5029 respectively. The implication for instance is that a 10% increase in the use of deficit financing will induce 14.31% decrease in the performance of the agricultural sector.

Co – integration test and specification of the Error Correction Model (ECM)

In a bid to estimate the short run agricultural output model following the error correction model approach, co – integration test was performed using the ADF test procedure. This tends to confirm that the residuals of the non-stationary series that were integrated of order one, (1) are actually integrated of order zero, (0). Prior to the co – integration test, the residual series from the Ordinary Least Square estimation model used to analyze the response of agricultural output to changes in deficit financing and selected macroeconomic variable in the long run is presented in Table 2. Co-integration test for the presence of unit roots was then performed to the generated residual series using the Augmented Dickey Fuller (ADF) test procedure. The result of the co integration test is presented in Table 3 below.

Table 3: Residual based co-integration test for agricultural output at level.

Parameters	Augmented Dickey Fuller
Test statistic	-6.873***
R Squared	0.7649
Adj. R – Squared	0.7398
F – Statistic	30.374***
Test critical values at: level:	
1% level	-4.2733
5% level	-3.5578
10% level	-3.2124

*** represents 1% level of significance.

The result of the co integration which is a precondition for the specification of an error correction model indicates the presence of co – integration in the residual of the static regression for agricultural output in Nigeria within the period under study and therefore data used to estimate the response of agricultural output to deficit financing and selected macroeconomic variables acted as the error correction factor. This is evident as shown by the stationary of the residuals of the static regression for and considered in Table 3.

Short-run influence of deficit financing and some macroeconomic variables on the performance of agricultural sector in Nigeria.

The estimated multiple regression results of influence of deficit financing and selected macroeconomic variables on the performance of agricultural sector in Nigeria in the short – run is presented in Table 4.

Table 4: Regression result of influence of deficit financing and some macroeconomic variables on the performance of agricultural sector in the short- run in Nigeria (1981 – 2017)

Variable	Coefficient	Std error	t-statistic
DLOG(DF)	-1.3741	0.2971	-4.6251***
DLOG(ACGSF)	1.0063	0.2865	3.5128***
DLOG(GCEA)	0.1031	0.0806	1.2791
DLOG(FIMP(-1))	1.1218	0.2681	4.1836***
DLOG(RF)	1.2621	0.3803	3.3184***
DLOG(RER)	0.9812	0.3729	2.6315**
DLOG(LFA)	-1.5161	1.3793	-1.0992
DLOG(INF)	-1.2095	0.5165	-2.3417**
ECM(-1)	-0.5972	0.1189	-5.0216***
Constant	2.5177	0.3113	8.0864***
R – Squared	0.9354		
Adj R – Squared	0.9117		
F – statistic	36.536***		
DW Statistics	1.9214		

*** and ** represents 1% and 5% significance levels.

Table 4 revealed that the coefficient of multiple determinations (R^2) is 0.9354. This means that the independent variables included in the model explained about 93.54% of the variations in agricultural output in the short-run. In the short run, agricultural output responded negatively to the one-year lag of deficit financing, inflation rate and labour force in agriculture implying that the increase in the previous year's deficit financing, inflation rate and labour force in agriculture led to a decrease in agricultural output and vice versa. Agricultural output responded positively to the one-year lag of value of loan, agricultural output and real exchange rate. This implies that the increase in the previous year's value of loan, agricultural output and real exchange rate led to an increase in agricultural output in Nigeria.

The coefficient of the error correction mechanism (ECM) which measures the speed of adjustment of the independent variable towards a long – run equilibrium carried the surmised negatively sign and is statistically significant at 1%. This shows that a long – run equilibrium exist among the independent variables that estimated agricultural output in Nigeria in the period under study. The error correction model of -0.5972 suggested that a feedback of 59.7% of the previous year's disequilibrium from the long run values of the independent variables included in the model was evident. Thus, there was a relatively slow adjustment to long-run equilibrium among the independent variables included in the model which estimated the response of agricultural output to changes in the independent variables within the period investigated and a feedback of 59.7% of the adjustment towards long-run equilibrium for agricultural output was completed in one year.

CONCLUSION
Agricultural performance is an important agricultural activity in Nigeria, and the influence of deficit financing and macroeconomic variables have posed a threat to its growth and development in Nigeria. The study observed that such deficit financing has a strong bearing on the performance of agricultural sector in Nigeria. In the long-run, deficit financing, value of ACGSF loan, food imports, rainfall, labour force in agricultural sector and the trend variables significantly determinants of the performance of agricultural sector based on the model specified. In the short run, agricultural output was influenced by one-year lag of deficit financing, inflation rate, value of loan, agricultural output, real exchange rate and labour force in agriculture. The rate of adjustment to equilibrium by the short-run model of the responses

of agricultural output to deficit financing and selected macroeconomic variables is relatively slow.

RECOMMENDATIONS

   i.   The study recommends that the government should display a high sense of transparency in the fiscal operations to bring about realistic fiscal deficits. Deficit financing should only be applied in a situation of true economic recession to reduce the incidence of inflation as unguided application of deficit financing hampers investors interest to invest in agricultural sector in Nigeria.

   ii.   Government should maintain optimum level of external debt as it is one of the mechanisms for economic growth but to an optimum level and that all external debt should be effectively utilized for the purpose for which it was obtained so as to promote agricultural sector growth.

   iii.   Efforts should be made by the government to rely on its abundant external reserve rather than borrowing huge amount externally that cannot be repaid with easy without engaging in debt servicing with the later taking away a large chunk of money that would have been used to boost investment in the agricultural sector.

   iv.   Government should setup monitoring team that will make sure that the budget allocation to the agricultural sector is carefully implemented and also ensure that loans borrowed by farmers are well utilized in other to reduce wastage and fund diversion, but increase agricultural performance positively.

   v.   Government should put up strategies geared towards achieving increased and sustained agricultural productivity such as putting to a stop unproductive agricultural loans, wasteful spending to the agricultural sector and unregulated money supply.

REFERENCES

Abdullahi H.A, (2000). The relationship between government expenditure and economic growth in Saudi Arabia. *Journal of Administrative Science*, 12(2),173 – 191

Adesuyio.O. & Falowo E. (2013). Impact of fiscal deficit financing on Macroeconomic growth in Nigeria. *International journal of research in management*, 3(5), 2249-5908.

Adesuyio.o & Falowo E. (2013). Impact of fiscal deficit financing on Macroeconomic growth in Nigeria. *International journal of research in management*, 3(5), 2249-5908.

Akinmulegun S.O (2014). Deficit financing and economic growth in Nigeria: Preliminary investigation. *British journal of Economics, Management and Trade*, 4(11), 1624-1643.

Antwi S. Zhao X. & Atta Mills E.F. (2013). Consequential effects of Budget deficit on economic growth: evidence from Empirical Ghana. *International Journal of Economics and Finance*, 5(3), 1916-9728.

Central Bank of Nigeria (2012). Statistical Bulletin, Abuja; CBN

Central Bank of Nigeria (2013). Statistical Bulletin, Abuja; CBN

Diamond J. (1990). *Fiscal indicators for economic growth*: an illusory search? IMF Working.PP345-356.

Duokit E.O & Ekong C.N (2016). Budget Deficit and Economic Growth in Sierra Leone: An Empirical Re-Examination. *Journal of Business and Human Resource Management* 2(1), 2-7.

Edame G.E & Okoi O.B (2015). Fiscal deficits and economic growth in Nigeria: a chow test approach. *International Journal of Economics and Financial issues*, 5(3), 748-752.

Eze O.R & Nwambeke G.C (2015).Effect of Deficit Financing on Unemployment Rate in Nigeria: An Error Correction Model. *International Journal of Small Business and Entrepreneurship Research*, 3(7), 28-246.

Eze O.R.& Ogiji, F.O. (2016) Impact of Deficit Financing on Economic Stability in Nigeria: Analysis of Economic Growth. Journal of Applied Finance and Banking, 6 (1) , 111-125

Ezeabasili V.N, Mojekwu J.N & Herbert W.E (2012).An empirical analysis of fiscal deficit and Inflation in Nigeria. *International Business and Management Journal* 4(1), 105-120, 2012.

Jhingan M.L (2008). Macroeconomic Theory. Delhi, India: Vindra publications Delhi

Monogbe T.G, Dornubari I.G & Emah D.S (2015).Deficit finance and the Nigeria economic performance (Empirical Investigation). *International Journal of Academic Research,* 1(3), 456-477.

Nnameremwa, G. C. (2012). Analysis of intra sectoral credit allocation under the agricultural credit guarantees scheme funds (ACGSF) in Nigeria (1978 – 2009) M.Sc Thesis. Department of agricultural Economics Michael Okpara University of Agriculture, Umudike Abia State Nigeria.

Nwaeke G.C & Korgbeelo C. (2016). Budget deficit financing and the Nigerian economy. *European Journal of Business and Management*, 8(22), 2222-2839

Nwanna, I.O. & Umeh G. N. (2019). Deficit Financing and Economic Growth: The Nigerian Experience *International Journal of Economics and Financial Management* 4(1), 28 - 49.

Obadan, M.I. & Odusola, A.F. (2010). Productivity and Unemployment in Nigeria. *National Centre for Economic Management and Administration* (NCEMA), Ibadan.

Onuorah A.C & Nkwaezema O.G (2013).Deficit financing and the growth of Nigerian economy. *International Journal of Management Sciences and Business research,* 3(2), 67-79.

Onyebinama U. A. U. (2001). An Analysis of the Prospect for Commercialization of Smallholder Agriculture in Imo State. *Journal of Agricultural Technology,* 9(2), 50-58.

Onyebinama U.A.U. & Nnamerenwa G.C. (2013). Comparative analysis of credit allocation to crop and livestock subsectors under the Agricultural Credit Guaranteed Scheme Fund (ACGSF) in Nigeria *The Nigerian Agricultural Journal,* 44(1&2),135 -145.

Onyebinama, U.A.U., Chidebelu, S.A.N.D. & Nwagbo, E.C. (2005). "Effects of Devaluation on Food Imports in Nigeria". Proceedings of the 19th Annual Conference of the Farm Management Association of Nigeria (FAMAN):63 -67.

Onyeiwe (2012). Domestic Debt and the Growth of Nigeria Economy. *Research Journal of Finance and Accounting*, 3(5), (2012). 45-56.

Osuala A. & Ebieri J.(2014). Empirical analysis of the impact of fiscal policy on economic growth in Nigeria. *International Journal of Economics and Finance*, 6(6), 1916-9728.

Osuji & Ozurumba (2013). Impact of External Debt financing on Economic Development in Nigeria. *Research Journal of Finance and Accounting*, 4(4), 20-32. Paper (August).

World Bank (2005). Food Price forecast in Developing Countries in West Africa. Report. 1 - 29.

ENVIRONMENTALLY SUSTAINABLE FARM MANAGEMENT STRATEGIES ADOPTED BY COMPOUND FARMERS IN MBAITOLI LOCAL GOVERNMENT AREA, IMO STATE, NIGERIA

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ABSTRACT

This study identified environmentally sustainable farm management strategies adopted by compound farmers in Mbaitoli Local Government Area of Imo State. Two-staged sampling procedure was used to select 100 households for the study. Data was collected using structured questionnaire and interview schedule and analysed using descriptive statistics. Results shows that organic pesticides (70%), mixed farming (71%), cover-cropping (84%), crop rotation (79%) and mulching (74%) are the major environmentally sustainable farm management practices adopted by compound farmers in the study area. The major compound farming ventures practiced by households in the study area were crop production (88%) and poultry (50%). Income generation ($\bar{x}$ = 3.43), reduction of family expenditure on food ($\bar{x}$ = 3.45) and assured availability of food varieties in the family ($\bar{x}$ = 3.35) were the major contributions of compound farming to household food security. The major factors affecting compound farming in the study area were diseases and pests infestation on compound farm ($\bar{x}$ = 3.40), labour intensive nature of compound farming ($\bar{x}$ = 3.40) and lack of irrigation facilities ($\bar{x}$ = 3.38). It was recommended that extension agents should play leading role in conveying innovations that could enhance compound farming activities of farmers as regards pesticides and insecticides as well as irrigation facilities.
Keywords: Environmentally, compound farmers, sustainable, farm management

INTRODUCTION

Farming system represents an appropriate combination of farm enterprises, cropping systems, livestock, fisheries, forestry, poultry and the resources available to the farmer to raise them for food and/ or profitability (Anikwe, Onyia, Ngwu, & Mba, 2005). Farm management is concerned with how an individual farmer can so organise the factors of production (land, labour and capital) on his farm, to improve the quality and quantity of his farm produce so as to improve his livelihood. Nigeria is generously endowed with abundant natural resources and has the potential to build a prosperous economy and provide for the basic needs of the population. Agriculture provides 41.8% of the Nigerians total GDP, provides employment for 70% of the population and it is a major source of economic activities (Food and Agriculture Organisation, 2007), but the economic performance of Nigerian agricultural sector is usually uncertain due to its biological nature, low infrastructural capacity in addition to relying mainly on natural conditions for agricultural and livestock production. This type of production is inherently risky because of variability of rainfall, animal mortality due to diseases and fluctuations of output prices. The environment in many small scale compound farming is characterized by crop diseases, flooding, illness of household members and crime (Capitanio, 2008). In general, variations in climatic factor affect change in plant growth and productivity by promoting spread of pests and diseases, increase exposure to heat stress, changes in rainfall

patterns, greater leaching of nutrients from soil during intense rain, greater erosion due to stronger winds and more wild fires in dry regions (Yusuf & Gurang, 2008). Variations such as climate conditions, intensity and amount of rainfall, the incidence of diseases and pests, crop failure, fire outbreaks, price fluctuations, unstable government policies, farmer's ill health etc. cause farm income to fluctuate unpredictably. These variations are source of risk, uncertainty to farm produce and lack of interest in small scale compound farming. Smallholder farmers constitute a significant portion of the world's population, with an estimated 450-500 million compound farmers worldwide, representing 85% of the world's farms (Nagayet, 2005). Compound farmers are also estimated to represent half of the hungry worldwide and probably three-quarters of the hungry in Africa (Sanchez & Swaminathan, 2005). Consequently, the fate of compound farmers will largely determine whether or not the world succeeds in reducing poverty and hunger worldwide and meeting the millennium development goals. Across the tropics, compound farmers already face numerous risks to their agricultural production, including pest and disease outbreaks, extreme weather events and market shocks, among others, which often undermine their household food and income security (Morton, 2007). Compound farmers are known to typically depend directly on agriculture for their livelihoods and have limited resources and capacity to cope with shocks, any reductions to agricultural productivity can have significant impacts on their food security, nutrition, income and well-being (McDowell & Hess, 2012). More so, malnutrition has been persistently evident especially among the rural population of Nigeria. Since the majority of the rural population of Nigeria live and work within the compound farming system.

Improving compound farming could be a way of reducing malnutrition among rural population. Compound farming could be said to play an important role in helping to reduce greenhouse gas (GHG) emissions that contribute to climate change because it ensures green vegetation in the compound that facilitate absorption of Green House Gases. Agriculture can reduce greenhouse gases through energy reductions, modified agricultural practices, and carbon sequestration associated with crop and grassland management. Compound farmers have a suit of practices that may assist them in adapting to these changes and supporting the sustainability of their farming enterprises. The agricultural development programme such as National Programme for Food Security (NPFS), Community-Based Agriculture and Rural Development Programme (CBARDP), Fadama-III were targeted at rural households aiming to enhance management strategies adopted by compound farmers to couching the effects of environmental threats to their economic activities. Most Nigerian farmers merely engage in compound farming to provide food for their family while very little is made available in the market. Compound farm as a system consists of the material environment and human environments. The material environment consists of physical elements (such as precipitation, temperature, topography, solar radiation and soil) and biological elements (such as natural vegetation, plant and animal pests and diseases). The human environment consists of economic, institutional and social elements. These elements are linked, and directly connected with the human environment (Amalu, 1998). Compound farms (*ani-ulo* in Igbo) could be described as those farms in the immediate vicinity of the house which are distinguishable from ordinary fields or distant farms (*ani-agu* in Igbo) (Francis, 1985). The state of compound farming in Mbaitoli Local Government Area, Imo State Nigeria in present-day condition is threatened due to the fragmentation of limited land among all the indigenes.

Observation shows that most of the lands in Mbaitoli Local Government Area is farmed by small holders who cultivate their field using traditional practices, the farms in this region are very small, and most of the households receive off-farm income. Part-time farming is typical in the area. Compound farm usually operates a small, diversified agricultural enterprise. It is important for policy makers to understand the environmentally sustainable management

strategies adopted by compound farmers in Mbaitoli Local Government Area Imo State, Nigeria. The knowledge of how these farmers make economic decisions under environmental threats is important in formulating policies for agricultural development in Nigeria. The broad Objective of this study was to identify the environmentally sustainable strategies adopted by compound farmers in Mbaitolu Local Government Area, Imo State, Nigeria. Specifically, the study: described the socio-economic characteristics of the compound farmers in the study area; identified the environmentally sustainable strategy adopted by compound farmers in the study area; identified compound farming ventures that are mostly adopted in the area of study; assessed the contributions of compound farming to household food security in the study area and examined factors affecting compound farming in the study area.

METHODOLOGY

The study was conducted in Mbaitoli Local Government Area of Imo State, Nigeria. The rainy season begins in April and lasts until October- with annual rainfall varying from 1,500mm to 2,200mm. An average annual temperature above 20°C creates an annual relative humidity of 75%, with humidity reaching 90% in the rainy season. The dry season experiences two months of Harmattan from late December to late February. The hottest months are between January and March. The Local Government Area covers a land area of 204km^2 and had a population of 237,555 according to 2006 census (Annual Abstract of Statistics, 2011). The population of the study consists of households that are involved in compound farming practices in the study area. The Local Government Area comprises of 9 communities namely Afara, EziamaObiato, Ifakala, Orodo, Mbieri, Ogwa, Ogbaku, Ubonmiri and Umunoha. These nine communities make up the population of this study.

Two-stage sampling procedure was used for this study. In the first stage, out of the nine communities in Mbaitoli Local Government Area Imo State, Nigeria, five were randomly selected. The second stage employed a snowball sampling technique. The technique was used in identifying a compound farmer and requesting him/her to link up another compound farmer. This technique was used to select 20 households from each of the five (5) communities, making up a total of 100 household heads, for the study.

Data were collected using structured questionnaire, interview and direct observations. The questionnaire provided background information on general socio-economic characteristics of the farmers. The questionnaire was administered by the researcher to the household heads and other relevant information was obtained through observation from the study environment. Data derived from the study were analysed using descriptive statistics namely; frequency, percentage and mean.

RESULTS AND DISCUSSION
Socio-economic characteristic of compound farmers in Mbaitoli Local Government Area.

Table 1: Socioeconomic characteristics of compound farmers in the study area.

VARIABLES	FREQUENCY	PERCENTAGE (%)
Age years)		
Below 30	9	9
31-40	12	12
41-50	45	45
51-60	26	26
Above 60	8	8

Sex of the farmers		
Male	30	30
Female	70	70
Marital status		
Single	30	30
Married	70	70
Household size (No of persons)		
Below 5	37	37
5-10	54	54
Above 10	9	9
Educational level		
No formal education	7	7
Primary education	17	17
Secondary education	37	37
Tertiary education	39	39
Farming experience (Years)		
1-4	21	21
5-8	29	29
9-12	24	24
Above 12	26	26
Other occupations		
None	43	43
Trader	30	30
Civil servant	15	15
Labourers	8	8
Students	3	3
Pastoring	1	1
Farm size (Ha)		
Below 1	23	23
1-2	49	49
2-3	20	20
Above 3	8	8
Total	**100**	**100**

Source: Field Survey, 2016

Table 1 shows that 45% of the compound farmers were between the ages of 41-50 years and were mainly (70%) females. Majority (70%) of the compound farmers were married with a household size of mainly (54%) 5 to 10 persons. This could imply that married persons are more involved in compound farming maybe because of increased responsibility hence the need to venture into compound farming as their secondary source of food in the family. It was also shown that 93% of the compound farmers had at least Primary education with only 7% as not having any formal education. This is also an advantage since farmers are known to be more innovative and adopters when they are educated. The Table further shows that farm size was mainly (49%) between 1 to 2 Hectares of land while majority (79%) have a farming experience of at least 5years. From the result, 43% of the compound farmers had no other means of livelihood outside farming. This confirms farming as the major livelihood source of rural dwellers.

Environmentally sustainable farm management strategies adopted in Mbaitoli Local Government Area.

Table 2: Environmentally sustainable farm management strategies adopted in Mbaitoli Local Government Area.

VARIABLE	FREQUENCY	PERCENTAGE (%)
Irrigation is a common practice in compound farming	58	58
I practice mulching in my farm	74	74
After harvesting, I allow my farmland to fallow before planting another crop	42	42
Application of organic fertilizer is better than inorganic fertilizer	70	70
Crop rotation	79	79
Mix farming	71	71
Cover-cropping	84	84
Inter-cropping	64	64

Source: Field Survey, 2016: *Multiple responses

Table 2 shows the environmentally sustainable farm management strategies adopted in the study area. The Table shows that the major environmentally sustainable practices used by the compound farmers were cover-cropping (84%), crop rotation (79%) and Mulching (74%). They also adopt the use of mixed farming (71%), organic fertilizer (70%) and intercropping (64%). The relatively low use of irrigation and fallowing may be as a result of lack of water resources and sufficient land to practice those strategies. It may not be surprising that cover-cropping, crop rotation and mulching are used mainly by the compound farmers as these are also some of the major climate change adaptation strategies used by farmers in adapting to excessive heat and solar radiation caused by the change in climate.

Compound farming ventures adopted in Mbaitolu LGA

Table 3: Compound farming ventures adopted in Mbaitoli Local Government Area.

VARIABLE	FREQUENCY	PERCENTAGE(%)
Poultry	50	50
Livestock	31	31
Crop	88	88
Fisheries	20	20
Bee farm	0	0
Mushroom	0	0
Snailery	8	8

Source: Field Survey, 2016: *Multiple responses

Table 3 shows that the major compound farming ventures adopted in the study area is crop production (88%) followed by poultry (50%) and livestock production (31%). None of the compound farmers were involved in Bee farming and Mushroom production. This could be due to lack of knowledge and necessary skill required in the two ventures. Some of them also could consider Mushroom as a forest crop which cannot be domesticated.

Perceived contributions of compound farming to household food security in Mbaitoli Local Government Area.

Table 4:The perceived contribution of compound farming to household food security adopted in Mbaitoli Local Government Area.

VARIABLES	SA	A	D	SD	Mean
Compound farming produces food for my family daily food consumption	28	61	10	1	3.16
I generate income from the sales of produce from my farm	47	50	2	1	3.43
Compound farming reduces family expenditure on food	46	53	1	0	3.45
Compound farming ensures food availability at all season	38	38	21	3	3.11
Compound farming helps to reduce malnutrition problem	26	64	9	1	3.15
Compound farm serves as my family demonstration farm	29	52	14	5	3.05
Compound farming contribute to improve health of my family members	23	63	12	2	3.07
Compound farm ensures availability of food variety in my family	40	55	5	0	3.35
My family livelihood standard is improved through compound farming	38	49	12	1	3.24

Source: Field Survey, 2016. *Note: Mean score ≥ 2.50 is significant*

Table 4 shows that the major contributions of compound farming to household food security in the study area includes reduction of family expenditure on food $(\bar{x} = 3.45)$, income generation from the sales of farm produce $(\bar{x} = 3.43)$, availability of food variety $(\bar{x} = 3.35)$ and improvement of family livelihood standard $(\bar{x} = 3.24)$. Others include production of food for family daily food consumption $(\bar{x} = 3.16)$, malnutrition reduction $(\bar{x} = 3.15)$, food availability at all season $(\bar{x} = 3.11)$, improve health of family members (Mean = 3.07) and serves as family demonstration farm $(\bar{x} = 3.05)$. The findings of the study show that compound farming is significantly contributing to the food security of the famers in the study area as it helps reduce expenditures on food thereby allowing the farmers more money to spend on other family necessities other than food. It even contributes to income generation as farmers sell the products to generate money to be spent on other family necessities.

Factors affecting compound farming in Mbaitolu LGA

Table 5: Factors affecting compound farming in Mbaitoli Local Government Area.

VARIABLES	SA	A	D	SD	MEAN
Limited land space in my compound affects my compound farming activity	41	37	19	3	3.16

Resistant diseases and pests infestation on my crops and livestock affects my compound farming activities	45	51	3	1	3.40
Lack of irrigation facilities during dry season	47	46	5	2	3.38
Compound farming is labour intensive	56	33	6	5	3.40
Lack of finance	47	41	9	3	3.32
Increased erosion in my compound	10	20	55	15	2.25
Increased land pressure	18	38	36	7	3.09
Extension agent nonchalant attitude towards compound farming issues	27	45	25	3	2.96
Excessive village meetings and events (time factor)	22	37	30	10	3.01
Lack of technical skill in some areas I would want to cultivate	24	56	15	5	2.99
Nonchalant attitude of family members	28	51	18	3	3.04

Source: Field Survey, 2016. *NOTE: Mean score ≥ 2.50 is significant*

Table 5 shows that the major factors affecting compound farming in the study area includes labour intensiveness *($\bar{x}$ = 3.40)*, infestation of resistant diseases and pests *($\bar{x}$ = 3.40)*, lack of irrigation facilities *($\bar{x}$ = 3.38)*, lack of finance *($\bar{x}$ = 3.32)*, limited land space *($\bar{x}$ = 3.16)*, Increased land pressure *($\bar{x}$ = 3.09)*, non challant attitude of family members *($\bar{x}$ = 3.04)* and excessive village meetings and events *($\bar{x}$ = 3.01)*. The findings of the study show that a lot of factors are militating against compound farming in the study area.

CONCLUSION
This study concludes that compound farming is contributing significantly to household food security in the study area. Farmers in the study area adopt varieties of environmentally sustainable farm management strategies which is contributing to the improvement of farmer's income standard of living and welfare. Very many challenges are being faced by compound farmers in the study area and if tackled will help to enhance compound farming in the study area. Therefore, efforts need to be made towards ensuring that these limiting factors are mitigated.

RECOMMENDATIONS
Based on the findings of the study, it was recommended that**:**
1. There is need for agricultural extension agents to help compound farmers overcome the numerous challenges they are facing, this they can do through building capacity of the compound farmers, effective information dissemination and demonstration farms.
2. Compound farmers should be encouraged through programmes that recognises and includes them bearing in mind the significant contribution of compound farming to household food security.
3. Credit facilities should be made accessible to compound farmers.
4. Government should make available infrastructure such as feeder roads, pipe borne water at strategic points to ensure continued production of farm products throughout the year.

REFERENCES

Amalu, U. C. (1998). Agricultural research and Extension Delivery systems in sub-Saharan Africa, the university of Calabar press, Calabar, Nigeria P.38.

Anikwe, M.A.N., Onyia,V.N., Ngwu, O.E. & Mba, C.N. (2005). Ecophysiology and cultivation practices in Arable crops. New Generation Books, Enugu, Nigeria.

Annual abstract of statistics (2011). National Bureau of Statistics, Federal Republic of Nigeria. http://istmat.info/files/uploads/53129/annual_abstract_of_statistics_2011.pdf Assessed May, 2016

Capitanio, F. (2008). Risk management through insurance and environmental externalities from agricultural input, November 20th-21st,2008.

Food Agriculture Organisation (2007). National programmes for food security: FAO's vision of a world without hunger, Rome. Pp 87-90.

Francis, P. (1985). Land Tenure systems and the Adoption of Alley Farming in Southern Nigeria. Proc. International Consultative Workshop on Tenure Issues in Agro-forestry, Nairobi.

McDowell, J.Z & Hess, J. J. (2012). Accessing adaptation: Multiple stressors on livelihoods in the Bolivian highlands under a changing climate. Glob. Environ change 22, 342-35

Morton, J.F. (2007). The impacts of climate change on smallholder and subsistence agriculture. Proc. Natl Acad. Sci. USA 11;104(50),19680-5.

Nagayet, O. (2005). Small farms: Current status and key trends. In the future of small farms: Proceedings of a research workshop (ed, International Food Policy Research Institute, IFPRI); 355-367

Sanchez, P.A., & Swaminathan, M.S., (2005). Cutting world hunger in half. Science,307:357-359.

Yusuf, M & Gurang, G. B. (2008). An integrated approach to climate change adaptation. Leisa 24(4), 6-8.

A REVIEW OF THE IMPACT OF THE NATIONAL FADAMA PROJECTS IN NIGERIA

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ABSTRACT
The National Fadama Development Project is one of the programmes that is aimed at reducing poverty among the rural populace in Nigeria. The project is also aimed at all year round crop production hence increasing food production and farmers' income. The paper reviewed the impact of Fadama II and III on food production and farmers income. The review revealed that there was an increase in the income, crop yield and farmers productive asset of the Fadama beneficiaries. Some of the studies reported that there was no increase in the income of beneficiaries and non-beneficiaries of the project. Based on the review it is concluded that the Fadama project has made positive effect on the beneficiaries. It is recommended that the project should be sustained by encouraging the beneficiaries to continue using facilities that have been put in place and the technologies they have adopted.
Keywords: *Fadama*, farmers, beneficiaries, non-beneficiaries, income.

INTRODUCTION
Despite the fact that Nigeria is the most important producer of oil in the African region, agriculture remains the backbone of the national economy. The agricultural sector is one of the most key non-oil sector in Nigeria and it is the largest employer of 70% labour force (National Bureau for Statistics (NBS), 2012) Although Nigeria is endowed with natural resources, the country is still poor (Ingawa, 2004). Most of the poor people live in rural areas which forms most of the workforce in the agriculture being the backbone of the population. Nigeria's agricultural sector has a high potential for further growth (Philip, Nkonya, Pender & Oni, 2009). The National Bureau of Statistics states that in the early sixties, agriculture accounted for about 70-80% of the nation's foreign exchange (Phillip *et al*., 2009). But with the advent of oil in Nigeria, agriculture was neglected, thereby leading to food shortages. This has made government spend huge amount of money on importation of food items in order to supplement the food requirement of the country. To provide food security for the nation, several projects have been established and implemented including National *Fadama* I, II and III Programme (Girei, Dire, Iliya, Salihu, 2013). Although several empirical studied have been conducted on the *Fadama* projects (Simonyan & Omolehin, 2012, Kwon-Ndung, 2012, Umar, 2015, Tanko, Jirgi, & Ogundeji, 2010).), there is scanty review study on the various *Fadama* projects in Nigeria. This paper is intended to review the *Fadama* projects with the aim of highlighting the achievements of the projects. The review will guide policy makers on improvement of implementation of such projects because of the benefits the benefiaries have derived from the various phase of the *Fadama* project.

Fadama
"*Fadama*" is a Hausa name for irrigation land-usually low lying plains underlay by shallow aquifers found along Nigeria's major river systems (Ingawa, Oredipe, Idefor, & Okafor, 2004; Iman, 2009). Such lands are especially suitable for irrigated production and fishing, and traditionally provide feed and water for livestock. According to FSO (1999) the huge potential

of this land is only very partially developed. Nigeria has great potential for the production of cereals, legumes, vegetables and tubers during the dry seasons. This is because the country is endowed with *Fadama* land. Nkoya *et al*. (2008) stressed that *Fadama* has been the source of income to several users as farmers, pastoralists, fishermen, and hunters etc. who depend directly or indirectly on the *Fadama* resources for their lively hood.

Fadama I

The *Fadama* I project, which was the first phase of the project focused on supplementary water supply for irrigation and other uses. The objectives of the *Fadama* 1 project according to Ingawa [1998] were:
construction of about 50,000 shallow tube wells in Fadama land for small scale irrigation;

- simplifying drilling technology for shallow tube wells;
- construction of *Fadama* infrastructure such as roads, culverts, storage sheds, etc.;
- organization of *Fadama* farmers for irrigation management, cost recovery and easy management of credit, marketing products, etc.;
- carrying out aquifer studies;
- monitoring and upgrading of irrigation technologies; and
- completion of environmental assessment of future *Fadama* development activities

According to the World Bank project (2003b), National Fadama 1 was adjudged successful both at national and international level and that culminated in the Federal Government of Nigeria requesting the World Bank for the preparation of a follow– up project.

Fadama II

Fadama II is a follow - up to *Fadama* I (phase I of the National *Fadama* Development project), which was implemented during the period 1993-1999. *Fadama* I focused mainly on crop production and largely neglected support of postproduction activities such as commodity processing, storage and marketing (downstream agricultural sector). The emphasis was on providing boreholes and pumps to crop farmers through simple credit arrangements aimed at boosting aggregate crop output (Nkonya *et al*, 2008). The Second National *Fadama* Development Project is one of the major instruments for achieving overall development of the agricultural sector in Nigeria. *Fadama* II was designed to operate for six years (2004–2010) with a goal of contributing to poverty reduction in Nigeria. The project set a target of 50 percent of male and female *Fadama* resource users who benefit from the project-supported activities.

Key Performance Indicators

By the end of year six, it is expected that the following key performance indicators are to Realized:

- 50 percent of male and female *Fadama* resource users, who benefit from project – supported activities, have increased their average real incomes by at least 20 percent compared to the baseline.
- At least 60 percent of *Fadama* Community Associations (FCAs) have successfully implemented their LDPs and other project – supported activities
- Conflicts among *Fadama* Users have been reduced by at least 80 percent compared to the baseline.

Fadama III Project

The *Fadama* III project is comprehensive five-year action programme developed by the Federal Ministry of Agriculture and Water Resources (FMAWR) in close collaboration with Federal Ministry of Environment (FME) and other federal and state government ministries, local government and key stakeholders (donors, private operations and NGOs) to raise

productivity and incomes of *Fadama* land users emphasizing a comprehensive and holistic approach to agricultural operations. The approach is centered on the community-driven model and includes investing in capacity building, public infrastructure, inputs, adaptive research, extension services, knowledge transfer, and group-owned productive asset through matching grants, advisory services, land management improvements, and mechanism to avoid or resolve conflicts among *Fadama* resource users. The first *Fadama* project focused on these systems but Fadama III drawing on the successes recorded by *Fadama* II moves beyond flood plain system to cover a diverse range of agro-ecosystems, productive activities, land uses and enduring sustainability (Ike, 2012). Again, the programme will empower communities by giving them resources that will enhance productivity in the fields. The beneficiaries include farmers, fishermen, beekeepers, pastoralists, hunters and poultry farmers. Other are bull keepers, agro-processors, windows, youths, handicapped and people living with HIV/AID (Ike, 2012).

Fadama III Project Objectives and Strategy
According to Ike (2012), the objective of the *Fadama* III project is to increase the income of *Fadama* land and water resources users on a sustainable basis. The project will support the financing and implementation of five resources to the beneficiary group in:
  i.   Institutional and social development;
  ii.   Physical infrastructure for productive use;
  iii. Transfer and adoption of technology to expand productivity, improve value-added and conserve land quality
  iv.   Support extension and applied research; and
  v.   Provide matching grants to access assets for income generation and livelihood improvements.
The project supports the government's strategic objectives to enhance growth of sectors other than the oil sector. This is to achieve increased food security, reduce poverty, create employment and improved opportunities in rural areas. More specifically the project will contribute to achieve Nigeria's stated rural development and environmental objectives. The basic strategy of the project is the CDD approach with a strong emphasis on stakeholder's participation, especially at the community level.

Beneficiaries
According to Ike (2013), the project will be active in all 36 states and the FCT. The target groups include.
  a) The rural poor engaged in economic activities (farmers, pastoralists, fishermen, nomads, traders, processors, hunters, and gatherers as well as other economic interest groups);
  b) Relative disadvantaged groups (women including widows) such handicapped, the sick including people living with HIV/AIDs and the youth); and
  c) Service providers, including government agencies, private operators and professional/semi-professional associations operating in the projects area.

Key Performance Indicators of the *Fadama* III project
According to National Fadama Development Programme III (2013) the key indicators and targets allow tracking progress towards the Project Development Objective and include:
  a) Income of participating households: 75 percent of *Fadama* user households, who benefit directly from the project supported activities, have increased their average real income by 40 percent by 2013.

b) Yields of primary agricultural of participating households: 20 percent increase in yield of primary agricultural products of participating households.
c) Saving participating groups: 10 percent of the replacement value of the common asset used for income-generating activities of the FUGs is saved annually (with effect from year two).
d) Physical verification of operations, maintenance and utility of assets at the mid-term and at project closing by surveys of random selected sites.
e) Surveys at mid-term and at project closing to show that at least 75 percent of *Fadama* users are satisfied with operations, maintenance and utilization of community owned infrastructure and capital assets acquired through the project.

A REVIEW OF EMPIRICAL STUDIES OF FADAMA II AND III

The analyses of fadama II and III revealed that the project had both positive and negative effects (Ayanwale and Alimi 2004, Adegbite, *et al* (2008), Kudi *et al* (2008), Tanko *et al*., 2010, Adeoye *et al.,* 2011, Simonyan and Omolehin, 2012, Bature *et al*., 2013, Agbarevo and Okwoche (2014) and (Henri-Ukoha, 2012). Ayanwale and Alimi (2004) studied the impact of national *Fadama* in alleviating poverty. The researchers reported that the farm income obtained from *Fadama* fields (mostly leafy vegetables) cultivation increased by about three times from ₦13,368.00 in 1997 when the first national *Fadama* project started to ₦ 38,918.00 in 2004. The technical efficiency of the farmers range was 0.059 - 0.94 which implies that the farmers were relatively efficient.

An assessment on the impact of *Fadama* II on small-scale farmer's income in Ogun state with emphasis on the implication for agricultural financing in Nigeria was conducted by Adegbite, *et al* (2008). The researchers sampled beneficiaries and non- beneficiaries in *fadama* endowed communities of Obafemi-Owade local government area of Ogun State. Their findings depict that there was no significant increase in the income of the *Fadama* beneficiaries compared to non-beneficiaries of the *Fadama* project in the study area. Kudi *et al* (2008) studied the impact of the *Fadama* II on poverty alleviation among farmers in Giwa local government area of Kaduna State, especially how the project has affected the socioeconomic status of the farmers and production efficiency. The research revealed that there was a slight improvement in the income of farmers. Adeoye *et al.* (2011) conducted a study on rural infrastructure and profitability of farmers under *Fadama* II project in Oyo state, the researchers applied the infrastructural index and gross margin. They compared the infrastructural development between *Fadama* II local government areas and non- fadama II areas. They reported that, more than half of the villages in *Fadama* II local government areas have more infrastructures than non *Fadama* II villages. The researchers concluded that *Fadama* II project had contributed significantly to the development of infrastructures in Oyo state. Simonyan and Omolehin (2012) studied the impact of *Fadama* II project on benefiaciary farmers income in Kaduna State, using a double difference method approach. The researchers reported that there was an increase in the net farm income of beneficiaries and non-beneficiaries of *Fadama* II project. The double difference method analysis showed a positive mean income difference value between beneficiaries and non-beneficiaries after *Fadama* II project. Chow test analysis showed that the project contributed positively to increased income realized by the beneficiaries over that of the non-beneficiaries. Tanko *et al*. (2010) conducted a research on the impact of *Fadama* II project on income of tomato farmers in Niger State, Nigeria. Production function analysis and Chow's analysis of covariance confirmed significant difference in production functions, heterogeneity in slopes and intercepts and factor bias was observed on the production functions of participating and non-participating farmers respectively. The study also revealed that the project exerted a positive significant impact on the income of the farmers. Bajoga *et al.* (2006) studied the impact of the *Fadama* project specifically on the living standard of dry

season farmers who benefited from the *Fadama* loans in Gombe state. The study showed that the project did not make any impact on the beneficiaries of the *Fadama* loan by increasing their income, improving the living standard of an access to more personal belongings.

Bature *et al*. (2013) analysed the impact of national *Fadama* III development project on beneficiaries income and wealth in FCT, Nigeria. The researchers reported an increase in the value of productive assets of the *Fadama* beneficiaries although there was a decrease in the net farm income of *Fadama* beneficiaries. The authors argued that the decrease in the income could be due to the limitations encountered by the farmers. Agbarevo and Okwoche (2014) evaluated the effect of the third national *fadama* development project among farmers in Kwande Local Government Area of Benue State, Nigeria. The researchers reported that farmers' participation in *Fadama* III project has significantly increased their crop yield. Henri-Ukoha *et al*, (2011) examined the effect of the World Bank assisted *fadama* II project on the performance of fish farming in Imo State, South East Nigeria. The study revealed that the *fadama* II fish farmers were more productive and performed better than the non *Fadama* beneficiaries.

CONCLUSION
The national *Fadama* development project is one of the programmes that is aimed at reducing poverty among the rural populace in Nigeria. The project is also aimed at all year round crop production hence increasing food production and farmers' income. The paper reviewed the impact of *Fadama* II and III on food production and farmers' income. The review revealed that there was an increase in the income, crop yield and farmers productive asset of the *Fadama* beneficiaries. Some of the researchers reported that there was no increase in the income of beneficiaries and non-beneficiaries of the project. Based on the review it is concluded that the *Fadama* project has made positive impact on the beneficiaries of the project.

RECOMMENDATIONS
It is recommended that the project should be sustained by encouraging the beneficiaries to continue using facilities that have been put in place and the technologies they have adopted.

REFERENCES
Adeoye, A., Yusuf S. A. Balogun, O. L. & Carim-Sanni, A. (2011), Rural Infrastructural Development and Profitability of Farmers Under Fadama II Project in Oyo State, Nigeria, *World Rural Observation*: 3 (2),1-10.

Agbarevo, M. N. B. & Okwoche, A. V. (2014). Evaluation of effect of the third national fadama development project (fadama III) on food production among farmers in Kwande local government area of Benue State, Nigeria. *European Journal of Agriculture and Forestry Research.* 2(2), 27-32.

Ayanwale, A. B, & Alimi, T. (2004). The impact of Agricultural Development Project (ADP) in Nigeria. *Journal of Social Science*: 9(3), 157-161.

Bajoga, Y. U. & Adebayo, A.A. (2006). The Impact of Fadama Development Project on the Living Standard of Dry Season Farmers of Gombe State, *FUTY Journal of the Environment, 1(1),16-22.*

Bature, Y. M., Sanni, A. A. & Adebayo, F. O. (2013). Analysis of impact of National Fadama Development Projects on Beneficiaries income and wealth in FCT, Nigeria. *Journal of Economic and Sustainable Development: 4(17), 11-23.*

Federal Office of Statistics. (1999). Poverty Profile for Nigeria 1980 1996, Lagos. http//www.odi.org.uk/play/resources/other/maps-potatoproduction-nigeria.pdf. Aug, 2012.

Girei, Dire, B, Iliya M.M. & Salihu M. (2013). Analysis of Impact of National Fadama II facility in Alleviation poverty on food crop farmers in Adamawa State, Nigeria. *Global Journal of Agricultural Research.* I (3),8-15.

Henri-Ukoha, .A, Ohajianya, D. O, Nwosu, . F. O, Onyeagocha, S.U.O and Nwankwo, U.E. (2011). Effect of World Bank assisted Fadama II Project on the performance of fish farming in Imo State, South East Nigeria. *American Journal of Experimental Agriculture,* 1(4). 450-457.

Ike, P.C. (2012) Analysis of Impact of Fadama III on Poverty Alleviation in Delta State Nigeria. Asian. *Journal of Agricultural Science 4(2)*, 158-164

Ike, P.C. and Uzokwe U.N. (2011). Estimation of Poverty among Rural Farming Household in Delta State, Nigeria. *Nigeria International Journal of Agriculture and Food Science Technology,* 2(1), 11-21.

Iman I. (2009). Nigeria:World Bank – Fadama III project to gulp $ 440 million copy (c) right 2009. This day all Africa Global Media (allafricacom).

Ingawa, S.A., Oredipe, A.A., Idefor, K. & Okafor, C. (Editors). 2004. *Facilitators Project Implementation Manual. Second National Fadama Development Project (Fadama II)*. Abuja, Nigeria: Federal Ministry of Agriculture and Rural Development.

Kudi, T. M., Usman, I., Akpo, J. G. & Banta, A. L. (2008), 'Analysis of the Impact of National Fadama Development Project II (NFDP-II) in Alleviating Poverty Among Farmers in Giwa Local Government of Kaduna State, Nigeria, *Ozean Journal of Applied Science* 1(1), 1- 8

National Fadama Development Project (NFDP) III (2013). Impacts Profile for Nigeria 2009-2012, Plateau and Irish Potato. Investigations carried out by Daily Trust News Paper. pp. 1-3.

NAFDO (2008). National Fadama Development office Poverty Reduction through increased productivity and empowerment; Abuja Nigeria.

National Bureau of statistics (2012). Nigeria Poverty Assessment. National Bureau of Statistics (NBS)/World Bank, December 2007. pp 48-49.

Nkonya, E., Pender, J., Jagger, P., Sserunkuuma, D., Kaizzi, C & Ssali, H.,(2003). Strategies for Sustainable Development in Uganda. Research Report Manuscript (under review). International Food Policy Research Institute (IFPRI), Washington DC.

Philip, D.E. Nkonya, J. Pender & Oni, O.A. (2009). Constraints to Increasing Agricultural Productivity in Nigeria. A Review of Nigeria Strategy Support Programme (NSSP) Background Paper 6. International Food Policy Research Institute, Washington D.C.

Simonyan, J.B. & Omolehin, R.A. (2012), Analysis of Impact of *Fadama* II Project on Beneficiary Farmers Income In Kaduna State: A Double Difference Method Approach, *International Journal of Economics and Management Sciences,* 1(11), 01-08.

Tanko, L., Jirgi, A. J. and Ogundeji, A. A. (2010). Impact of *Fadama* II project on income of tomato farmers in Niger State, Nigeria. *African Journal of Agricultural Research*: 5(15), 1937-1942.

ANALYSIS OF YOUTHS INVOLVEMENT IN NON-FARM ACTIVITIES IN SELECTED RURAL COMMUNITIES OF KWARA STATE, NIGERIA

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ABSTRACT
This study examined the implications of youth involvement in non-farm activities on agricultural production in some selected rural communities of Kwara state, Nigeria. Data for the study were obtained with the aid of questionnaire. Eight communities with sizeable number of youths were randomly selected from the four (4) Agricultural Development Programme (ADP) zones in Kwara State while random sampling technique was used to select 200 respondents. Data were analysed using descriptive statistics and Pearson Product Moment Correlation was used to test the hypothesis. The study revealed that 50.0% of the youths were between 26-30 years old, 69.0% were male and 56.5% had secondary school certificate with 66.5% having farm size of about 1-5 acres. The results further revealed that commercial motorcycle operation was the dominant non-farm activity practiced by the youths. Factors for involvement in non-farm activities according to the respondents were high cost of mechanization (59.0%), supplementing returns from farming activities (55.5%), safety-net during off season (49.0%), and poor access to agricultural loan (36.5%). Farm size (r= -0.276**, p=0.000) and farming experience (r= -0.292**, 0.000) were found to be significant but inversely related to the level of involvement of respondents in non-farm activities. Youths take up different non-farm activities to meet their basic needs and this reduced their effective participation in agricultural production. Concerted efforts should be made by various levels of Government and Non-Governmental Organizations to provide capacity building and advisory services to make farming more attractive to the youth in the study area.
Keywords: Youth, Non-farm activities, Involvement, Rural communities, Kwara State

INTRODUCTION
There is no single preferred definition of rural area that serves all policy purposes. Rural area definition changes with shifts in population distribution or commuting patterns, or as a result of changes in geographic boundaries. Alemu (2012) referred to rural areas as the economic backbone of most developing countries, rural areas contribute to economic growth by creating jobs, supplying labour, food, and raw materials to other growing sectors of the economy. However, rural areas are the most marginalised, characterised by poverty, food insecurity, and unemployment. Agriculture is the main source of living for most rural people but there has been an increasing recognition that the rural economy is not confined to the agricultural sector alone (Csaki & Lerman, 2000). In the rural areas, the majority of households are involved in farm activities but many of them also get their income from non-farm activities (World Bank, 2008). Rural non-farm economy is defined as any form of economic enterprise that generates income outside of real agricultural activities (Lanjouw, 1999; Davis & Pearce, 2000; Haggblade et al., 2010; Wiggins & Hazell, 2011). Non-farm activities are refers to those activities that are not primary agricultural but located in rural areas. Non-farm activities help farm-based households spread risks, offer more remunerative activities to supplement or replace agricultural income (Gordon & Graig, 2001). In terms of employment, Islam (1997) reports that the share of the non-farm activities in rural employment in developing countries varies from 20% to 50%.

Youth is the time of transition between childhood and adulthood. There are over one billion youth (aged 15-24) in the world, 85 percent of these youth live in the developing countries and about 50 percent of youth populations in developing countries live in rural areas (United Nations, 2007). The non-farm activities in rural areas are increasingly becoming more popular than ever before, despite the government efforts to make the country self-sufficient in agricultural production through youths to reduce the nation's dependence on the importation of food. The rate of food production is still low compared to the population growth, most youth who are unemployed and suppose to engage themselves in agricultural production rather engage themselves in non-farm activities and this have serious implications on the farm labour and agricultural productivity. However, despite the fact that youths involved in agricultural activities have access to market for the sale of farm produce and purchase of inputs (Adesuga & Mavrotas, 2016), many of the rural youths still engage in non-farm activities.

Several studies have been carried out on non-farm activities, of particular interest is those studies carried out by Adefalu et al. (2013), Yakubu et al. (2015) and Gesese & Ignatious (2012) but there had not been sufficient information that focused on the non-farm activities and the period of the year that they are undertaken and how it affects agricultural production either positively or negatively. This is the gap in knowledge that this study seeks to fill. In view of the above problem, it is therefore imperative to examine the involvement of youth in non-farm activities. This research thus seeks to provide insights into the socio-economic characteristics of the respondent, identify the non-farm activities practiced in the study area, examine the pattern of involvement of respondents on non-farm activities, assess the factors responsible for youth involvements in non-farm activities

Hypothesis

H_O: There is no significant relationship between some selected socio-economic characteristics of the youths and their level of involvement in non-farm activities.

METHODOLOGY

The study was conducted in Kwara State, and its capital is Ilorin. Kwara State is located in the north-central zone of Nigeria. The State comprises of 16 Local Governments. Agriculture is the main source of economy and the principal crops grown are cassava, maize, yam and rice. The rainfall pattern both in quantity (900 to 1500) and distribution (6 to 7months) makes farming a great choice for the people. The population of the study comprised of all rural community based youth in Kwara State.

A multi stage sampling technique was used for the study. The study was carried out in the four agro-ecological zones in Kwara state. The first stage involved the purposive selection of one Local Government Area that has a community youth association from each zone. Second stage involved the random selection of two rural communities that has a sizeable community youth association each from the LGA selected making a total of eight communities. The final stage involved a random selection of 25 rural youths from the eight selected rural communities on their community youth association meeting day on the basis of their willingness to participate in the survey to give a total of 200 respondents and this constituted the sample frame.

Data collection was carried out using quantitative survey method with the aid of structured interview schedule. Data obtained from the field survey was subjected to both descriptive (frequency distributions, percentages, mean scores and ranking order) and inferential statistics (Pearson Product Moment Correlation) for analysis.

RESULTS AND DISCUSSION
Socioeconomic characteristics of the respondents.

Table 1:   Distribution of respondents based on socioeconomic characteristics

Variable	Frequency	Percentage	Mean
Age			
18-21	51	25.5	
22-25	49	24.5	25.3 years
26-30	100	50.0	
Total	200	100	
Sex			
Male	138	69.0	
Female	62	31.0	
Total	200	100	
Marital status			
Single	95	47.5	
Married	105	52.5	
Total	200	100	
Educational attainment			
No formal education	16	8.0	
Quranic education	10	5.0	
Primary education	33	16.5	
Secondary education	113	56.5	
Tertiary education	28	14.0	
Total	200	100	
Religion			
Islam	168	84.0	
Christian	28	14.0	
Traditional	4	2.0	
Total	200	100	
Farm size			
1-5	133	66.5	
6-10	49	24.5	
11-15	9	4.5	4.4 acres
16-20	9	4.5	
Total	200	100	
Farming experience			
1-5	40	20.0	
6-10	67	33.5	
11-15	44	22.0	10.2 years
16-20	49	24.5	
Total	200	100	
Occupation			
Commercial motorcycle	36	18.0	
Schooling	31	15.5	
Tailoring	17	8.5	
Trading	15	7.5	
Hairdressing	11	5.5	
Barbing	8	4.0	
Motorcycle repairing	7	3.5	
Electrician	4	2.0	
Welding	4	2.0	
Farming	29	14.5	
Domestic work	7	3.5	

Vulcanizing	3	1.5
Teaching	7	3.5
Produce gathering	5	2.5
Firewood gathering	1	0.5
Commercial driver	5	2.5
Shoemaking	3	1.5
Carpentry	4	2.0
Charcoal making	3	1.5
Total	200	100

Source: field survey, 2017

Table 1 reveals that half of the respondents (50.0%) were between the ages of 26–30 years, 25.5% were between the ages 18-21 while 24.5% were between the ages 22-25. The mean age of the respondents was 25years and this was an indication that the respondents are full of energy and agility which could make them to embark in non-farm activities. As could be found in the table above, 69.0% of the respondents were male while females constitute 31.0%. The table further reveals that 52.5% of the respondents were married while 47.5% were single. Marriage confers additional responsibility on individuals and may probably make the respondents scout for additional livelihood activities including off-farm enterprise to sustain their family needs. Also from the table, 56.5% had secondary school certificate, 16.5% of them had primary education, while 14.0%, 8.0% and 5.0% of the respondents had tertiary, no formal education and quaranic education respectively. The fact that more than half (56.5%) of the respondents are moderately educated, dissemination of extension innovations on both on-farm and off-farm activities is not likely to suffer any resistance in the study area. As a matter of fact basic numeracy and literacy skills help to improve farmers' livelihoods (Food and Agriculture Organization, 2007). Majority of the respondents (84.0%) were Muslims while 14.0% and 2.0% were Christians and traditional believers respectively.

The finding indicates that 66.5% of the respondents had farm size between 1-5 acres while 24.5% of the respondents had between 6-10 acres. Less than five percent (4.5%) of the respondents respectively indicated 11-15 and 16-20 acres as their farm size. The mean farm size of the respondents was 4.4 acres. The implication of operating on small acreage by the respondents who are mostly married is that they would have to look for other means (off-farm activity) to supplement the relatively low income from the farm. The results further indicated that 33.5% of the respondents have 6-10 years of experience of farming, 24.5% have between 16-20 years of experience, while 22.0% and 20.0% of the respondents have 11-15 and 1-5 years of experience in farming respectively. The mean farming experience of the respondents was 10years. The result shows that majority of the respondents have reasonable farming experience in the study area. Table 1 also shows various occupations the respondents participated in. it showed that commercial motorcycle operator, schooling, tailoring and trading were the major non-farm activities the respondents participated in with 18.0%, 15.0%, 8.5% and 7.5% respectively.

Non-farm activities practiced by the youths in the study area

Table 2: Non-farm activities practiced by the youths in the study area

Non-Farm Activities	*Frequency	Percentage (%)
Charcoal making	134	67.0
Carpentry	135	67.5
Motorcycle repairing	152	76.0
Shoe making	137	68.5

Barbing	155	77.5
Commercial driver	116	58.0
Firewood gathering	149	74.5
Produce gathering	167	83.5
Hair dressing	139	69.5
Teaching	107	53.5
Commercial motorcycle operator	168	84.0
Trading	103	51.5
Plumbing	74	37.0
Vulcanizing	93	46.5
Hunting	121	60.5
Domestic work	122	61.0
Schooling	110	55.0

Source: Field survey, 2017;   *Multiple responses

Table 2 shows the non-farm activities practiced in the study area. The result revealed that majority of the respondents (84.1%) indicated that motorcycle operation is the most practiced non-farm activity in the study area; this is probably because the enterprise guarantees steady daily patronage and income for the respondents than other enterprises in the study area. This is in tandem with the findings in the study carried out Adefalu, Usman, Adisa & Orioka (2013) on youth involvement in commercial motorcycle operation in rural communities. The result however disagrees with the study carried out in Benue State by Mbah, Ezeano & Odiaka (2016) where it was found that petty-trading was the predominant occupation among the youth. Furthermore, 83.5% of the respondents also indicated produce gathering as a livelihood activity. However, the least non-farm activity embarked upon by the respondents was plumbing work. The implication is that few (37.0%) respondents considered plumbing work as an option in the rural community because most of the houses lacked piped water and sanitation facilities which could make for plumbing services to be demanded.

Table 3: Pattern of involvement in non-farm activities

Variables	Frequency	Percentage
Mode of engagement		
Part-time	56	28.0
Full-time	144	72.0
Total	200	100
Time spent on farm activities		
1-4	122	61.0
5-8	57	28.5
9-12	21	10.5
Total	200	100
Time spent on non-farm activities		
1-4	19	9.5
5-8	86	43.0
9-12	95	47.5
Total	200	100
Period engaged in non-farm activities		
Raining season	146	73.0
Dry season	54	27.0
Total	200	100

Source: field survey, 2017

From Table 3 above, Majority (72.0%) of the respondents engage in non-farm activities as a full-time job while 28.0% of the respondents engage in non-farm activities as a part-time job. The reason may be traced to the fact that most of the available non-farm activities in the rural areas guarantee more return than that of the on-farm. Also, the result shows that 28.5% of the respondents spend 5-8 hours on farming activities daily, 61.0% and 10.5% of the respondents spend 1-4 and 9-12 hours on farming activities respectively. It further shows that 47.5% of the respondents spend 9-12 hours daily, while 43.0% and 9.5% of the respondents spend 5-8 and 1-4 hours on non-farm activities respectively. Respondents would prefer to spend more hours on any activity which gives instant returns as was found in the case of those who engage in non-farm occupation. On-farm activities require longer time before the individuals involved in it can reap the returns and young people may not have the patience. Table 3 also shows that majority (73.0%) of the respondents engage in non-farm activities mostly in the dry raining season while the remaining 27.0% of the respondents engage in non-farm activities mostly in the dry season. The high youth participation in non-farm activities during the dry season could impact negatively on agricultural development as it is capable of taking labour away from dry season irrigation farming activities (Bardhan & Udry, 1999).

Level of Involvement in Non-farm Activities

Table 4: Level of Involvement in Non-farm Activities

Activities	HI	MI	UN	I	NI	Mean	Rank
Charcoal	19(9.5)	29(14.5)	6(3.0)	38(19)	108(54.0)	1.06	3rd
Carpentry	4(2.0)	1(0.5)	12(6.0)	5(2.5)	178(89.0)	0.24	15th
Motorcycle repair	3 (1.5)	1(0.5)	15(7.5)	6(3.0)	175(87.5)	0.25	14th
Shoe making	5 (2.5)	3(1.5)	15(7.5)	0(0.0)	177(88.5)	0.29	13th
Barbing	7(3.5)	5(2.5)	14(7.0)	6(3.0)	168(84.0)	0.38	10th
Commercial driving	3(1.5)	4(2.0)	17(8.5)	14(7.0)	162(81.0)	0.36	12th
Firewood gathering	15(7.5)	17(8.5)	17(8.5)	26(13.0)	125(62.5)	0.80	5th
Produce gathering	22(11.0)	18(9.0)	16(8.0)	21(10.5)	123(61.5)	0.97	4th
Hair dressing	13(6.5)	4(2.0)	17(8.5)	8(4.0)	158(79.0)	0.53	9th
Teaching	20(10.0)	7(3.5)	9(4.5)	16(8.0)	148(74.0)	0.67	6th
Commercial Motorcycle	75(37.5)	21(10.5)	7(3.5)	56(28.0)	41(20.5)	2.16	1st
Tailoring	20(10.0)	6 (3.0)	7(3.5)	9(4.5)	158(79.0)	0.60	7th
Trading	10(5.0)	4(2.0)	8(4.0)	7(3.5)	171(85.5)	0.37	11th
Plumbing	0(0.0)	3(1.5)	9(4.5)	2(1.0)	186(93.0)	0.14	17th
Vulcanizing	4(2.0)	1(0.5)	10(5.0)	3(1.5)	182(91.0)	0.21	16th
Hunting	3(1.5)	19(9.5)	8(4.0)	33(16.5)	137(68.5)	0.59	8th
Domestic work	32(16.0)	11(5.5)	5(2.5)	21(10.5)	131(65.5)	0.37	11th
Schooling	70(35.0)	5(2.5)	4(2.0)	15(7.5)	106(53.0)	1.59	2nd

Source: Field survey, 2017 *Highly Involved (HI)   *Moderately Involved (MI) *Undecided (U)
*Involved (I)   Not Involved (NI)   Mean (M)

Table 4 shows the level of involvement in non-farm activities by the respondents. Commercial Motorcycle Operation (ranked 1st). Schooling, charcoal making, produce gathering, firewood gathering and teaching ranked 2nd, 3rd, 4th, 5th and 6th respectively. The result implies that commercial motorcycle operation which was ranked 1st among the respondents was probably as a result of the quick and daily income. This finding is supported by Abdulsalam & Wahab (2014) who concluded in a study carried out in Kwara State that commercial motorcycle operation help the rural youth to be economically responsible both at family and society levels.

Factors responsible for youth involvement in non-farm activities

Table 5: Factors responsible for youth involvement in non-farm activities

Factors	SA	A	U	D	SD	M	Rank
Passion for non-farm activities	59(29.5)	86(43.0)	19(9.5)	17(18.5)	19(9.5)	2.74	8th
Instant income from non-farm activities	56(28.0)	102(51.0)	15(7.5)	17(8.5)	10(5.0)	2.88	7th
Herdsmen attack on farms	34(17.0)	83(41.5)	33(16.5)	33(16.5)	17(8.5)	2.42	12th
Less stressful	45(22.5)	100(50.0)	18(9.0)	25(12.5)	12(6.0)	2.70	9th
Means of diversifying from farming during disasters	73(36.5)	70(35.0)	24(12.0)	21(10.5)	12(6.0)	2.85	6th
Poor access to farm land	23(11.5)	73(36.5)	17(8.5)	53(26.5)	34(17.0)	1.9	16th
Low financial returns from farming	45(22.5)	67(33.5)	20(10.0)	49(24.5)	19(9.5)	2.3	14th
Health condition	39(19.5)	62(31.0)	34(17.0)	41(20.5)	24(12.0)	2.2	15th
Untimely supply / poor access of farm inputs	53(26.5)	78(39.0)	31(15.5)	31(15.5)	7(3.5)	2.6	10th
Poor access to agricultural loan	73(36.5)	98(49.0)	15(7.5)	9(4.5)	5(2.5)	3.12	4th
High cost of mechanization	118(59.0)	60(30.0)	16(8.0)	3(1.5)	3(1.5)	3.43	1st
To supplement returns from farming activities	111(55.5)	68(34.0)	9(4.5)	10(5.0)	2(1.0)	3.3	2nd
Poor pricing of farm produce	81(40.5)	78(39.0)	14(7.0)	22(11.0)	5(2.5)	3.04	5th
As a safety net during off season	98(49.0)	75(37.5)	12(6.0)	10(5.0)	5(2.5)	3.25	3rd
Low prestige attached to farming	62(31.0)	62(31.0)	14(7.0)	40(20.0)	22(11.0)	2.51	11th
Inability to insure farm investment against disasters	70(35.0)	43(21.5)	21(10.5)	39(19.5)	27(13.5)	2.4	13th

Source: Field survey, 2017 Key: SA-Strongly Agree, A-Agreed, U-Undecided, D-Disagree, SD-Strongly D-Disagree, M-Mean

Table 5 shows the factors responsible for youth involvement in non-farm activities in the study area. High cost of mechanization, to supplement returns from farming activities, as a safety net during off season, poor access to agricultural loan and poor pricing of farm produce ranked 1st, 2nd, 3rd, 4th and 5th respectively. The fact that mechanization of farming activities which is expected to remove drudgery was costly and ranked 1st could suggest that youths in the study area had probably considered off-farm activities as a way to supplement returns from farming activities and particularly during the dry season as a kind of safety net.

Table 6: Results of the hypothesis
Relationship between selected socio-economic characteristics and level of involvement in non-farm activities.

Relationship between selected socio-economic characteristics and level of involvement in non-farm activities

Variables	Co-efficient –r	p-value	Remarks
Sex	-0.119	0.093	Not Significant
Educational level	0.048	0.497	Not Significant
Occupation	0.107	0.130	Not Significant
Farm size	-0.276	0.000**	Significant
Farming experience	-0.292	0.000**	Significant

Source: field survey, 2017   ** Significant at p 0.01   * Significant at p 0.05

As shown in Table 6, among the socio-economic characteristics, the variables tested against the level of involvement in non-farm activities, farm size ($r= -0.276^{**}$, $p=0.000$) and farming experience ($r= -0.292^{**}$, 0.000) were inversely significant to the level of involvement in non-farm activities. The result showed that, farm size and farm experience were found to be significant but inversely related to the level of involvement of respondents in non-farm activities, and the implication is that the higher the farm size and the farming experience, the lower the tendency for the youth in the study area to be involved in non-farm activities.

CONCLUSION
Based on the findings of the study, youths engage in different types of non-farm activities both in raining and dry season when they would have otherwise been actively involved in farming activities to improve and increase agricultural production. It is concluded that high cost of mechanization, supplementing returns from farming activities, safety net during off-season and poor access to agricultural loan were the factors that make the youths takes up non-farm activities so as to meet their basic needs. This therefore reduced the involvement of youths in agricultural activities and in other words hampered agricultural production. Furthermore, respondents with smaller farm size and lesser farming experience are more prone to drifting towards non-farm activities as a means of livelihood.

RECOMMENDATIONS
The study therefore recommends that concerted efforts should be made by different levels of Government Institutions, Non-Governmental Organizations and other stakeholders including Extension agencies to provide capacity building and advisory services so as to enhance the scale of on-farm activities of the youth in the area. The youths in the study area should also be organized into groups so that they could pull their resources together to access agricultural machineries to reduce drudgery.

REFERENCES
Abdulssalam, O.I & Wahab, A.S. (2014), Is "Okada" Commercial motorcycle riding reducing poverty among operators in Ilorin West Local Government Area, Kwara State. European Journal of Business, Economics and Accounting, 2 (3), 12-21.

Adefalu, L. L., Usman, B. A., Adisa, R. S. & Orioka, G. E. (2013). Analysis of Rural Youth in Involvement in Commercial Motorcycle Operation in Ilorin East Local Government Area of Kwara State, Nigeria. The Zaria Geographer. 20 (1).

Adesuga, M & Mavrotas, G. (2016): Youth Employment, Agricultural Transition and Rural Labour Dynamics in Nigeria. Published in International Food Policy Research Institute, Discussion Paper 10578, Dec. 2016.

Alemu Z. G. (2012). Livelihood Strategies in Rural South Africa: Implications for Poverty Reduction. Selected Paper Prepared for Presentation at the International Association of Agricultural Economists (IAAE), Triennial Conference, Foz do Iguacu, Brazil.

Bardhan, P & Udry, C. (1999): Development Microeconomics. Oxford: Oxford University Press.

Csaki, C & Lerman, Z. (2000): Agricultural Transition Revisited: Issues of Land Reform and Farm Restructuring in East Central Europe and the Former USSR. Washington DC: World Bank.

Davis, J.R & Pearce, D. (2000): "Rural Non-farm Economy in Central and Eastern Europe". Natural Resources Institute. Rural Non-farm Economy Project, Social Sciences Department Central Avenue, Chatham Maritime, Kent ME44TB, United Kingdom.

Food and Agriculture Organization (FAO, 2007): Education for Rural People and Food Security: a cross-country analysis. p. De Muro & F. Burchi, Rome.

Gesese S. k & Ignatious M. (2012) The Role of Off- and Non-Farm Activities in Achieving Sustainable Rural Livelihoods Security in Gubalfto Woreda, North Wollo Zone, Amhara Region State, Ethiopia. Journal of Sustainable Development in Africa 14 (5).

Gordon, A & Craig, C. (2001) Rural Nan-Farm Activities and Poverty Alleviation in Sub-Saharan Africa. Policy series 14. Chatham, UK: Natural Resources Institute.

Haggblade, S; Peter, B.R; Hazell, D. & Thomas, R. (2010): The Rural Non-farm Economy: Prospects for Growth and Poverty Reduction.

Islam, N. (1997). The Non-Farm Sector and Rural Development. Food, Agriculture and Environment Discussion Paper, No. 22. Washington DC: International Food Policy Research Institute.

Lanjouw, P. (1999). "Rural Non-agricultural Employment and Poverty in Ecuador". *Economic Development and Cultural Change, 48* (1), 91-122.

Mbah, E., Ezeano, C.I. & Odiaka, E.C. (2016). Analysis of rural youths' participation in family farming in Benue State: Implication for policy. *Current Research in Agricultural Sciences,* 3(3), 46-56.

United Nations (2007). World Youth Report. 2007. New York: United Nations

Wiggins, S & Hazell, P. (2011). "Access to non-farm employment and enterprise development". Background paper for the IFAD Rural Poverty Report 2011.

World Bank (2008). Agriculture for Development, World Bank: Washington D.C.

World Bank (2008). Teachers for rural schools: Experiences in Lesotho, Malawi, Mozambique, Tanzania and Uganda. A. Mulkeen & D. Chen. Africa Human Development Series.

Yakubu B., Bulama S. M & James H. L. (2015). Off Farm Activities and its Contribution to Household Income in Hawul Local Government Area, Borno State, Nigeria. IOSR *Journal of Agriculture and Veterinary Science* (IOSR-JAVS). 8 (10), 9-13

EFFECTS OF CASHEW PRODUCTION ON RURAL POVERTY ALLEVIATION AND ITS CONSTRAINTS ON FARMERS IN KOGI STATE, NIGERIA

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ABSTRACT

This study generally analysed the effects of cashew production on rural poverty alleviation in Kogi State, Nigeria. The specific objectives were to determine the poverty status of respondents in the study area and identify the constraints of cashew production in the study area. A sample size of 210 cashew producers were purposely selected in the State, data were obtained through the use of questionaire and interview schedules. Data were analysed using desriptive statistics, the Foster-Greer-Thobecke (FGT) models and logit regression model. The mean annual income of the farmers was ₦134,517.1; and majority of the respondents 95.7% sold their cashew nuts to local purchasing agents. Further findings revealed that 95.7% of cashew producers purchased mobile phone using income from cashew production, 95.2% pay children school fees with cashew income, 95.2% of cashew producers bought radio using income from cashew production and lastly 93.8% of cashew producers settled their medical bills using income from cashew production.The result of the FGT model showed that 24.8% of the farmers were poor. Moreso, 23.14% increase in income is needed for farmers to escape poverty line. The research further showed that the coefficient of income (-0.0003772), household size (.641994) and farm size (-.7139034) had significant effects on poverty alleviation among cashew farmers. The major constraints faced by cashew farmers in the study area were insufficient price information, inadequate extension and inadequate capital. It was recommended that adequate capital and other farm inputs should be provided for farmers in other to maximise production and poverty alleviation. Similarly, an enabling environment through government policies should be put in place for extension agents to carry out their duties effectively, and finally more lands should be devoted to cashew production in the study areas to enable farmers to escape poverty line.
Key Words: Cashew, Production, Poverty and Income

INTRODUCTION
According to Jubril, Haruna, & Oknonu (2009) poverty is currently one problem in Nigeria whose level contradicts the extreme resources in this Country. Poverty is one of the greatest challenges facing Nigeria today (Central Bank of Nigeria (CBN), 2004). The poverty situation in Nigeria is paradox because the country is endowed with a lot of natural, materials and human resources which can be harnessed, developed to generate employment and alleviate poverty in the land. Indeed, it is estimated that over 70% of Nigerians are classified as poor, and half of this number live in absolute poverty (World Bank, 2009; Landes, 2010). Poverty is particularly severe in rural areas, where up to 80% of the population live below the poverty line and with limited access to social services and infrastructures (Adam, 2007). The rural populace depends mainly on agriculture especially subsistence farming for food and income. Women are particularly vulnerable to the incidence of poverty, they comprise the bulk of the poor groups within rural communities (Eagerwood, 2009). The men have higher capacity for higher productivity and can usually combine a number of enterprises which allows them to have multiple sources of income. Moreover, there are an increasing number of men migrating from the rural areas to urban areas in search for greener pasture which has resulted in increased

number of female-headed rural households in the rural areas. This development has serious implication for rural development in Nigeria (Nwobi, 2010).

Over the years, rural farmers in the study area have used cashew production as a major means of alleviating poverty amongst themselves. During the past decade, the production of cashew nuts in Nigeria has increased almost six-folds from 30,000 tonnes in 1990 to 176,000 tonnes in 2000 (Food and Agriculture Organization, 2000). Prior to this, production was relatively static at 25,000 tonnes over 25 years from 1965 (Olunloyo, 1996). According to Promoting Pro-Poor Opportunities through Commodities and Service Market (PROPCOM, 2005) estimated area under cashew plantations in Nigeria varies from 200,000 to 300,000 hectares, the production of cashew is estimated to about 100,000 tonnes of raw nuts per annum. About 60 to 70% of the local production is commercialized, of which about 90% is exported in the form of raw nuts, less than 10% is processed locally for exports as kernels, and similar amount is also processed by small enterprises or at domestic level for local market. (Hammed., Adedeji., Asogwa & Ibiremo, 2007). Raw nuts are exported mainly to India and Vietnam and recently to China. In order to combat the problem of soil erosion and reclaim marginal land cashew trees have been planted for re-afforestation purposes. It also provide live fence, shade, firewood and charcoal (Agbongiarhuoyi, Aigbekaen, & Akinbile, 2008). During the last five to ten years, Nigeria has emerged as a leading producer of cashew nuts in Africa (Ogunsina & Lucas, 2008). Presently in Nigeria, products of the cashew tree (kernel and apple) are under-utilized for income generation. There is still much wastage of the fresh apples on farms since a negligible portion is consumed by the harvesters. This wastage reduces the household income. It is thus become imperative that value addition to cashew apple and nut be explored. Value addition has been found to improve income and shelf-life of product on crops like cocoa (Lawal & Jaiyeola, 2007).

Kogi State is characterized by high annual rainfall, good temperature and soil which favour the production cashew. As a result of this favourable climatic condition, the State is one of the leading producer of cashew in the country. The problem of high poverty rate among farmers in the State which is prevalent can be addressed through cashew production. The cashew seed is served as a snack or used in recipes, like others nuts, the pulp is very juicy. Cashew trees are usually grown for their kernels which when roasted have a very pleasant taste. Technical Centre for Agricultural and Rural Cooperation (CTA, 2007) reported that raw nuts which are much in demand in industrialized countries are processed into kernels that constitute a valuable export product for confectionery. They are used as an ingredient for making fruit paste, candied fruit, canned fruit, cashew apple, resins, jams and jellies, chutney, fruit juice, alcohol and vinegar. Cashew kernels rank third after almonds and hazelnuts in the international trade of tree nuts. Wine and pulp are produced from cashew apple. Apple is eaten as a raw fruit or is fermented to produce a delicious alcoholic drink. The pulp is the fibrous part obtained after extracting juice from the apple and could be used as animal feed or dried and processed into diet fiber biscuit. Another product of cashew is the Cashew Nut Shell Liquid (CNSL). It is greatly valued in the international market as a raw material for brake and clutch linings, paints, and vanishes. It is also used in lacques, agglutinants, insecticides and fungicides. As a result of its industrial uses, about 30% of recorded Nigerian raw cashew nuts, valued at about US$12 million, are exported to the major processing countries, such as India, Brazil and recently, Vietnam, for further value-added processing (Peter, 2011).

Despite these numerous social and economic advantages of cashew production and conducive natural condition for cashew production, the cultivation of cashew is yet to be carried out on a large scale in the State. The inability of farmers to cultivate cashew on large scale has resulted in the loss of most of these advantages embedded in cashew production. Moreover, in most cashew farms in Kogi State, it is common phenomenon to see the fleshy apple and some nuts

wasting away due to inability of the farmers or lack of adequate information about how to turn them into useful products that will help in alleviating poverty. Agencies like Agricultural Development Programmes (ADPs) and extension units of research institute are saddled with the responsibility of converting technological information into useful knowledge to promote cashew production. Against this background, the paper looked at the following objectives: to determine the poverty status of respondents in the study area, determine the effects of cashew production on poverty status of respondents in the study area and to identify the constraints of cashew production in the study area.

METHODOLOGY
The study was conducted in Kogi State, Nigeria. Kogi State was created in August, 1991 out of Kwara and Benue States with the capital in Lokoja and consists of 21 Local Government Areas (LGAs). The State is located in the Guinea savannah ecological zone of Nigeria and is situated at the confluence of rivers Niger and Benue making the State to be popularly known as the Confluence State. The State is located between latitude $6^0 33^1$ and $8^0 44^1$ N and longitude $5^0 22^1$ and $7^0 49^1$E (Kogi State Ministry of Information, 2010). The State share common boundaries with Niger, Plateau, Nasarawa States and Federal Capital Territory (FCT) to the North and Benue State to the East. To the west, it is bounded by Kwara, Ondo and Ekiti state and to the South by Enugu, Anambra and Edo States. Kogi State has a total population of about 3,278,487 people with land area of about 30,354.74 square kilometers (Kogi State Ministry of Information, 2010). The State has about 2 million hectares of cultivable land with only about 0.5 million hectares currently under cultivation (Kogi State Ministry of Information, 2010). The State is well endowed with river valleys and swamplands for dry season farming. The major food crops grown in the State are yam, cassava, maize, sorghum, rice, millet, cowpea, pigeon pea, groundnut, bambara nut, cocoyam, sweet potato, beniseed, melon, banana, plantain and cotton. Fruits and leafy vegetables such as okra, pepper, fluted pumpkin and spinach are highly cultivated in the area. Tree crops grown in the State are: cashew, oil palm, citrus, cocoa, coffee and kolanut. Cattle, sheep, goats and poultry are the major animals reared. Fishing is common along the riverside areas.

Multi-stage sampling technique was used for the study. At the first stage, three Local Government Area (LGAs) were purposively selected due to high concentration of cashew producers in these areas. The LGAs are Ijumu, Kabba Bunu, and Yagba East. At the second stage three villages were randomly selected from each LGAs making a total of nine villages. The third stage involved the use of simple random sampling technique to determine the sample size from the sampling frame using Yamane (1973). The sampling frame was 443 and the sample size was 210.

The Yamane formula is given as;
$$n = \frac{N}{1+N(e)^2}$$ (1)
Where;
 n= sample size
N= finite population
e= limit of tolerable error
1= unity

Data were collected on poverty status, income and constraints faced in production using questionaire and interview schedule with the help of trained enumerators.

Measurement of Variables
Dependent variable
Poverty was measured using poverty line as a bench mark, (1) if the household is poor and (0) if otherwise
(2)   Income realized from cashew output was measured in Naira (₦)
(3)   Constraints of cashew production were determined using 3 point likert scale, constraint were measured as follows, very severe = 3, severe = 2 and not severe =1, these were added together to get 3+2+1= 6 and was divided by the number of value to get 2 which is the mean point, any problem that is less than 2 is regarded as not severe while any problem that is above 2 regarded as severe.

Descriptive statistics such as percentages, means and frequency counts was used for data analysis.

The Foster-Greer-Thobecke (FGT) Poverty Measures is expressed as:
$$P\alpha = \frac{1}{N}\sum_{i=1}^{Hi}\left(\frac{Z-yi}{Z}\right)\alpha \text{ ---(1)}$$
Foster-Greer-Thorbecke, (1984)
Where, N = total number of respondents;
Yi = Annual income;
Z = poverty line of respondents in the study areas.
q = number of households with income less than Z;
α = Poverty Aversion Parameter Index which takes on the values of 0, 1 and 2 representing incidence of poverty, poverty gap and severity of poverty respectively (Foster *et al.*, 1984). The measure relates to different dimensions of the incidence of poverty:
The poverty line were placed at two-third mean income of respondents. Based on this, respondents was classified into three groups:
$$P_{O=}\frac{Ho}{N} \text{ ---(2)}$$
What is the proportion of the population that falls below the poverty line. This is called the head count or incidence of poverty. If α = 1, FGT becomes:
$$P_1 = \frac{1}{N}\sum_{i=1}^{Hi}\left(\frac{Z-yi}{Z}\right)\alpha \text{ --(3)}$$
What is the depth of poverty. It is the percentage of income required to bring each individual below the poverty line up to the poverty line. If α = 2, FGT becomes:
$$P_2 = \frac{1}{N}\sum_{i=2}^{H2}\left(\frac{Z-y2}{Z}\right)\alpha\text{---(4)}$$
What is the severity of poverty. It is indicated by giving longer weight to the extremely (core) poor. It is achieved by squaring the gap between their income and the poverty line to increase its weight in the overall poverty measure.

Effect of Cashew Production on Poverty Status of Respondents
Logit regression, both the implicit and the explicit models are specified below:
Poverty status (Y) =f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8X_9.......X_n)
Y= b_o +b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 +b_5X_5+b_6X_6+b_7X_7+b_8X_8+b_9X_9 + $b_{10}X_{10}$+b_2X_{11}U ----------- (5)
Y = Poverty status (1 if poor and 0 otherwise)
X_1=Cashew output (kg)
X_2= Income (naira)
X_3= age (years)
X_4= household size (numbers of persons)
X_5= farm size (hectare)

X_6= cashew farming experience (Years)
X_7= cooperative society members (numbers of membership)
X_8= extension contact (number of contact per annum)
X_9 = distance to market (km)
X_{10} =education (years)
X_{11} = credit access (Yes or no)
U= random disturbance or error term

RESULTS AND DISCUSSION

Effects of Cashew Production on Poverty Status

Table 1: Effect of cashew production on poverty status of respondents using logit regression

Variables	Coefficients	Z value
Cashew output	-.0012317	-0.78
Income	-0.0003772	-3.21***
Age	-.0093806	-0.09
Household size	.641994	1.77*
Farm size	-.7139034	-1.91*
Farming experience	-.0498403	-0.78
Cooperative	2.675374	1.46
Extension access	.0047014	0.00
Distance market	-.2656883	-0.54
Education	-.089284	0.78
Credits access	-.3704638	-0.29
-Constant	38.3268	2.68

Source: Field survey, 2015

Log likehood = -13.343609	*** = significant at 1% level of probability
LR chi square (10) = 206.14	**=significant at 5% level of probability
Prob>chi square = 0.0000	*= significant at 10% level of probability
Pseudo R^2 = 0.8854	

The result in Table 1 revealed that income, household size and farm size had significants effect on poverty status. The coeffficient of Income had negative effect on poverty status and this shows that the lower the income the likely the probability of being poor. This findings was in line with Federal Office of Statistic (FOS, 1999) that low income make it impossible for farmers to escape poverty line. However, additional income become imperative to enable the farmers to escape from poverty line. The coefficient of household size had positive effect on poverty status, this implies that larger household are likely to be poor due to more people in the household. The result further indicated that farm size had negative effect on poverty status. This implies that respondents that lack access to adequate farm land for cashew production are likely to be poor. This findings corroborates with (Omonona, 2001), that increase in household number and lack of access to adequate farm land contribute to rural poverty.

Marginal Effect of Cashew Production on Poverty Status
Table 2:Marginal effect of logit regression model

Variables	Coefficient	Std error	t-value
Income	-6.59e	9.85e	-6.67***
Household size	0.010	.0058	1.83*
Farm size	-0.011	.0057	-2.10**

Sources, Field survey, 2015
*Significant at 10%   **Significant at 5%   ***Signicant at 1%

The marginal effect explain the contribution of each variable to the over-all model as presented in table above. Income and farmsize were negative and contributed 65.9% and 1% to the model respectively, while household size was positive but contributed 1% to the model.

Constraints Faced by Cashew Farmers
Table 3: Distribution of respondents according to constraints affecting their production

Variables	Very severe	Severe	Not severe	Sum	Mean	Remark
Inadequate extension	186 (89%)	18 (9.0%)	6 (9.0%)	600	2.86	Severe
Inadequate capital	181 (86%)	25 (12%)	4 (2.0%)	597	2.84	Severe
Insufficient price information	181 (86%)	25 (12%)	4 (20%)	597	2.84	Severe
Lack of storage facilities	173 (82%)	31 (15%)	6 (3.0%)	587	2.79	Severe
Poor marketing channel	158 (75%)	47 (22%)	5 (3.0%)	573	2.72	Severe
Lack of awareness on potential	153 (73%)	24 (11%)	33 (16%)	540	2.54	Severe
Inadequate supply of input	130 (62%)	63 (30%)	17 (8.0%)	533	2.54	Severe
Lack of processing industries	138 (66%)	44 (21%)	28 (13%)	530	2.52	Severe
High cost of transport	115 (55%)	88 (42%)	7 (3.0%)	528	2.51	Severe
Post-harvest lost	128 (59%)	58 (28%)	27 (13%)	518	2.46	Severe
Lack of good road	111 (53%)	66 (31%)	33 (16%)	498	2.37	Severe
Insufficient labour	20 (10%)	34 (16%)	156 (74%)	284	1.35	Not severe
Poor quality of nut	2 (1.0%)	39 (19%)	169 (80%)	253	1.20	Not severe
Low farm gate	6 (3.0%)	17 (8.0)	187 (89%)	239	1.14	Not severe
Insufficient buyer	2 (1.0%)	2 (1.0%)	206 (98%)	216	1.02	Not severe

Source: Field survey, 2015.

Table 3 showed that inadequate extension services was the major constraints faced by cashew farmers with mean value of 2.86. Farmers also reported that inadequate capital and insufficient price information limit their production with a mean value of 2.84. Lack of storage facilities had mean value of 2.79, this constraint is well pronouced in Nigeria compared to other developed countries that make better use of cashew apple. In the study area, repondents only make use of cashew nuts. Akinwale & Ayodele (1999) reported that despite the increase in cashew production in Nigeria, it is only the cashew nuts that are being utilized in the processing industry where as the cashew apple wasted away. This constraints was followed by poor marketing channel due to the activities of middle men with mean value of 2.72. Other challenges of concern in the study area were lack of awareness (2.54), inadequate supply of input (2.54), inadequate processing industries (2.52), high cost of transportation (2.51), post harvest losses (2.46), bad road (2.37) among others. The inference that can be drawn from this finding is that the cashew producers are faced with several challenges in the study area, which require attention for improved cashew production and poverty alleviation.

CONCLUSION
Poverty status analysis revealed that 24.8% of the respondents were poor. The FGT measured of poverty further revealed that cashew farmers income must be raised by 23.14% for them to escape poverty line. The coefficients of annual income and farm size both had negative effects on poverty status while the coefficient of household size had positive effects on poverty status, inadequate extension service, inadequate capital and insufficient price information were some of the constraints faced by cashew farmers in the study area.

RECOMMENDATIONS
The following recommendations were made based on the empirical findings of the study:
i.   Adequate capital and other production incentives should be provided for farmers in other to maximise their production and alleviate poverty in the study area.
ii.   Adequate and relevant extension sevices on cashew production should be provided to increase cashew output and alleviate poverty

REFERENCES

Adam, G. (2007). "Role of Microfinance in Actualization MDGs" in Paper Delivered at the Induction Ceremony of Institute of Chartered Economists of Nigeria, Porthacourt, Rivers State Nigeria.

Agbongiarhuoyi, A.E., Aigbekaen, E.O & Akinbile, L.A. (2008). Awareness of cashew products potentials and market information among farmers in Kogi State, Nigeria. *ARPN Journal of Agricultural and biological Science,*3(4), 10-15.

Akinwale, T.O & Ayodele, E.A. (1999). Economic importance of cashew. *Quarterly Nigeria's First Magazine Journal,* 2(9), 45-47.

Central Bank of Nigeria (2004). " Asssessment of Community Banks" *Report No 04/03IIC-NIR,* Food and Agricultural Organization, pp.10-16.

Eadgerwood, J. (1999). "Sustainable Banking for the Poor Project in South Asia", World Bank Economic Review.

Federal Office of Statistics (1999). Poverty and agricultural sector in Nigeria. Federal Office of Statistics Publication (FOS), Lagos, Nigeria.

Food and Agriculture Organization, FAO (2000). Cashew production in Africa, 1990-2000. Food and Agricultural Organisation of the United Nation. Production database. Retrieved on September 10, 2014 from http:apps.fao.org/page/collection.

Hammed, L.A., Adedeji, A.R., Asogwa, E.U & Ibiremo, O. (2007). Constraints to Cashew Production in Nigeria, A paper presented at the cashew stake-holders meeting organized by the African Cashew Alliance (ACA) held at IITA Ibadan, Nigeria. 12.

Jubril, S.A., Haruna, U & Oknonu, K.S. (2009). Assessment of poverty among farmers in Bauchi Local Government Area of Bauchi State. Proceedings of the 43rdAnnual Conference of Agricultural Society Nigeria held at Bauchi, pp. 454-466.

Kogi State Ministry of Information (2010). *Working Document.*

Landes, D.S. (2010). The Wealth and Poverty of Nations-Why some are so Rich and Some are so Poor, New York: Norton.

Lawal, J.O., & Jaiyeola, C.O. (2007). Economic analysis of cocoa wine produce from cocoa powder. Retrieved on April 14, 2015 from www.world-food.net. *Journal of Agriculture, Food and Environment, 5(2),*76-77.

Nwobi, N. C. (2006). Microfinance and Poverty Alleviation in Nigeria–Case Study of Obazu Progressive Women Association, Mbieri, Imo State, Uppsala: Department of Economics.

Ogunsina,B.S. & Lucas, E.B. (2008). Development of a manually operated cashew juice extractor. *Agricultural Engineering International, TheCIGR E Journal,*3(2).

Olunloyo, O. A. (1996). Marketing outlets for cashew nuts. *Proceedings of the national workshop on cashew production technology,* held at the Cocoa Research Institute of Nigeria (CRIN), Ibadan, Nigeria. March 26-29.

Omonona, B.T. (2001). Poverty and its correlates among rural farming households in Kogi State. Ph.D thesis, Department of Agricultural Economics, University of Ibadan, Nigeria.

Peter, K.S. (2011). An Assessment of the Contribution of Cashew Production to Local Economic Development, a Case Study of the Brong Ahafo Region, Ghana. Kwame Nkrumah University of Science and Technology, Ghana.

Promoting Pro-poor Opportunities through Commodities and Service market. (PROPCOM) (2005) Cashew sub-sector Strategic Framework, using Cashew sector market for pro-poor Growth in Abuja, Nigeria. March-April, 2005

Technical Centre for Agricultural and Rural Cooperation ACP-EU (CTA, 2007). CTA spore food sovereignty the right to food (128). 4 April. Published by CTA, The Netherlands.

World Bank, (2009). Poverty Reduction Handbook, the World Bank Washington, D.C.

ASSESSMENT OF CLIMATE SMART AGRICULTURAL PRACTICES AND CONTRIBUTION OF HOUSEHOLD INCOME IN CASSAVA FARMING HOUSEHOLDS IN KWARA STATE, NIGERIA

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ABSTRACT

Climate-Smart Agricultural practices (CSAPs) are paramount to the success of farming activities today in the face of the menace of climate change. This study assessed climate smart agricultural practices and the contribution of households' income in cassava farming households in Kwara State. Data were collected from 120 cassava farming households in three (3) villages across four (4) local government areas. Descriptive statistics, likert-type scale and ordinary least square were used for data analysis. Result showed that majority of the respondents were male, married and few of them had no formal education with household size of 6-10 and 11-20 persons .The total household income and the percentage contribution of income from cassava production to the total household income of farmers indicate that the majority of the farmers had 81-100% contribution of cassava income to their total household income. However, the practice of conservation agriculture, planting drought and heat tolerant crop were the most used CSAPs in the study area, the results of the ordinary least square estimate regression showed that off farm income, access to credit, income from cassava were significant variables influencing the effect on households' income of cassava farming households at 1% and farm size at 5% level of significance. The study therefore recommends that the farmers should be well educated and on the benefits of CSAPs in agricultural production, which are the panacea for reducing the negative impact of climate change on their farming activities.
Keywords: CSAPs, household's income, cassava production, Kwara State

INTRODUCTION

Agriculture is considered to be climate smart when it achieves three main goals: (i) The sustainable increase in agricultural production and income, (ii) The acclimatizing and building resilience to climate alteration and (iii) The reduction or eliminating greenhouse gas (GHG) emission (Fanen, & Adekola, 2014). Climate smart farming promotes the transformation of agricultural systems and agricultural policies to increase food production to enhance food security and ensure that food is affordable (low input-cost) hence reducing poverty while preserving the environment and ensuring resilience to a changing climate (Mnkeni & Mutengwa, 2014).Climate change equally leaves many more people vulnerable to poverty. Climate change is one of the environmental lives threatening to economic development and sustainability of mankind worldwide. These environmental problems result to low and unpredictable crop yields, which invariably make farmers more vulnerable, especially in Africa (Ziervogel, Nyong, Osman, Conde, Cortes & Dowing, 2006; United Nations Framework for Climate Change, 2007). Cassava (*Manihot esculenta*, *Crantz*) is a major food and industrial crop grown majorly in the tropics for its starchy and tuberous roots, which are used for both human and animal consumption, and as well as raw material for industries (Nweke, 2004). In African, cassava is regarded as a powerful poverty fighter. Food and Agricultural Organization (2012) stated that ability of cassava to display an exceptional ability to adapt to climate change

makes it very important to the agro-economy of several tropical countries and the use of Improved Agricultural Technologies (IATs) is expected to boost its production.

The climate smart agricultural practices include the usage of organic manure, agro-forestry, conservation agriculture, the usage of improved varieties and breeds, integrated crop/livestock management, mulching, control flooding, crop rotation as well as irrigation for smallholder farmers. This is in response to the consequences of the poor production associated with low agricultural output and high incidence of poverty among farmers in Nigeria. The consequences of climate change such as submerging, droughts, landslides amongst others, will not only reduce farm yields for many, but will also leave farmers vulnerable to poverty in the short, medium or long term. This has led to a growing concern about the likely consequences of climate change on poverty, economic growth, and livelihood prospects. Due to these environmental threats resulting to declining in crop yields and income, some farmers in Nigeria are abandoning farming for non-farming activities (Apata, Ogunyinka, Sanusi & Ogunwande 2010). Hence, concerted efforts toward tackling these menaces are necessary. The objective of this study is to assess climate smart agricultural practices and the contribution of households' income in cassava farming households in Kwara State. The specific objectives are to analyse the contribution of income from cassava production to the total households' income, examine the rate of usage of CSAPs among cassava farmers and to estimate the effect of households' income on the socioeconomics characteristics of cassava farming households.

METHODOLOGY

The study was conducted in Kwara State of Nigeria. Kwara State lies within the North central geopolitical zone of Nigeria. Primary data was used for the study. A three stage sampling procedure was employed. First stage was a purposive selection of zone C and D out of the four agro-ecological zones in the state due to high cassava farming activity. Ifelodun, Oyun, Irepodun and Asa local government was used for this study. Second stage involved a random selection of three villages each from the local government area and the third stage also involved the random selection of 10 cassava farmers from each village thus having a total of 120 respondents**.** Households was classified based on their age, sex, marital status, level of education, family size and farming experience using frequency counts, means, table and percentages.

Contribution of Income from Cassava Production to Total Household Income: The percentage contribution of income from cassava production will be calculated as the ratio of returns to cassava production to total household income of the farmers and this is expressed as:

Percentage Contribution $= \frac{Returns\ to\ cassava\ production}{Total\ household\ income} \times 100$

Likert-type Scale: A five-point likert scale was used to determine the frequency of use of CSAP in the study area:

Frequently used = 5; Occasionally used = 4; Rarely used = 3; Stopped using = 2; Not used = 1
Ordinal Least Square Estimate Regression: It was used to determine the effect of household income on the socioeconomic characteristics of cassava farming households in the study area. The ordinal least square estimate is thus expressed as:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X + \beta_3 X_3 + \beta_4 X + \beta_5 X + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \varepsilon_i$$

The dependent variable is Y = percentage contribution of income from cassava production to the total household income. The independent variables are:

X_1 = Age of farmers (years); X_2 = Household size (number);X_3= Income on cassava (naira);X_4 = off farm income (naira);X_5 = Labour cost (naira);X_6 = Years spent in school;X_7 = Farm size (hectares);X_8 = Farming experience (years);X_9= Marital Status (dummy variable, 1 = single, 2 = married, 3 = widowed, 4 = divorced/separated);X_{10}= Access to credit (dummy variable, yes = 1, otherwise = 0);X_{11}= Sex of the farmers (dummy variable, 1 = male, 0 = female);u/ε = error term

RESULTS AND DISCUSSION

Socio-economic characteristics of the farmers in the study area
Table 1: Socio-economic characteristics of the farmers in the study area

Variables	Frequency	Percentage
Age		
≤30	4	3.33
31-40	34	28.34
41-50	42	35.00
51-60	25	20.83
>60	15	12.50
Mean=48.17		
Gender		
Female	2	1.67
Male	118	98.33
Marital status		
Single	35	29.17
Married	85	70.83
Educational Status		
No formal Education	50	41.67
Primary Education	36	30.00
Secondary Education	24	20.00
Tertiary Education	10	8.33
Household Size		
≤5	9	7.50
6-10	56	46.67
11-20	52	43.33
>20	3	2.50
Mean=11		
Farming experience		
≤10	15	12.50
11-20	25	20.83
21-30	42	35.00
31-40	21	17.50
41-50	13	10.84
>50	4	3.33
Mean=26.63		
Place of cassava		
Major occupation	87	72.50
Minor occupation	33	27.50
TOTAL	**120**	**100.00**

Source: Field Survey, 2018

The results from table above showed that 35 percent of the respondents were between the ages of 41 and 50, which formed the active years of the farmers and therefore, they are strong enough to engage in agricultural practices (Ojoko, James, Sulaiman & Omobowale, 2016) while 28.34

percent were even younger and the mean age approximately was 48years. About 98.33 percent of the farmers were males and 1.67 percent was female. This agrees with the study of Adenegan, Adams & Nwauwa (2013), which claimed that a typical Nigerian farming system is predominantly dominated by men. Women are only allowed to partake in activities like harvesting, winnowing, and processing of farm produce among other things. About 41.67 percent of the farmers have no formal education followed by 30 percent with primary education, 20 percent had secondary education and 8.33 percent had tertiary education. Majority of the farmers 62.5 percent had either no formal education (no western education) or primary education (western education between 1-5 years). Majority of the farmers were married 70.83 percent, 19.17 percent have their wives and husband dead, 8.33 percent of the farmers were unmarried and few of the farmers were either divorced/separated 1.67 percent. It was revealed that 46.67 percent of the farmers had a household size between 6 and 10, followed by 43.33 percent with a household size of 11 to 20 persons; the average household size was 11 members. A large household size is a source of family labour in rural Nigeria where farming is mostly a major occupation; this conforms to the study of Lapar, Holloway & Ehui (2002) propensity to exploit labour declines with the number of household members. It was revealed that 35 percent of the farmers had farming experience of 21 to 30 years. Farming experience is very important in farming activities, as it helps the farmer in the area of proper farm management to maximize profit; the average farming experience was 27 years approximately. Majority of the farmers 72.5 percent in the study area take cassava production as a major source of occupation while about 27.5 percent had cassava production as a minor job to do.

Contribution of income from cassava production to the total household income
Table 2: Percentage contribution of income from cassava production to the total household income

Income on cassava production (A) (Naira/month)	Total household income (B) (Naira/month)	Percentage contribution of A to B	Frequency (120)	Percentage (100)
12500-40000	24500-40000	≤ 40	6	5.00
40500-60050	40500-60050	$41 - 60$	21	17.50
60500-79500	64000-80250	$61 - 80$	28	23.43
80250-225000	81000-245000	$81 - 100$	65	54.07
		Mean = 78.39		

Source: Field Survey, 2018

The results indicate that the majority of the farmers 54.07 percent affirmed that they had 81 - 100 percent contribution of cassava income to their total household income (which is between ₦80250 - ₦225000 and ₦81000 - ₦245000) respectively. Also, 23.43 percent of the farmers affirmed that cassava production contribute about 61 - 80 percent income to their total household income as shown in Table 2 above, while 17.5 percent and 5 percent of the respondents had about 41 - 60 percent and ≤ 40 percent of cassava income to the total household income. The average percentage contribution of cassava income to the total household income was 78.39 percent.

Frequency of usage of climate smart agricultural practices (CSAPs)in the study area.

Table 3: Rate of usage of climate smart agricultural practices (CSAPs) among cassava farmers in the study area

CSAPs	Frequently used	Occasionally used	Rarely used	Stopped usage	Not used	Mean score	Ranking
Conservation agriculture	117(97.50)	3(2.50)	0(0.00)	0(0.00)	0(0.00)	4.98	1st
Agro-forestry	0(0.00)	0(0.00)	0(0.00)	0(0.00)	120(0.00)	1.00	11th
Use of organic manure	113(94.17)	7(5.83)	0(0.00)	0(0.00)	0(0.00)	4.94	3rd
Crop rotation	83(69.17)	34(28.33)	3(2.50)	0(0.00)	0(0.00)	4.67	6th
Crop diversification	8(6.67)	48(40.00)	33(27.50)	0(0.00)	31(25.83)	3.02	9th
Mulching	85(70.83)	34(28.33)	1(0.83)	0(0.00)	0(0.00)	4.70	5th
Use of wetland	0(0.00)	0(0.00)	0(0.00)	0(0.00)	120 (0.00)	1.00	11th
Planting drought and heat tolerant crop	118(98.33)	2(1.67)	0(0.00)	0(0.00)	0(0.00)	4.98	1st
Planting cover crops	60(50.00)	58(48.33)	2(1.67)	0(0.00)	0(0.00)	4.48	7th
Irrigation	0(0.00)	0(0.00)	7(5.83)	12(10.00)	101(84.17)	1.22	10th
Intercropping	111(92.50)	9(7.50)	0(0.00)	0(0.00)	0(0.00)	4.93	4th
Soil conservation techniques	24(20.00)	58(48.33)	22(18.33)	1(0.83)	15(12.50)	3.63	8th

Source: Field Survey, 2018*Numbers outside the parenthesis are frequencies. *Numbers inside the parenthesis are percentages.

Results in Table 3 revealed that the five (5) most used CSAPs in the study area include conservation agriculture, planting of drought and heat tolerant crops, use of organic manure, intercropping, and mulching in descending order, while agroforestry and use of wetland (fadama) are the least used CSAPs in the study area. Conservation agriculture was the major CSAP in the study area. It involves minimum soil disturbance which reduces run-off and soil water loss. This is in line with the findings of Dumanski, Peiretti, Benetis, McGarry & Pieri (2006), who stated that conservation agriculture, provides direct benefits to environmental issues of global importance. Drought and heat tolerance is the degree to which a plant is adapted to arid or drought conditions. Planting of drought and heat tolerance crop gave the farmers less worries when it does not rain as at when it should. Organic manure is an organic matter, mostly derived from animal feces except in the case of green manure; it contributes to the fertility of the soil by adding organic matter and nutrients, such as nitrogen, that are utilized by bacteria, fungi and other organisms in the soil. Intercropping is simply the growing of two or more crop types on one field. Intercropping therefore helps to reduce chemical and fertilizer application; diversity and stability of the fields; weed suppression and reduction in susceptibility to insects and diseases. Mulching helps to retain water in the soil to keep the roots moist, keeps weeds out to help prevent root competition, and prevent soil compaction. Agroforestry (AF) is a land-use system in which woody perennials (i.e. shrubs or trees) are deliberately grown in association with herbaceous species (i.e. crops or pastures) with or without livestock (Anderson and Sinclair, 1993); and this was not practiced in the study area. Although there were some trees in some of the farmers' farm they claimed not plant it themselves and they did not cut it off so as it can serve as a relaxation place for them while working on the farm. Fadama land is

otherwise called wetland, which is characterized by the presence of water in the most part of the year.

Effect of income on socio-economics characteristics of cassava farming household

Table 4: Effect of income on socioeconomics characteristics of Cassava Farming Households

Variables	Coefficient	Standard error	t-value
Gender	-2.547401	6.455115	-0.39
Age	-0.0753058	0.1632436	-0.46
Marital status	1.662692	1.792994	0.93
Household size	0.1416368	0.1896354	0.75
Farming experience	0.0772793	0.1432374	0.54
Access to credit	8.175886	2.412451	3.39***
Farm size	1.294327	0.6326779	2.05**
Off-farm income	-0.0009992	0.0000627	-15.93***
Cost of labour	-0.0000337	0.0000937	-0.36
Years spent in school	-0.1179043	0.1759609	-0.67
Income on cassava	0.0001562	0.0000197	7.91***
Constant	79.68547	8.632929	9.23

Source: Field Survey, 2018; *** Significant at 1%=2.58 level, ** Significant at 5%=1.96; Prob>F= 0.0000; R-squared= 0.8544; Adjusted R Squared= 0.8396; Root MSE= 7.6972

Table 4 above showed the model's R squared and adjusted R squared is 85% and 84% respectively with a significant overall fit. Four out of eleven variables are significant. Off farm income, access to credit, farm size and income on cassava all had a significant and positive relationship with total household income which suggests that an increase in any of these variables will lead to an increase in the percentage contribution of income from cassava to total household income. However, the off farm income had a negative and significant relationship with the percentage contribution of income from cassava to the total household income, and which is against a priori expectation (Adenegan et al. 2013). This might be as a result of most respondents not being well educated.

There is a positive significant relationship (p<0.05), between the percentage contribution of income from cassava production to the total household income and access to credit as expected. This implies that percentage contribution of income from cassava production to the total household income is higher by 8.175886 due to having access to credits for instance, every household that have access to credits have their percentage contribution of income from cassava production to the total household income increased by a 8.175886 units, this could be as a result of having more fund invested in the production of cassava. The regression result also indicated that farm size had a significant and positive impact on the percentage contribution of income from cassava production to the total household income. This implies that an increase in farm size will increase the income obtain from cassava to the total household income as they produce more cassava. This could be associated to the fact that a larger area of farm size provides a greater opportunity for surplus production and it is important to know that size of land is very essential because transaction costs are largely fixed costs that can be spread across more output on large farms (Randela, Alemu & Groenewald, 2008). It was also revealed that income obtained from cassava production is strongly and positively related with percentage contribution of income from cassava production to the total household income.

CONCLUSION
Cassava is an important cash crop, contributing to famer's income in Kwara State, the study revealed that as the farm size increases, the volume of cassava produce increases, this showed

a positive effect on the percentage contribution of income from cassava production to the total household income, while off-farm income was found to have a negative effect on the percentage contribution of income from cassava production to the total household income. Farmers that have access to credit tends to be better off than those without access to credits, farmers that cassava production is their major source of occupation and likewise still have other source(s) of income flare better than those without other income source(s). Also farmers with large farm size produce more cassava which in turn brings them more income from the production.

RECOMMENDATIONS

It is therefore recommended that:

   i. farmers should be encouraged to join one or more farmer social groups, which would expose them to agricultural innovations such as the use of CSAPs among many others and have access to credits so as to be financially stable at any point in time.
   ii. Also, the farmers should be well educated and enlightened by extension services on the benefits of CSAPs in agricultural production, which are the panacea for reducing the negative impact of climate change on their farming activities.

REFERENCES

Adenegan, K.O., Adams, O.& Nwauwa, L.O. (2013): *British Journal of Economics, Management and Trade*, ISSN: 2278-098X, 3 (1).

Anderson, I.S & Sinclair, F.L. (1993). Ecological Interactions in Agroforestry Systems. Agroforestry Systems 6(2), 58-61.

Apata, T.G., Ogunyinka. A., Sanusi RA & Ogunwande, S. (2010). Effects of global climate changeon Nigerian Agriculture: *An empirical analysis. Paper presented at the 84th annual conference of Agricultural Economics Society held Edinburgh, Scotland, pp 345-351.*

Dumanski, J., Peiretti, R., Benetis, J., McGarry, D., & Pieri, C. (2006). The paradigm of conservation tillage. *Proceedings of World Association of Soil and Water Conservation,* P1, 58-64.

Fanen, T & Adekola O. (2014). "Assessing the role of climate-smart agriculture incombating climate change, desertification and improving rural livelihood in Northern Nigeria*", African Journal of Agricultural Research, 2014. 3(4), 23-34.*

Food and Agriculture Organization (2012). *Save and Grow. A policymaker's guide to the sustainable intensification of smallholder crop production.* Rome.

Lapar, Ma. L., Holloway, G & Ehui, S. (2002). Policy Options for Promoting Smallholder Market Participation: A Case Study from the Philippines. Socio-economics and Policy Research Working Paper 47. International Livestock Research Institute (ILRI), Nairobi, Kenya, 21 pp.

Mnkeni P & Mutengwa C. (2014). "A Comprehensive Scoping and Assessment Study of Climate Smart Agriculture" (CSA) Policies in South Africa".

Nweke, F. (2004). New Challenges in the Cassava Transformation in Nigeria and Ghana. A view Point I. I.T.A. Research No 14/15 NPC, 1996, National Population Census Pp. 1-10.

Ojoko, E. James, A., Sulaiman., Y & Omobowale O. (2016). factors influencing the level of Use of climate smart agricultural practices in Sokoto State, Nigeria.

Randela R. Alemu Z.G. & Groenewald J.A (2008). Factors enhancing market participation by small scale farmers. *Agrekon 47 (4), 451-469, 2008.*

United Nations Framework Convention on Climate Change (2007). Climatic change impact,vulnerabilities and adaptation in developing countries UNFCCC Secretariat,

Mar-tin   Luther-King-Straat 8 53175 Bonn, Germany. www.unfccc.int.

Ziervogel G, Nyong A, Osman B, Conde C, Cortes S & Dowing T (2006). Climate variability and change: *implications for household food security. Assessments of impacts and adaptations to climate change (AIACC) Working Paper No. 20,* January 2006. The AIACC Project Office, *International START Secretariat, Washington DC, USA, pp* 678-691.

COMPARATIVE ANALYSIS OF THE PRODUCTIVITY OF ENTERPRISES OWNED BY WOMEN LOAN- BENEFICIARIES AND NON-LOAN BENEFICIARIES IN IMO STATE, NIGERIA

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ABSTRACT
This study was conducted to investigate the comparative analysis of the productivity of enterprises owned by women loan-beneficiaries and non-loan beneficiaries in Imo State, Nigeria. A representative sample was selected through a multi-stage sampling technique. Data were collected through the use of two sets of structured questionnaire and analyzed using descriptive statistics and total factor productivity. A total of 151 (comprising of 80 loan beneficiaries and 71 non-beneficiaries) respondents were selected for the study. The result showed that the mean age from the pooled data was 40.7years which is an indication that the respondents sampled were predominantly middle aged. The result showed that the crop production enterprise was the most productive with 36.61% increase in productivity performance and also has the highest return on the amount invested. The results showed that the enterprise with the highest total factor productivity is the most productive and that access to credit enables loan beneficiaries in the procurement and purchase of inputs, tools and equipment needed to improve their businesses. Increment in funds invested in the business enterprises of these women entrepreneurs alongside reduced cost of expenses could boost the possible expansion of their enterprises. The major constraint is inadequate funding. It is therefore recommended that women entrepreneurs should form cooperatives and pool their resources together for increased productivity in each enterprise and for easy access to bank credit.
Keywords: Comparative analysis, women, total factor productivity, Imo State.

INTRODUCTION
The acceleration of economic growth requires an increased supply of women entrepreneurs (Shah, 2012). New research on women entrepreneurs showed their indispensable roles as farm managers and workers all over the world (Eze, 2006). Female entrepreneurs have been identified by Organization for Economic Cooperation and Development (OECD, 1997) as a major force for innovation, job creation and economic growth. In Nigeria, financing of entrepreneurial ventures is very important, as sources of finance open to entrepreneurs are many but not efficient due to bureaucracies in application, disbursement, collateral, high and exploitative interest rates needed for credit. Akabueze (2002) stated that it would seem reasonable to expect that small businesses would grow and flourish, but the rate of business failure continues to increase because of the obstacles affecting business performance which include: lack of financial resources, lack of management experience, poor location, laws and regulations, general economic conditions, as well as critical factors such as poor infrastructure, corruption, low demand for products and services and poverty. Despite the inherent problems associated with the growth of small scale businesses, women entrepreneurs are increasingly venturing into ownership of small-scale enterprises either on their own or in partnership with male entrepreneurs (International Labour Organisation, 2005). This has been made possible

primarily because of ease of entry, limited access to other enterprises and lack of employment opportunities in formal sector of the economy. Also given the growth of entrepreneurship among women, understanding the social and economic factors influencing their success performance is of critical importance for poverty reduction. Both in developing and developed world small firms have been found to have less access to external finance and to be more constrained in their operation and growth (Galindo & Schantiarelli, 2003). This directly imparts on the profits made by micro, small and medium enterprises. Entrepreneurship encourages self-employment and this has been found to have an impact in productivity growth (Chang, 2011).

Micro, small and medium enterprises sector employs about 70% of the nation's industrial sector labour force, yet it only accounts for 10 to 15% of the total industrial output while utilizing only about 30% of its installed capacity (Kadiri, 2012). Ijere (1998) believed that with the acquisition of credit, an entrepreneur can seek a better combination of resources to attain a more efficient use, discover new and cheaper products, and help in reaping economies of scale. These will help to increase income and profitability of the business which will subsequently create employment opportunities, reduce hunger and food insecurity in the economy. The entrepreneurial sector is a large and growing component of many economies, enhancing its performance will generate significant gains for the nation as a whole. No matter what an entrepreneur does, improving productivity is a significant way of ensuring success. In today's competitive business environment, doing more with fewer resources is a vital ingredient for survival. It is against this background that the study: examines the socio-economic characteristics of women loan beneficiaries and non-loan beneficiaries, compare the productivity of the enterprises owned by women loan beneficiaries and non-loan beneficiaries, and the problems women entrepreneurs encounter in the study area.

METHODOLOGY

The study was conducted in Imo state. The State was selected for this study because it has a high number of women entrepreneurs at the small and medium scale level. A representative sample was selected through a multi-stage sampling technique. The list of all the registered and approved Microfinance banks in Imo State was compiled with the help of the Central Bank of Nigeria Development Finance Office Owerri. From the compiled list of 45 Microfinance banks, proportionate sampling technique was employed in the random selection of 15 Microfinance banks from the 3Agricultural zones in the state. A list comprising of borrowers and non-borrowers was obtained from the bank credit officers of the 15 Microfinance banks. From the compiled list of beneficiaries and non-beneficiaries, a sampling frame of 225 and 180 was obtained respectively. From each of the selected institutions, 12 women entrepreneurs were selected for the study. This brings the total sample size to 180 women entrepreneurs. The non-loan beneficiaries were selected from those who were unable to access credit from the Microfinance banks. A list of borrowers from these Microfinance banks was obtained from the banks credit managers for further use. A total of 151 (comprising of 80 loan beneficiaries and 71 non-beneficiaries) valid and returned questionnaire were used for analysis in the study.

Data were analysed using descriptive statistics while the Total factor productivity indices is given as:

TFP = VOP/ VIE   -- equation 1

Where TFP = Total Factor Productivity

VOP = Value of Output Produced in Naira

VIE = Value of Inputs employed in Naira

RESULTS AND DISCUSSION

Table 1. Socio-economic characteristics of loan beneficiaries and non-loan beneficiaries in the study area

	Loan Beneficiaries		Non- loan Beneficiaries		Pooled	
	Frequency	%	Frequency	%	Frequency	%
Age (Years)						
25-34	13	16.25	19	26.77	32	21.19
35-44	37	46.25	35	49.29	72	47.68
45-54	27	33.75	16	22.54	43	28.48
55-64	3	3.75	1	1.41	4	2.65
Mean	**41.6**		**39.4**		**40.7**	
Educational attainment						
0 (no formal education)	1	1.25	0	0	1	0.66
1-6	12	15	7	9.86	19	12.58
7-12	40	50	38	53.52	78	51.66
13-18	27	33.75	26	36.62	53	35.10
Mean	**10.5**		**11.1**		**10.7**	
Household size						
1 - 3	11	13.75	10	14.08	21	13.91
4 - 6	65	81.25	58	81.69	123	81.45
7 - 9	4	5	3	4.23	7	4.63
Mean	**5**		**5**		**5**	
Marital Status						
Single	19	23.75	16	22.53	35	23.17
Married	61	76.25	55	77.46	116	76.82
Business Experience						
1-5	8	10	9	12.67	17	11.26
6-10	23	33.75	21	29.57	44	29.14
11-15	35	38.75	29	40.84	64	42.38
16-20	14	17.5	12	16.90	26	17.22
Mean	**12**		**11**		**11.5**	

Source: Field Survey Data, 2015

Table 1 showed that the mean age of both beneficiaries and non-beneficiaries fell within the productive age range of 42 and 39 years respectively. This indicates that respondents were middle aged entrepreneurs who are still physically active, vibrant, dynamic and are more likely to adopt innovations better and faster than their older counterparts (Ohajianya *et al*., 2010). The mean age from the pooled data was 40.7years which is an indication that the respondents sampled were predominantly middle aged. This age group is known to be energetic and strong and therefore expected to save and/ or borrow for investment than the old while the old depend mostly on their past savings and accumulated wealth (Ajagbe, 2012). The result shows that majority of the women are moderately educated, this is evident in their pooled mean levels of education of 10.7 years. According to Orebiyi (2000) education is an investment in human capital which is able to raise the skill of man, narrow his information gaps and increase his

allocative abilities thereby leading to more productive performance. The mean household size was 5 persons which implies that women entrepreneurs spend a modest amount on feeding, clothing, hospital bills etc. The result supports the idea that married people have more responsibilities hence their increased need for coping strategies to financial security obligations in their households (Ikwuakam, 2013). The Table also showed that 23.17% of the respondents were single which implies that business is not solely for the married, it is also a source of employment to the increasing population of unemployed youths since the white collar jobs are limited (Ben-chendo, Eze & Asiabaka, 2013). The table further shows that the respondents were reasonably experienced. This is indicated in their mean years of experience which was found to be 12 years for loan beneficiaries and 11 years for non-loan beneficiaries. This implies that the respondents are well experienced and can therefore understand the need for credit. This could be due to the fact that their long years of experience in entrepreneurship may have exposed them to the benefits of using credit.

Productivity of Women Entrepreneurs' Enterprises

Table 2 shows the productivity of loan beneficiaries

Table 2: Estimation of the total factor productivity of women entrepreneurs' enterprises for loan beneficiaries

Enterprises	Value of Output (₦)	Value of Inputs (₦)	TFP
Crop Production	7,154,100	1,068,300	6.697
Poultry Production	96,167,250	25,624,400	3.753
Clothing & textile	23,208,000	2,027,640	11.446
Hair Dressing	12,092,400	2,521,920	4.795
Confectionaries	8,010,000	3,103,140	2.581

Source: Field Survey Data, 2015

Table 2 shows the total factor productivity measures of women entrepreneur's enterprises for loan beneficiaries. It showed that clothing and textile (11.446) has the highest total factor productivity while confectionaries (2.581) have the lowest total factor productivity. This is an indication that women entrepreneurs in clothing and textile enterprise were the most productive compared to other enterprises. As indicated earlier, the higher the total factor productivity, the more productive the enterprise is and the different enterprise types have been ranked simply on the basis of magnitude. This is consistent with the findings of Emenyonu, Nwosu, Lemchi, & Iheke (2013) that the enterprise with the highest total factor productivity is the most productive.

Productivity of Non-Loan Beneficiaries

Table 3 shows the productivity measures for non-loan beneficiaries. Estimation of the total factor productivity of women enterprises for non-loan beneficiaries.

Table 3: Estimation of the total factor productivity of women entrepreneurs' enterprises for non-loan beneficiaries

Enterprises	Value of Output (₦)	Value of Inputs (₦)	TFP
Crop Production	1,793,000	422,400	4.245
Poultry Production	23,928,000	6,616,400	3.616
Clothing & textile	6,102,800	694,020	8.793
Hair Dressing	5,850,600	1,122,380	5.213
Confectionaries	3,228,000	962,400	3.354

Source: Field Survey Data, 2015

Table 3. shows the estimation of the total factor productivity of women entrepreneurs' enterprises for non-loan beneficiaries. The result showed that clothing and textile (8.793) has the highest total factor productivity, and the least productive enterprise is confectionaries (3.354). This indicates that women entrepreneurs in clothing and textile enterprise are more productive compared with other enterprises. The higher the total factor productivity, the more productive the enterprise is. This is consistent with the findings of Emenyonu et *al.* (2013) that the higher the total factor productivity of an enterprise, the more productive that enterprise will be.

Productivity Performance of Women Entrepreneurs' Enterprises

The productivity performance of women entrepreneurs' enterprises is shown in Table 4 below.

Table 4: Productivity performance of loan and non-loan beneficiaries in the study area.

Enterprises	TFP (Beneficiaries)	TFP (Non-Loan Beneficiaries)
Crop Production	6.697	4.245
Poultry Production	3.753	3.616
Clothing & textile	11.446	8.793
Hair Dressing	4.795	5.213
Confectionaries	2.581	3.354

Source: Field Survey Data, 2015

Table 4 shows the productivity performance of loan and non-loan beneficiaries. This is an indication that access to credit enables loan beneficiaries in the procurement and purchase of inputs, tools and equipment needed to improve their businesses (Ugbajah & Orji 2006). On the other hand loan beneficiaries in hair dressing and confectionaries enterprises have lower productivity compared to their non-loan beneficiaries, this implies that the majority of the beneficiaries in the area used the loans either in settling debts, repairing and replacing worn outs, settling family/personal issues, or in settling other business issues that have long run productive effects (Tundui, C & Tundui, H., 2013)

Problems and Constraints Faced by Women Entrepreneurs

Table 5 presents the percentage and frequency distribution of respondents based on the identified problems.

Table 5: Percentage and frequency distribution of respondents based on the identified problems in the study area.

Identified Problems	*Frequency	Percentage (%)
Inadequate fund	87	57.6
Epileptic power supply	50	33.11
Instability in prices	38	25.2
Lack of training	42	27.82
Family obligation	10	6.62
Attracting customers	48	31.78
Health problems	35	23.18
Other problems	22	14.57

Source: Field Survey Data, 2015   *Multiple response recorded.

From Table 5, over 57% of the respondents mentioned inadequate fund, 33.11% mentioned epileptic power supply and 31.78% mentioned attracting customers. Most women entrepreneurs operate small scale businesses and as a result do not have properties to leverage when seeking credit facilities from financial institutions as a result of the Patriarchal nature of the study area. According to Sabarwal & Terrell (2008), access to bank finance is a more important barrier for women business owners than for their male counterparts. 27.82% of the respondents also mentioned lack of training as a constraint. This could be as a result of lack of finances to acquire the required training which could boost their managerial ability. According to Philips, Moos & Nieman (2014), running a business is very risky for any entrepreneur, even more so for women entrepreneurs who not only have to survive in a male-dominated environment but also often lack the education and training in this field. If the number of persons who mentioned each problem is used as a measure of its importance, this implies that inadequate funding is the most pressing problem of the respondents. Other problems women entrepreneurs face include instability in prices, health problems etc.

CONCLUSION
It was concluded that the enterprise with the highest total factor productivity is the most productive and that access to credit enables loan beneficiaries in the procurement and purchase of inputs, tools and equipment needed to improve their businesses. Increment in funds invested in the business enterprises of these women entrepreneurs alongside reduced cost of expenses could boost the possible expansion of their enterprises.

RECOMMENDATIONS
1. The government should formulate credit policies that will improve the level of education of women entrepreneurs thereby increasing their level of awareness of Microfinance bank credit. This can be achieved through education schemes and extension services.
2. The women entrepreneurs should form cooperatives and pool their resources together for increased productivity in each enterprise and for easy access to bank credit.

REFERENCES
Ajagbe, F.A. (2012). Analysis of access to and demand for credit by small scale entrepreneurs: Evidence from Oyo State, Nigeria. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS), 3(3),* 180-183.

Akabueze, B. (2002). Financing small and medium enterprises (SMEs): The Small and Medium Industries Equity Investment Scheme (SMIEIS) Option Lagos, Nigeria.

Ben-Chendo, G.N., Eze, C.C., & Asiabaka, C.C. (2013). Value addition to plantain by women entrepreneurs in Imo State, Nigeria. *Developing Country Studies. 3(10),* 130-138.

Chang, E.P. (2011). Exploring the effects of entrepreneurship capital on the private economic impact of American Countries

Ekpenyong, D.B. (1997). Problems of small businesses and why they fail. *Journal of General Studies, Bayero University, 3(1), 38-52.*

Emenyonu, C.A., Nwosu, A. C., Lemchi, J.I., & Iheke, O.R. (2013). Analysis of productivity, profitability, incomes and returns on investments in youth SMEs in Niger Delta, Nigeria. *International Journal of Small Business and Entrepreneurship Research,2(1),* 20-34.

Eze, C.C. (2006). Determinants of women access to credit from selected commercial banks in Imo State, Nigeria. *International Journal of Natural and Applied Science,* 2(2), 136-141.

Galindo, A., & Fabio, S., (2003). "Credit Constraints and Investment in Latin America." Inter-

American Development Bank, Washington D.C.

Ijere, M.O. (1998). Agricultural credit and economic development. (In) Ijere, M.O. and Okorie, A. (ed.); *Readings in Agricultural Finance*.Ikeja: Longman Nigeria Plc., pp.4-8.

Ikwuakam, O.T. (2013). Determinants of socio-economic status of cassava processing entrepreneurs in South-eastern, Nigeria. *Journal of Agriculture and Veterinary Sciences, 5(2),* 140-150.

International Labour Organisation, (2005). Business environment, labour law and micro- and small enterprises, Geneva. ILO Publication.

Kadiri, I.B. (2012). Small and medium entrepreneurship and employment generation in Nigeria: The Role of Finance, University of Ilorin, Nigeria. Pp.79-90

Organization for Economic Cooperation and Development (1997). Globalization and small and medium enterprises, V. 1: Synthesis Report, Paris: Organization for Economic Cooperation and Development.

Ohajianya, D.O., Echetama, J.A., Offodile, P.O., Osuagwu, C.O., Henri-Ukoha, A., Okereke, E., & Anyaoha, N.O. (2010). Allocative efficiency among maize farmers in Imo State, Nigeria. *Report and opinion* 2(12), 139-147.

Orebiyi, J.S. (2000). The performance of rural credit markets in Imo State, Nigeria. Unpublished Ph.D Thesis. Federal University of Technology, Owerri.

Philips, M., Moos, M., & Nieman, G. (2014). The Impact of Government Support Initiatives on the Growth of Female Businesses in Tshwane South Africa, *Mediterranean Journal of Social Sciences.* 5(15) 85-92

Sabarwal, S., & Terrell, K. (2008). Does Gender Matter for Firm Performance? Evidence from the East European and Central Asian Region. IPC Working Paper Series No. 73. http://ssrn.com/abstract=1223454. [Accessed 4/1/2010]

Shah, H. (2010). ICECD: Achieving convergence for empowerment of women. Paper presented at the Western Regional Conference of the National Mission for Empowerment of Women, 23-24 April.

Tundui, C. & Tundui, H.(2013). An empirical analysis of social capital and enterprise performance in Tanzania: The case of women owned businesses. *International Journal of Developing Societies,* 2(1), 50-60.

Ugbajah, M. O. & Orji, E. C. (2006). Determinants of access to financial services among male and female farmers in Anambra State. *Proceedings of the Annual Conference of the Agricultural Society of Nigeria held at Umudike, Umuahia, 2006, Pp 110-114.*

Utomi, P. (1997). Small and medium enterprises development: policies, programmes and prospects. West African Management Development Institutes Network (WAMDEVN): 120-128.

ECONOMIC ANALYSIS OF TIMBER MARKETING IN ABIA STATE, NIGERIA

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ABSTRACT
The study analyzed timber marketing in Abia State, Nigeria. The objectives of the study were to examine the socio-economic characteristics of timber marketers, estimate the costs and return of timber marketing, determine the factors that affect marketing efficiency and identify problems hindering timber marketing in the study area. The study was conducted in three major markets (Timber Industrial market, Ogbor osisi and Akara building market). A random sampling technique was used to select 30 respondents each from the three markets giving a total of 90 respondents in the study area. Data were analyzed using descriptive statistics, costs and return analysis and multiple regression. Results shows that 34% of the respondents were within the age range of 40 – 49, 70% were married, 81% had formal education, while 40% had marketing experience between 11 – 20. Results also showed that timber marketing was a profitable venture with net profit of ₦252042, ₦323950, ₦189500 and Marketing Efficiency of 76.77, 93.16 and 66.98 for Umuahia, Aba and Ohafia respectively. The regression result also showed that education, price, membership of cooperative and quantity of wood positively influenced the marketing efficiency at 10%, 1%, 5% and 1% respectively while age, transportation cost, loading cost and rent negatively influenced the marketing efficiency at 10%, 1%, 10% and 1% level of significance. Major problems affecting the performance were transportation cost, bad roads, inadequate capital and lack of credit facilities. The study recommends provision of credit facilities and infrastructures that will help reduce cost of marketing hence enhance marketing efficiency.
Key words: Timber, Marketing, Marketing Efficiency and Performance

INTRODUCTION
Timber is a product from the forest, sometimes used interchangeably with wood in building parlance. It is used for many industrial purposes such as the finished structural materials used for the construction of buildings or as a raw material, in the form of wood pulp, that is used in the production of paper. Timber contributes to the nation's economy in terms of employment generation and socio- economic development with relevant benefits to human welfare (Usman, 2010). The benefits range from its usefulness for interior and exterior decorations in homes and industries, production of electric poles, plywood, pulpwood, veneers and planks needed in building and construction industries (Adebara, Hassan, Shitu & Anifowose, 2014). The total wood consumed in Nigeria is estimated at over 200,000m3 per annum, while the utilization and further processing of the wood provides employment to numerous people and thus contributes to the local and national economy (Food and Agriculture Organization, 2004). Therefore, efficient distribution and utilization may reduce wastages and hence the pressure on the forest and its rate of disappearance. Timber marketing is a process of selling timber to obtain its true fair market value. Achieving a reasonable financial return on a wood investment depends on many factors. None is more critical, however than proper marketing which can help reduce the cost of achieving other management objectives (Hoover, 2000). Marketing provides a means through which people can create economic value for their resources and products. However, efficiency in timber marketing is an economic asset to the forestry sub sector for a sustained resource production, distribution and consumption.

Popoola & Rahji (2001) posited that an efficient marketing system is a prerequisite for increased and sustained production, and so, it is relevant in stimulating and producing forestry development and economic growth. This therefore helps in appraising the extent to which interaction between buyers and sellers in the market stimulate outcome that are consistent with profit levels, sales volume, utilization and sustainability. This necessitates the scientific survey of its marketing system and the livelihood support of timber marketing in the study area.

The objectives of the study were to examine the socio economic characteristics of timber marketers, estimate cost and returns and marketing efficiency of timber marketing, determine the factors affecting the revenue derived from timber marketing and to identify the problems hindering timber marketing in the study area.

METHODOLOGY

The study area is Abia State, Nigeria. Multi-stage sampling technique was used for the study. The first stage involved the selection of the three agricultural zones in the state (Aba, Ohafia and Umuahia). The second stage involved a purposive sampling of three markets (Ogbor Osisi, Timber Industrial Market and Akara Building Market) based on the concentration of timber marketers. The last stage involved a random selection of 30 timber marketers from each market thus making it a total of 90 timber marketers for the study.

Primary data was used for the study which was administered to the timber marketers.

Data were analyzed using descriptive statistics such as frequency, percentages, Net Return and Multiple Regression model.

NR= TR – TC and TC = TFC + TVC………………. 1

Where,

NR = Net returns
TR = Total revenue
TC = Total cost
TFC= Total fixed cost
TVC = Total variable cost

The implicit functional form of the regression model is specified as follows;

$Y = f (X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, U)$ ………………. 2

Where,

Y = Net returns from sales of wood (₦)
X_1 = Age of the marketer (years)
X_2 = Level of formal education (years)
X_3 = Marital Status (1= married, 0= others)
X_4 = Household Size (Number)
X_5 = Marketing Experience (₦)
X_6= Transportation cost (₦)
X_7 = Processing cost (₦)
X_8 = Selling price of trailer load (₦)
X_9= Quantity of wood sold (Kg)

U = Error term

Four functional forms were used which are the linear, exponential, double log and semi- log. The semi-log functional form was chosen as the lead equation based on the number of significant variables, the value of R2 (Coefficient of multiple determination), F- ratio and agreement with the *a priori* expectation.

RESULTS AND DISCUSSION

Socio-economic characteristics of timber marketers

Table 1: Socio-economic characteristics of timber marketers in the study area.

Variable	Frequency	Percentage
Age		
20 – 29	3	3.33
30 – 39	21	23.33
40 – 49	31	34.45
50 – 59	27	29.99
60 – 69	8	8.88
Marital Status		
Married	63	70.00
Single	19	21.11
Divorced	1	1.11
Widow/ widower	7	7.78
Level of Education		
No formal Education	17	18.89
Primary	27	30.00
Secondary	36	39.99
Tertiary	10	34.44
Years of Experience		
1 – 10	31	34.44
11 – 20	36	40.00
21 – 30	17	18.89
31 – 40	6 .	6.67
Total	**90**	**100**

Source: Field Survey, 2016

The result presented in Table 1 showed that majority (34.45%) of the timber marketers were within the age range of 40 – 49 with mean age of 45.72. This implies that timber marketers are mostly middle aged who are strong and be expected to participate actively in the marketing activities. This finding is similar to that of Odii & Nwosu (1996) which noted that young age relates positively with energetic and innovative marketing and vice versa. Timber marketers in the area were majorly (70%) married. This may be an indication of the support from their family members. Hired labour use is likely to reduce as members of the household may be sufficient to assist them on their activities (Yahaya, 2012). Majority of timber marketers had formal education which help in taking decisions to maximize profit. Nkang et al, (2009) observed that education affects the way farm business is managed as well as overall production. The mean years of experience is 16 years. Marketing experience is important as it provides the seller with efficient market information. This is in line with the findings of Ali *et al*, (2008) who observed that marketing experience is important in determining the profit levels of marketers.

Costs and return of timber marketers

Table 2: The costs and return of timber marketers in the study area

Variables (₦)	Pooled	Umuahia	Aba	Ohafia
Average Purchase cost	280000	300000	310000	250000
Loading/offloading	8000	10000	12000	7500
Transport cost	15000	18000	20000	15000
Storage cost	3000	5000	7000	3000
Total Variable Cost (TVC)	**256000**	**333000**	**349000**	**275500**
Rent	4000	5500	6000	4000
Depreciation cost	6000	7000	8000	5000
Other marketing cost	2000	3000	3500	1500
Total Fixed Cost	**12000**	**15500**	**17500**	**10500**
Total Cost (TVC + TFC)	**268000**	**348500**	**366500**	**260500**
Total Revenue (TR)	**520000**	**600542**	**690450**	**450000**
Net Profit (NP)	232000	252042	323950	189500
Marketing margin (MM)	264000	267542	341450	174500
Net Return/naira invested (NRI)	0.985	0.768	0.932	0.67
Marketing Efficiency (ME)	98.507	76.77	93.165	66.987

Source: Field survey, 2016

Table 2 shows the Net Profit of 232000, 252042, 323950 and 189500 for the pooled, Umuahia, Aba and Ohafia markets respectively. This result implies that timber marketing in the study area is profitable. This is in line with the findings of Aina et al. (2012) and Oladejo (2008). The Net Return was highest for the pooled markets (0.985), followed by Aba (0.932) and lowest for Ohafia (0.67). This implies that for every one naira invested, a 93.2% return was achieved. The marketing efficiency across the markets shows that timber marketing is inefficient. Marketers in Aba have higher marketing efficiency than marketers in Umuahia and Ohafia. This is because Aba is known as a commercial city which sells at cheaper rate and also marketers from Umuahia and Ohafia buy sawn wood from them. The market is tending towards efficiency though not yet optimal in performance.

Multiple Regression on determinants of marketing efficiency among timbers marketers

Table 3: Multiple Regression on determinants of marketing efficiency among timbers marketers in Abia State.

Variable	Linear	Exponential	Cobb Douglas	Semi- log(+)
Constant (bo)	272.045 (4.10^{***})	5.388 (5.61^{***})	3.127 (1.78^{*})	1531.10 (4.99^{***})
Age (X_1)	-3.344 (-2.34^{**})	-0.033 (-1.58)	-0.108 (-0.25)	-206.614 (-2.67^{*})
Education (X_2)	3.994 (3.23^{***})	0.052 (2.83^{***})	0.006 (0.08)	36.699 (2.46^{*})
Marital Status (X_3)	18.932 (-1.13)	-0.374 (-1.47)	-0.043 (-0.28)	-36.001 (-1.40)
Household size (X_4)	-2.088 (-0.54)	0.029 (0.53)	-0.661 (-0.51)	15.274 (0.74)
Experience (X_5)	0.634	-0.015	0.138	13.296

	(0.65)	(-1.08) s	(1.30)	(0.72)
Occupation Status (X_6)	32.604	0.569	0.015	-3.139
	(1.49)	(1.80^*)	(0.10)	(-0.12)
Transportation cost (X_7)	-0.0001	-8.57×10^{-6}	-0.788	-24.137
	(-3.83^{***})	(15.75^{***})	(-22.32^{***})	(-3.91^{***})
Loading Cost (X_8)	-0.0042	-0.00004	-0.026	-38.453
	(-2.80^{***})	(-1.91^*)	(-0.31)	(-2.57^*)
Land Rent (X_9)	-0.0018	-0.00002	-0.372	-34.083
	(-4.19^{***})	(2.92^{***})	(-7.68^{***})	(-4.03^{***})
Price (X_{10})	0.0018	0.00002	5.684	311.676
	(7.00^{***})	(5.55^{***})	(13.29^{***})	(4.18^{***})
Membership of Coop	36.252	6.393	-0.1112	63.162
	(2.25^{**})	(1.69^*)	(-1.07)	(3.48^{**})
Quantity of Wood	0.0019	0.00002	4.698	294.408
	(7.02^{***})	(4.88^{***})	(11.40^{***})	(4.09^{***})
R^2	0.7922	0.8191	0.7912	0.8381
Adjusted R	0.7452	0.8018	0.7885	0.7870
F-ratio	16.84^{***}	50.73^{***}	358.39^{***}	16.39^{***}

Source: Field survey, 2016; *,** and *** is significant at 10%, 5% and 1% levels Figures in parenthesis are t values,
+ = lead equations

The semi-log functional form was chosen as the lead equation as shown in Table 1. The R^2 value of 0.8381 indicates an 83.81% variability in efficiency of timber marketers was explained by the independent factors. The F value of 16.39 was highly significant at 1% level indicating goodness of fit of the regression line and significance of the R^2 values. The coefficient of transportation cost was negative and highly significant at 1%. This implies that increase in transportation cost leads to a corresponding decrease in marketing efficiency. The coefficient of rent was negative and highly significant at 1% level. This implies that any increase in rent will lead to a corresponding decrease in marketing efficiency. The coefficient of price was positive and highly significant at 1%. This implies that any increase in price will lead to increase in marketing efficiency. The coefficient of quantity of wood sold was positive and highly significant at 1% level. This implies that any increase in the quantity of wood sold will lead to increase in marketing efficiency. The coefficient of membership of cooperative was positive and significant at 5% level. This implies that membership of cooperatives is capable of improving the marketers' efficiency. The coefficient of age was negative and significant at 10% level. This implies that any increase in age will lead to a corresponding decrease in marketing efficiency among the wood marketers in the study area. The coefficient of education was positive and significant at 10%. This implies that any increase in educational level will lead to a corresponding increase in marketing efficiency. The coefficient of loading cost was negative and significant at 10% level. This implies that any increase in loading cost will lead to a corresponding decrease in marketing efficiency.

Problems faced by wood marketers in the study area

Table 4: Problems faced by wood marketers in the study area

Problems	Frequency	Relative Frequency (%)
a) High transportation cost	85	94.44
b) Inadequate capital	65	72.22
c) Bad roads	88	97.78
d) Lack of credit facilities	50	55.56
e) Unavailability of products	42	46.67
f) Attitude of law enforcement agents	30	33.33
g) Seasonality on the availability of wood	45	50.00
h) Bulkiness of wood	12	13.33
i) High government charges	5	5.56

Source: Field survey, 2016. Multiple Responses recorded

The results in Table 4 revealed that the problems affecting timber marketing in descending order are high transportation cost (94.44%), inadequate capital (72.22%), bad roads (97.78%) and lack of credit facilities (55.56%). It was observed that these major problems the marketers faced influenced commodity prices and the efficiency levels in the market. These had a negative impact on the business expansion and hence its performance. According to Oladejo (2013), inadequate capital, lack of facilities and bad roads tend to limit the size of business and the level of returns in marketing.

CONCLUSION
Marketing of timber should not be neglected as it can serve as a means of livelihood. An increase in the production requires an increase in marketing. Timber marketing in the study area and in Nigeria presently, is an import- dependent industry characterized by high cost of labour and hence its attendant reduction in the net income accruable to the marketers. Globally, this result implies that there is need for nations of the world to take issues of sustainable natural resource use seriously and put in place structures, rules and regulations that will forestall all forms of over exploitation of economic resources like timber.

RECOMMENDATIONS
i)Government and other stakeholders should aim at encouraging tree planting, effective management, processing and maximum utilization of wood and its resources. This would improve the production of forest products in the state and in turn reduce the buying of these products, sawn wood inclusive from other states.
ii)Prices in the markets were relatively low; this may be due to transportation cost and distance. Also the coefficient of transportation was negative when related to marketing efficiency, which implies that increase in transportation leads to a corresponding decrease in marketing efficiency. Therefore, efforts should be made by government to improve the roads; this will help reduce the transport cost and time incurred by the marketers which in turn raises the price of sawn wood.
iii) It is necessary to link the roads and discourage any form of unionism that is unfavorable to free marketing activities

REFERENCES
Adebara S.A, A. Hassan, M.B Shitu & M.A Anifowose (2014), Quality of utilization of timber
        species for building construction in Minna Nigeria. *The International Journal of*

Engineering and Science, 3(5),46-50.

Ali E.A, H.I.M Gaya & T.N. Jampada (2008): Economic analysis of fresh fish marketing in Maiduguri gamboru market and Kachallari Alau Dam landing site of north eastern Nigeria. *Journal of Agriculture and social sciences, 4, 23 – 26.*

Aina, O.S; S. Ajilola, M.T. Bappah; I. Ibrahim & I.A. Musa (2012).: Economic analysis of plantain marketing in Odigbo Local Government Area of Ondo State, Nigeria. *Global Advanced Research Journal of Agricultural Science,* 1(5), 104 – 109.

Food and Agriculture Organization, (2004):Market for high value tropical hardwoods in Europe", Rome forester.

Hoover,W.L. (2000): "*Marketing Timber*". Department of forestry and Natural resources, Purdue University

Nkang, N.M., E.A. Ajah, S.O. Abang & E.O. Edet (2009): Investment in cocoa production in Nigeria: A cost and return analysis of three cocoa production management systems in the Cross River cocoa belt. *African Journal of Food, Agriculture, Nutrition and Development. 9(15),713 – 727.*

Odii, M.C.A & Nwosu, A.C (1996): Cost and Returns of Rice Production under Alternative Production System. *Journal of Modelling Measurement, 13(1,2)*

Oladejo, J.A & Sanusi, W.A. (2008), Marketing analysis of plantain in Owo and Ose Local Government Area of Ondo state, Nigeria. *International Journal of Agricultural Economics and Rural Development. 7(2), 60 – 67.*

Oladejo, J.A (2013). 'Analysis of structure, conduct and performance of Charcoal market in Oyo state, Nigeria'. Department of Agricultural Economics Ladoke Akintola University of Technology Oyo State Nigeria. *International Journal of marketing and technology.*

Popoola, L & Rahji, M.A. (2001): 'Spatial market integration test of Terminalia ivorensis sawn wood markets in Nigeria'. *Journal of Tropical Forest Products. 2001,7(1),1-9.*

Usman BA & Adefalu LL (2010). Nigeria forestry, wildlife and protected areas: Status report. Tropical Conservancy. Biodiversity II (3&4)

ASSESSMENT OF THE LEVEL OF UTILIZATION OF POULTRY MANURE BY MAIZE FARMERS IN OSUN STATE, NIGERIA

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ABSTRACT
Poultry dropping is the fresh perhaps decaying, faecal matter from birds which when decomposed to a stable condition becomes poultry manure. This study assesses poultry manure utilization among maize farmers in Osun state, Nigeria. The objectives of the study are to describe the socio-economic characteristics of the respondents, identify the sources of information on poultry manure, examine the level of utilization of poultry manure, determine the perceived benefits of poultry manure and evaluate the constraints to the use of poultry manure among maize farmers. Purposive sampling technique was used to select 180 registered maize farmers in Osun state. The data obtained were analyzed using simple frequency counts, percentages and Pearson Product Moment Correlation. The findings revealed that 68.3% of maize farmers were males with an average age of 57years. More so, majority of respondents obtained information from fellow farmer (X=2.6), farmers group(X=2.6) and friends/relatives (x= 2.2). It was further revealed that 44% of the respondents apply poultry manure on 50-75% of their farm. However, some of the limitations to use of poultry manure include odour of the manure (X=2.7), time spent in the application (X=2.6), cost of transporting the manure (X= 2.6) among others. The study recommended that Private organization and Non-Governmental Organization in conjunction with Government should provide improved technologies to process poultry manure to dry form in other to improve the quality and quantity of poultry manure in Osun state, Nigeria.
Keywords: utilization, poultry manure, maize farmers

INTRODUCTION
One of the members of the cereal family that has added great value to man and animals is maize (Zea mays L). It ranks third following wheat and rice in world production (Food and Agriculture Organization, 2002). It is consumed roasted, baked, fried, boiled or fermented in Nigeria. Maize is a source of such industrial products as corn oil, syrup, corn flour, sugar, brewers' grit and alcohol (Dutt, 2005). As livestock feed, which serve as energy supplement, maize is cherished by various species of animals, including poultry, cattle, pigs, goats, sheep and rabbits (Directorate of Information and Publications of Agriculture, 2006). All over the world, there is a clamor for environment-friendly technique and practice for production activities and more developed countries are also taking bold steps in recycling their waste (Cabinet Office, 2002; Felipó, Huerta, Lopez & Soliva 2004; Mittelstrass, 2005; Grant Conservation District, 2006). With respect to agriculture, inorganic fertilizers which were once thought by agronomists to be the saviour of diminishing fertility of soils have been found to have dangerous effects on the soil, living organisms as well as the environment (Aktar, Sengupta & Chowdhury, 2009). The intense and inorganic fertilizer in Nigeria has also contributed to the destruction of the soil structure, leading to depressed yields as a continuous use of result of soil acidification, potassium deficiency and aluminium toxicity (Nigeria Strategy Support Program/International Food Policy Research Institute, 2013). Furthermore,

the use of inorganic fertilizer in Nigeria has also been faced with different problems: distribution (irregularity of supplies, non-uniformity of price and diversion of consignment), utilization (improper rate and time of application as well as the use of the inappropriate types) and high cost of the fertilizer, which has made it go beyond the financial capacity of most farmers (NSSP/IFPRI, 2013). The use of inorganic fertilizers alone may cause problems for human health and the environment that means the excess use of chemical fertilizers in agriculture can lead to nitrate accumulation into plant parts especially on edible parts.

However, Fertilizer Procurement and Distribution Division (2002) reported a significant difference in grain yield of maize due to application of poultry manure because of its richness in ammonium Sulphate. Moreover, mineral fertilizer and poultry manures both separately or combined have beneficial effects upon soil and crop, their combined use are expected to yield rewarding dividends (Rayar, 2000). Organic agriculture "includes all agricultural systems that promote the environmentally, socially and economically sound production of food and fiber (International Federation of Organic Agriculture Movements, 2005). Organic agriculture dramatically reduces external inputs by refraining from the use of chemo-synthetic fertilizers, pesticides, and pharmaceuticals. Instead it allows the powerful laws of nature to increase both agricultural yields and disease resistance. Organic agriculture adheres to globally accepted principles, which are implemented within local social-economic, geo-climatic, and cultural settings. The specific objectives are to: describe the socio-economic characteristics of the farmers in the study area, identify the sources of information on poultry manure used by maize farmers in the study area, examine the level of utilization of poultry manure among maize farmers, identify the perceived benefits of poultry manure to maize crop farmers and to identify the constraints to the use of poultry manure among maize farmers.

Hypotheses

H_{01}; there is no significant relationship between some selected socio-economic characteristics of maize   farmers and level of utilization of poultry manure
H_{02}: there is no significant relationship between constraints to the use of poultry manure and the level of utilization of poultry manure.

METHODOLOGY
The study was conducted in Osun state capital of Nigeria. Osun state came into existence on 27th August, 1991 with the creation of nine new states by the Federal Military Government. Osun State is located in the heartland of the Yoruba people and shares the distinctive high urbanization attributes of most parts of Yoruba land. Osun state carved out of the old Oyo State and occupies a land mass of approximately 8,602 square kilometers. Osogbo is the trade center for a farming region. Yams, Maize, cassava and tobacco are grown. Cotton is grown and used to weave cloth. Most of the populations are members of the Yoruba ethnic group. In 1988, about 27% of the population were engaged in farming as their primary occupation, 8% were traders and about 30% clerks and teachers (Osogbo city Web,2013)

A three-stage sampling procedure was used to select the respondents for this study. The first stage involved purposive selection of three (3) local government in Osun state which are Osogbo, Ede North and Olorunda, due to predominance of maize farmers in the local governments and availability of poultry farms in these locations. The second stage is the purposive selection of five (5) communities from each of the three selected local government areas based on the farmers' lists and availability of poultry farms. The third stage involved a random selection of twelve (12) farmers from the lists of OSSADEP contact maize farmers in

each of the identified three local governments. A total of 180 maize farmers were used for the study.

The data obtained was analysed using descriptive statistics such as: frequency counts, means and percentages, likert type scale while inferential statistics such as Pearson Product Moment Correlation (PPMC) was used to test the hypothesis.

Benefits of poultry manure was evaluated using a 5 point Likert-type scale of strongly Agree (5), Agree (4), undecided (3), Disagree (4), and Strongly Agree (1). 10 statements on the benefits of poultry manure were stated for the respondents. Any mean that is less than 3 will not be considered as a strong benefit while any mean that is greater than 3 will be considered as a very important benefit of poultry manure to the farmers. Sources of information on poultry manure accessible to the respondents: This consists of 10 information source. Respondents were asked to indicate their accessibility to these sources of information on a 3-point Likert-Type scale of Always accessible=3, sometimes accessible=2, never accessible=1. Level of utilization of poultry: farmers were asked to indicate the percentage of their farm size that use poultry manure on a scale of < 50% (1), 50-75% (2), >75% (3). Constraints in the use of poultry manure was determined using a 3 point Likert-type scale of very severe (3), Severe (2), Not Severe (1). List of constraints were stated for the maize farmers.

Table 1: Distribution of maize farmers according to their socio-economic characteristics

Variables	Frequency	Percentages	Mean
Age			
≤30	4	2.2	
31-40	21	11.7	57years
41-50	39	21.7	
51-60	83	46.1	
Above 60	33	18.3	
Sex			
Male	123	68.3	
Female	57	31.7	
Religion			
Christianity	83	46.1	
Islam	95	52.8	
Traditional	2	1.1	
Marital status			
Single	17	9.4	
Married	139	77.2	
Divorced	2	1.1	
Widowed	22	12.2	
Educational level			
Non-formal education	91	50.6	
Primary education	47	26.1	
Secondary education	25	13.9	
Tertiary education	17	9.4	
Household size			
≤5	72	40.0	8members
6-10	100	55.6	
11-15	4	2.2	
16-20	2	1.1	
Above 20	2	1.1	
Years of experience			
≤5	72	40.0	8years
6-10	100	55.6	
11-15	4	2.2	
16-20	2	1.1	
Above 20	2	1.1	
Farm size ≤5	29	16.1	12hectares
6-10	41	22.8	
11-15	79	43.9	
16-20	30	16.7	
Above 20	1	0.6	

Members of association		
Maize growers' association	78	43.3
Oke-osun evergreen agro farmers	48	26.7
Agbewumi fadama livestock farmers	26	14.4
National programme for food security	17	9.4
Oke-osun unique farmers multipurpose	11	6.1
Distance to poultry farms		
<2km	35	19.4
<5km	92	51.1
<10km	53	29.4
Total	180	100.0

Source: Field Survey, 2017

Table 1 shows that majority of the farmers (46.1%) were between the ages of 51-60 while 21.7% of the respondents were aged 41-50years.This implies that the farmers in the study area are quite elderly and acquired wealth of experience in the use of poultry manure for maize production based on their age. The average age of respondent is 57years. This result disagrees with the findings of Idrisa (2009), Kamara (2009), Akudugu, Guo & Dadzie (2012), that farming population in northern part Nigeria are young with a mean age of 44 years. It was revealed that 68.3% of maize farmers were males while 31.7% were females. The findings implies that men are involved in poultry manure usage to boost maize growth than female and this may be as a result of the fact that application of poultry manure is more tedious and energy consuming than inorganic. Therefore, men are stronger to face this task than women particularly at the onset of planting season when the land as to be prepared. This result agrees with findings of Dipeolu, Bello & Akinbode (2006) and Solomon (2008) that farming activities is mostly carried out by male which are done on field while females are usually engaged in post harvesting operations such as processing, bagging and marketing of agricultural produce.

Table 1 further show that 46.1% of the respondents were Christians while 53.8% were Muslims. This implies that poultry manure is not religion bias. Furthermore, it shows that majority of farmers (77%) in the study area were married. The reason for this large number of married respondents may be because of the cultural values placed on marriage and provision of additional labour by the family members who may assist in the application of manure. The table shows that about half of the respondents (50.6%) were not educated. This result contradicts Bonabana-Wabbi (2002) in Uganda, Jones (2005) in Togo-Benin, Kudi, Bolaji, Akintola & NasaI (2011) in Kwara (Nigeria) who reported high level of formal education among farmers in their study areas. It revealed that many (55.6%) of the respondents have household size ranging between 6-10 members with the mean of 8 members. This implies that the farmers have fairly large household which may readily supply labour for the application of poultry manure on the maize farm. This result is in line with the study of Mignouna, Abdoulaye, Kamara & Oluoch (2013) who reported an average number of seven and nine people per household for agricultural activities. It revealed that many respondents (40%) had farming

experience of 15-20 years. Moreover, the mean farming experience is 8 years. This implies that majority of maize farmers had long period of farming experience and therefore would be conversant with the use of poultry manure to improve maize crop yield. This is in line with Bello, Daudu, Galadima, Anzaku & Abubakar (2012) report that most (83.70%) of the respondents in Jenkwe Development Area of Nasarawa State, Nigeria had above 10 years of farming experience. It shows that many of the farmers (43.9%) had between 11-15 hectares. This implies that the farmers have fairly significant farm size and may need more poultry manure to improve their soil fertility.

Table 1 further shows that 43.3% of farmers belong to maize growers' association. This may be because the respondents in the study area were maize farmers. Caviglia &Kahn (2001) in Brazil &Oladele (2002) in Nigeria have shown the importance of farmers' associations and unions as one major sources of information available to farmers for collective decision making as it affects their agricultural production.

Table also shows that 51.1% of the farmers have their farm located less than 5km away from poultry base. This shows that there is proximity to the poultry house which will enhance the availability and utilization of poultry manure for maize production

Sources of information on poultry manure used by maize farmers

Table 2: Distribution of poultry farmers based on sources of information in the study area.

Sources of information	Always accessible	Sometimes accessible	Not accessible	Mean	Rank
1. Television	21(11.7)	89(49.4)	70(38.9)	1.7	6
2. Radio	28(28)	140(77.9)	12(6.7)	2.1	4
3. Extension agent	4(2.2)	131(72.8)	44(24.4)	1.8	5
4. News papers	7(3.9)	72(40)	101(56.1)	1.5	8
5. Mobile phones	12(6.7)	87(48.3)	81(45.0)	1.6	7
6. Friends/relatives	53(29.4)	105(58.3)	22(12.3)	2.2	3
7. Farmers group	126(70)	42(23.3)	12(6.7)	2.6	1
8. Fellow farmers	121(67.8)	41(22.8)	17(9.4)	2.6	1
9. Internet	19(10.6)	51(28.3)	110(61.1)	1.5	8
10. Text books	15(8.3)	56(31.1)	109(60.6)	1.5	8

Source: Field survey, 2017

Table 2 shows that majority of respondents get their source of information from fellow farmer (mean=2.6), farmers group (mean=2.6) and friends/relatives (mean=2.2). Agbamu (2006) reported that the source of information mostly used by farmer in developing countries are influenced by the farmer's age and level of education, available sources of innovations and the extent of modernization in the locality. Although, the respondents indicated that they obtain information from all the sources however, it is clear that major information use by the farmers is obtained or sourced from farmers group and fellow farmers.

Level of utilization of poultry manure among maize farmers
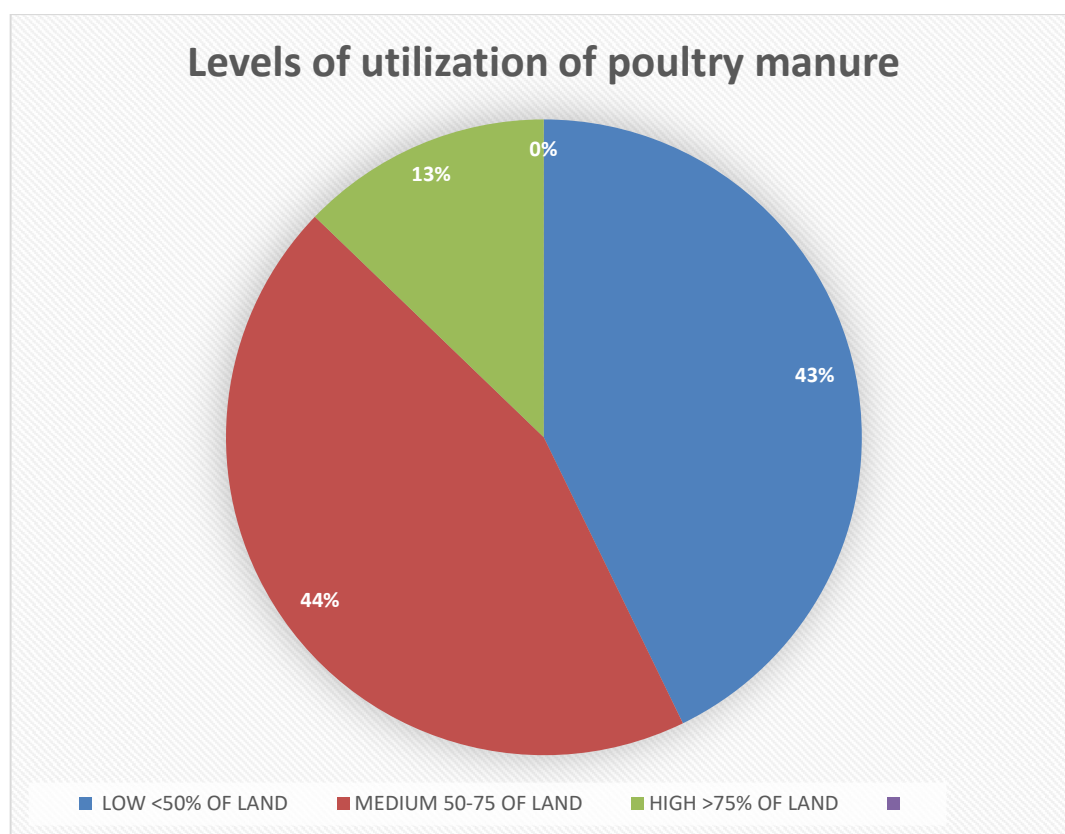

Figure 2: A pie chart showing the distribution of respondents by level of utilization of poultry

manure

Figure 2 shows that 44% of the respondents apply poultry manure on 50-75% of their land. This implies a medium level of utilization of poultry manure. This may be because of the limited amount of manure or as a result of the fact that the application is labour intensive. The result is in line with the work of Lampkin & Padel (1994) noted that, in many countries, labour costs on organic farms are high.

Benefits of poultry manure on maize production
Table 3: Benefits of poultry manure on maize production

BENEFITS	SA	A	U	D	SD	MEAN
1. It improves soil fertility and soil structure	3(1.7)	1(0.6)	3(1.7)	30(16.7)	143(79.4)	4.7
2. It reduces all forms of environmental pollution	60(33.3)	70(38.9)	14(7.8)	23(12.8)	13(7.2)	2.2
3. It is efficient in reducing pest and diseases infestation	12(6.7)	26(14.4)	132(73.3)	10(5.2)	-	3.2
4. It gives high-quality products	11(6.1)	106(58.9)	58(32.2)	5(2.8)	-	3.7

5. It reduces environmental degradation	3(1.7)	89(49.4)	78(43.3)	10(5.6)	-	3.5
6. It reduces farmers' exposure to health hazard	2(1.1)	22(12.2)	100(55.6)	55(30.6)	1(0.6)	2.8
7. It increases maize productivity	21(11.7)	90(50)	65(36.1)	4(2.2)	-	3.7
8. It is efficient in reducing climate change effect	33(18.3)	60(33.3)	78(43.3)	9(5.0)	-	3.7
9. It reduces input cost of production	113(62.8)	57(31.7)	7(3.9)	3(1.7)	-	4.6
10. It increases farmers' income with low cost	126(70)	42(23.3)	8(4.4)	2(1.1)	2(1.1)	4.6

Source: Field survey, 2017

Table 3 shows the cut off point for five-point Likert type scale is 3.00. The table shows that out of all the 10 benefits identified, eight of them were considered as very crucial benefits of poultry manure to the farmers. These are poultry manure improves soil fertility and soil structure (mean=4.7), it reduces input cost of production (mean=4.6) among others. Only two benefits were not considered as very strong benefits to the farmers which are poultry manure reduces all forms of environmental pollution (mean=2.2) and it reduces farmers' exposure to health hazard (mean=2.8). Adebayo and Oladele (2012) in their review of organic agriculture shows that it potentials include soil fertility and system stability, ecosystem service, food safety and quality, mitigating climate change, ecological health among others

Constraints to the use of poultry manure among maize farmers

Table 4: distribution of respondents by constraint to the use of poultry manure in the study area

	Very severe	Severe	Not severe	Mean	Rank
1. Unavailability of poultry manure	37(20.6)	133(73.9)	10(5.6)	2.2	12
2. Preference for inorganic fertilizer	97(53.9)	78(43.3)	5(2.8)	2.5	4
3. Bulkiness of poultry manure	88(48.9)	81(45)	11(6.1)	2.4	8
4. Cost of transporting the manure	110(61.1)	61(33.9)	9(5.0)	2.6	2
5. Method of application is tedious	99(55.0)	76(42.2)	5(2.8)	2.5	4
6. Distance covered to poultry farms	84(46.7)	87(48.2)	9(5.0)	2.4	8
7. Labour	87(48.3)	84(46.7)	9(5.0)	2.4	8
8. Time spent	117(64.4)	52(28.9)	11(6.1)	2.6	2
9. Odour	137(76.2)	36(20)	7(3.9)	2.7	1
10. Drudgery	97(53.9)	78(43.3)	5(2.8)	2.5	4
11. Larger quantity per hectare is high	93(51.7)	83(46.1)	4(2.2)	2.5	4

Source: Field survey, 2017

The result of the three-point Likert scale in Table 4 shows the constraints of poultry manure on maize production by respondents when a mean score of 2.5 and above indicate a constraint while a mean score of less than 2.5 indicate a not severe constraints of poultry manure. However, constraints of poultry manure that are severe and have great effects are preference for inorganic fertilizer (2.5), cost of transporting the manure (2.6), method of application is tedious (2.5), time spent (2.6), odour (2.7), drudgery (2.5) and larger quantity per hectare is high (2.5). Omiti, Freeman, Kaguongo & Bett, (1999) noted that animal manure compost is the most common source of soil amendment in organic agriculture in Nigeria and indeed Africa. However, Mafongoya, Bationo, Kihara & Waswa, (2006). reported that in Africa, though, animal manure is one of the mostly used organic inputs, but as the need for increased agricultural production rises; it has been found to be limited in quality and quantity. Williams (1999) reported similar result among farmers in semi-arid West Africa.

Test of hypotheses

Table 5: summary of correlation result showing the relationship between respondents' socio-economic characteristics and the level of utilization of poultry manure

Variable	Co-efficient	p-value	Significance status
Age (x_1)	0.108	0.148	NS
Sex (x_2)	-0.084	0.264	NS
Religion (x_3)	-0.029	0.900	NS
Marital status (x_4)	0.076	0.310	NS
Education (x_5)	-0.101	0.178	NS
Household size (x^6)	-0.020	0.787	NS
Years of experience (x_7)	-0.111	0.139	NS
Farm size (x^8)	0.183	0.014*	S
Members of association (x^9)	-0.057	0.451	NS
Distance to poultry farm (x^{10})	0.158	0.035*	S

*-Significant at P≤0.05, **-Significant at p0.05, Source: Field survey, 2017

Table 5 shows the correlation coefficients of the relationship between selected socio-economic characteristics of respondent and the level of utilization of poultry manure. Out of all the variables used in the correlation analysis, only two were significant. These are farm size and distance to poultry farms. This means that the bigger the farm size, the more amounts the poultry manure utilized. Also, the closer the farmers farm to the poultry farm, the higher the amount of poultry manure being utilized. Adebayo and Oladele (2013) shows that farm size is one of the factors that influences adoption of organic farming practices in South West Nigeria

Table 6 shows the correlation coefficients of the relationship between constraints hindering the use of poultry manure and the level of utilization of poultry

Variable	Co-efficient	P-value	Remarks

1. Unavailability of poultry manure	0.035	0.641	NS
2. Preference for inorganic fertilizer	0.053	0.479	NS
3. Bulkiness of poultry manure	0.190	0.011**	S
4. Cost of transporting the manure	-0.148	0.047**	S
	0.018	0.814	NS
5. Method of application is tedious	-0.063	0.404	NS
6. Distance covered to poultry farms	-0.078	0.301	NS
7. Labour	0.052	0.489	NS
8. Time spent	-0.011	0.887	NS
9. Odour			
10. Larger quantity per hectare is high	0.041	0.589	NS

Source: field survey, 2017, *-Significant at p0.001, **-Significant at p0.05
P≤0.05= There is significant difference (H₁)

Table 6 shows the correlation coefficients of the relationship between constraints hindering the use of poultry manure and the level of utilization of poultry. Out of all the variables used in the correlation analysis, only two were significant. These are bulkiness of poultry manure and cost of transporting the manure. The result shows that Bulkiness of poultry manure (0.190, $p<0.05$) positive significant to the level of utilization of poultry manure. This implies that the bulkiness of poultry manure may hinder the use of poultry manure by farmers on their farms. Cost of transporting the manure (0.148, $p<0.05$) have a negative significant on the level of utilization of poultry manure. This implies that, if the cost of transporting manure is high, then the farmers will not be encourage to use the manure and this will contribute to the reduction or negatively on the level of utilization of poultry manure. The study conducted by Adebayo & Oladele (2013) showed that education, farm size, membership of organization, distance to farm center among others are factors influencing adoption intensity of organic farming practices in South West Nigeria

CONCLUSION
The study revealed that most of the maize farmers agreed that poultry manure encourages the improvement of soil fertility and soil structure, reduces input cost of production and increases farmers' income with low cost. However, the level of utilization of the poultry manure is still low probably as a result of the bulky nature of the manure and the cost of transporting it to the farm site. Based on the result of the findings, it could be concluded that most of the respondents use poultry manure for their maize production based on the benefit it provides in Osun State, Nigeria.

RECOMMENDATIONS
Based on the findings, the following recommendations were made:

i. Research institutes in conjunction with Government should provide improved technologies to process poultry manure to dry form in other to reduce the bulky nature of poultry manure

ii. Poultry houses should be located close to farm settlement in order to reduce the distance covered to the farm site.

iii. Government should make vehicles available to the poultry houses to transport the manure to the farm site thereby reduce the odour in the city but improve soil quality on the farm.

REFERENCES

Adebayo S.A & Oladele O.I. (2012).   Potentials of Organic Agriculture for Sustainable Development in Africa: A review. *The Asian International Journal of Life Sciences; Pages*: 1-15 (Available at: http://journals.uplb.edu.ph/index.php/ALS/issue/view/111)

Adebayo, S.A. & Oladele, O.I. (2013): Adoption of organic farming practices in South Western Nigeria *Journal of Food, Agriculture & Environment, 11 (2), 403--410.* Published by the International Society of Food, Agriculture and Environment. Available online at http://www.world-food.net

Adebayo S.A. and Oladele O.I (2013).   Factors affecting adoption intensity of organic agricultural practices in South West Nigeria: Green manure and cover crop *Journal of Food, Agriculture & Environment, 11 (2), 687-690.* (Available at: http://www.world-food.net).

Agbamu J.U (2006). Essentials of Agricultural Communication in Nigeria. Malthouse Press Limited, Lagos. Pp 34-56.

Akudugu M.A., Guo E & Dadzie S.K. (2012). Adoption of modern agricultural production technologies by farm households in Ghana: What factors influence their decisions? *Journal of Biology, Agriculture and Healthcare, 2(3), 12- 20 Systematic Variant Method. American- Euroasian Journal of Agriculture and Environmental Science, 1(2) , 302 – 307*

Aktar M.W., Sengupta D., Chowdhury A. (2009): Impact of Pesticides Use in Agriculture: their Benefits and Hazards.Interdisciplinary Toxicology 2(1),: 1-12. Retrieved January 19 2013 from http://www.ncbi.nlm.nih.gov/pmc/articles/ PMC2984095/

Bello, M., Daudu S., Galadima, O.E., Anzaku, T.K.A & Abubakar, A.A. (2012). Factors influencing adoption of crop-based technologies in Jenkwe Development Area of Nasarawa State, Nigeria. *Glob. Adv. Res. Journal of Agricultural Science, 1(8), 250-256.*

Bonabana-Wabbi, J. (2002). Assessing factors affecting adoption of agricultural technologies: The case of Integrated pest management (IPM) in Kumi District, Eastern Uganda. Unpublished M.Sc Thesis, Virginia Polythenic Institute of State University.

Cabinet Office (2002). Public Attitude towards Recycling and waste management Quantitative and Qualitative Review. Retrieved January 2013 from http://www. Ipsos mori.com/Assets/Docs/Archive/Polls/waste- recycling.pdf 58P

Caviglia, J. L., & Kahn, J. R. (2001). Diffusion of Sustainable Agriculture in the Brazilian Rain Forest: A Discrete Choice Analysis, *Economic Development and Cultural Change* 49: 311–33

Directorate of Information and Publications of Agriculture (DIPA) (2006). Handbook of Agriculture: facts and figures for farmers, students and all interested in farming. Directorate of Information and Publications of Agriculture. *Indian Council of Agricultural Research,* New Delhi, pp. 435. [7].

Dutt, S. (2005). A Handbook of Agriculture. ABD Publishers, India. pp 116-118.

Dipeolu, A. O., Bello, K. A & Akinbode, S. O. (2006). Comparative economic analysis of organic and inorganic vegetable production in Ogun State, Nigeria. Proceedings of the 2nd National Conference on Organic Agriculture, University of Ibadan, Ibadan, Nigeria 27 – 29 November, 2006. pp. 24

Food and Agriculture Organization (2002). Fertilizer and the future. IFA/FAO Agriculture Conference on Global food security and the role of Sustainability Fertilization. Rome, Italy. 16th-20th March, 2003, pp 1-2.

Felipó, M.T., Huerta O., Lopez M & Soliva M. (2004). Research on Organic Wastes Soil Recycling and its Applicability to Local Scenarios. Proceedings of International Conference on Engineering Education in Sustainable Development, Barcelona, Spain. Retrieved January 19 2013 from http://mie.esab.upc.es/ms/recerca_experimentacio/articles_ESAB/Research%20Organic%20Waste.pdf 8P

Fertilizer Procurement and Distribution Division (2002). Fertilizer use and Management Practices for crops in Nigeria. The Fertilizer Procurement and Distribution Division of the Federal ministry of Agriculture, Water Resources and Rural Development, Abuja: pp 1-20

Grant Conservation District (2006) Grant Country Public Works Feasibility study for an Organic Waste Recycling Programme in Grant Country.

Idrisa, Y.l. (2009). Analysis of the determinant of soybean production technology adoption by farmers in southern Borno State. *Unpublished Ph.D Dissertation submitted to the School of Postgraduate Studies*, University of Maiduguri, Borno-Nigeria.

International Federation of Organic Agricultural Movement (2005). The IFOAM norm of Organic Production, London, London pp. 254

Jones, K. M. (2005). Technology Adoption in West Africa: adoption and disadoption of soybean on the Togo-Benin border. Unpublished M.Sc Thesis, North Carolina State University. K

Kamara, M. (2009). Factors influencing the adoption of Soybean Production among male and female farmers in Borno State: Implications for Community Development. *Unpublished M.Ed. Thesis*, Kano, Bayero University, Kano, Nigeria.

Kudi, T.M., Bolaji, M., Akintola, M & Nasa'I, D.H. (2011). Analysis of adoption of early maturing maize varieties among farmers in Kwara State, Nigeria. *International Journal of Peace Development Studies,* 1(3), 8-12.

Lampkin, N, H., & Padel, S. (1994). The economics of organic farming: An International Perspective. CAB International: Wallingford, UK. XVl, 468 p.

Mafongoya, P. L., Bationo, A., Kihara, J & Waswa, B. S. (2006). Appropriate technologies to replenish soil fertility in Southern Africa. Nutrient Cycling in Agroecosystem 76:127-151

Mignouna, B.D., Abdoulaye, T., Kamara, A & Oluoch, M. (2013). Baseline study of smallholder farmers in Striga-infested maize and cowpea growing areas of northern Nigeria. International Institute for Tropical Agriculture, Ibadan, Nigeria. pp 60.

Muyanga, M. (2009). Smallholder adoption and economic impacts of tissue culture banana in Kenya. *African Journal of Biotechnology*, 8(23), 6548-6555.

Mittelstrass H. (2005). The Emergence of a Faculty of Organic Agricultural Sciences. *LEISA.* 21(4), 26-27

NSSP/IFPRI (2013). Impact of fertilizer subsidies on the commercial fertilizer sector in Nigeria. Evidence from previous fertilizer subsidy scheme NSSP working paper 235p.

Oladele, O. I. (2002). Communication links in research-extension-farmers interface in south western Nigeria. Journal of Extension Systems India 18(June):89-100.

Omiti, J. M., Freeman, H. A., Kaguongo, W & Bett, C. (19s99). Soil Fertility Maintenance in

Eastern Kenya: Current Practices, Constraints, and Opportunities, CARMASAK Working
Paper No. 1. KARI/ ICRISAT, Kenya, pp. 13-17.

Rayar, A.J. (2000). Sustainable Agriculture in Sub-Sharan Africa. The Role of soil productivity. *AJR publishers India*. P 104-156.

Solomon, O. (2008). Small scale oil palm farmers perception of organic agriculture in Imo State, Nigeria, *Journal of Environmental Extension.* 7: 67-71.

Welcome to Osogbo city Home page. Osogbo city WEB Retrieved 2013-06-21

Williams, T. O. (1999). Factors influencing manure application by farmers in semi-arid West Africa. Nutrient Cycling in Agro ecosystems 55:15– 22.

ASSESSMENT OF ADOPTION OF IMPROVED RICE PRODUCTION TECHNOLOGIES AMONG RICE FARMERS IN NASARAWA STATE, NIGERIA

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ABSTRACT
Local production is yet to match the growing domestic demand for rice in Nigeria and this has continued to form the basis for improved technology innovation to promote crop productivity. The study assessed the adoption of improved rice production technologies among rice farmers in Nasarawa State. A two-stage sampling technique was employed to collect data from 160 respondents from the list of registered farmers under the Bukan-Sidi Lafia Rice Innovation Platform of the Nasarawa/Benue hub. The study specifically: examined determinants of the level of adoption of improved rice production technologies and determined effects of the adoption of improved rice production technologies on rice productivity. T-test and Logit Regression Model were used as the analytical tools. The results show that educational level, household size, off-farm income, number of extension contacts and farm size were statistically significant at 10%, 5%, and 1% respectively. Also, the full adoption of improved rice production technologies significantly increased rice productivity. The study recommends that rice farmers should be encouraged through intervening measures such as subsidy to fully adopt the improved rice production technologies to help improve rice productivity.
Keywords: Improved technologies, rice production, rice farmers, adoption, Nasarawa

INTRODUCTION
Rice (*Oryza sativa L.*) is a commonly grown and consumed food crop in Nigeria belonging to the family *Poaceae.* Audu, Salu & Ukwutenu (2008) opined that rice is the second largest crop produced in the world after wheat. Nigeria is the largest consumer of rice in Africa, and also one of the largest producers of rice in Africa and simultaneously one of the largest rice importers in the world (Food and Agriculture Organization, 2019). Onuk, Anzaku & Luka (2010) observed that rice, in recent times, has emerged as one of the fastest growing agricultural commodity moving from a ceremonial food to a staple food in many Nigerian homes within the last three decades. Despite being the largest producer of rice in West Africa, there is still a shortfall of supply which has not matched the demand (Ajala & Gana, 2015) and domestic rice production is below the national requirements (Rahji & Adewumi, 2008). Significant efforts have been made towards increasing rice production by encouraging the adoption of improved technologies. However, productivity and level of adoption are still low. The importance of improved rice production technologies to agricultural development, especially in less developed countries like Nigeria, is widely recognized. Generally, the adoption, access, and usage of improved technologies can increase employment opportunities, increase farmers' income and land productivity (Waggoner, 2004; Doss & Morris, 2001). The adoption of improved rice production technologies is a means of achieving increased productivity among rice farmers in Nigeria. Nonadoption of improved technologies by rice producers may result in low productivity which could lead to poor income and inadequate working capital among farmers. Also, variations in the agricultural productivity of rice farmers may be due to the large differences in the level of adoption of selected agricultural technologies which may have

attendant consequences on the productivity of farmers. Furthermore, there is also little evidence-based research outcome on the effects of the adoption of improved rice production technologies in the study area. The main objective of this study was to assess the effect of the adoption of improved rice production technologies among rice farmers in the study area. The specific objectives are: to examine the determinants of the level of adoption of improved rice production technologies among rice farmers and to determine the effect of the adoption of improved rice production technologies on rice productivity among rice farmers.

METHODOLOGY
The study was conducted in Nasarawa State in the North-Central zone of Nigeria. Nasarawa State was created on the 1st October 1996 from Plateau State. The state has 13 Local Government Areas and the capital is Lafia. Nasarawa State has three senatorial districts - South, North and West Senatorial District. The South Senatorial District consists of Awe, Doma, Keana, Lafia, and Obi LGAs. The North Senatorial District consists of Akwanga, Nasarawa, Egon and Wamba LGAs. The West Senatorial District consists of Karu, Keffi, Kokona, Nasarawa, and Toto LGAs. The land area covered is 27,117km^2(10,470 sqm). The population of the state is 2.05million (NPC, 2006). It is located between latitude 8°32'N, longitude 8°18'E. agriculture is the mainstay of the economy with the production of varieties of cash crops throughout the year. Nasarawa State is highly agrarian with a large percentage of their populace engaged in rice farming. The state experiences an annual rainfall ranging from 1100 mm to about 2000mm starting from late April and lasting till October. The area has minerals such as salt, barite, and bauxite and these are mostly mined by artisanal miners. The major ethnic groups in the area include Kanuri, Gbagyi, Basa, Alago, Tiv, Gwandara, Eggon and Ebira.

A two-stage sampling technique was used to select the sample for the study. The first stage comprised a purposive selection of 4 major rice hubs under the Bukan-Sidi Lafia Rice Innovation Platform (IP) of Nasarawa/Benue hub. These rice hubs are Igibi, Ashangwa, Gida-Maikuya and Barkin-Abdallah. The second stage involved the random selection of 40 rice farmers from the list of the registered farmers in each of the rice hubs; making a total of 160 respondents for the study.
Primary data for the study were collected from rice farmers. Information on the socioeconomic characteristics of the farmers such as age, sex, marital status, educational attainment, place of agriculture as a source of occupations among other information was gathered from rice farmers. Information on the determinants and effect of the adoption of improved rice production technologies were also collected.

The data for the study were collected using a structured interview schedule. The interview schedule was administered by trained enumerators who are extension agents in the study area.

The study employed a number of analytical tools based on the study objectives. The analytical tools used in analyzing data collected for the study include the Logistic Regression Model and the t-test.
The implicit form of the model is specified as follows:
$$Prob\ (Y_i = 1) = \frac{\exp(X_i{}'\beta)}{1 + \exp(X'_i \beta)}$$
Where, Y is the observed response for the ith observation i.e (binary adoption status of the individual farmer), Y = 1 for full adoption of improved rice production technologies, Y = 0 for partial adoption of improved rice production technologies). The hypothesized independent variables are: X_1=farm size (hectares), X_2=educational status of the farmers (ordinal), X_3=off-

farm income (naira), X_4=household size (number), X_5=age (years), X_6=extension services (number of visits), d_1=access to credit (dummy) and d_2=membership of cooperative (dummy), e = error term

Objective II: t-test was used to examine the effect of improved rice production technologies on rice productivity.

$$t = \frac{\overline{X_1} - \overline{X_2}}{\sqrt{\frac{S^2_1}{n_1} + \frac{S^2_2}{n_2}}}$$

Where
$\overline{X}_1$ = Mean of X_1 partial adopters
$\overline{X}_2$ = Mean of X_2 full adopters
S^2_1 = Variance of X_1 variable
S^2_2 = Variance of X_2 variable
n_1 = Number of partial adopter respondents
n_2 = Number of full adopter respondents

RESULTS AND DISCUSSION

Table 1: Determinants to the Level of Adoption of Improved Rice Production Technologies among Rice Farmers

Variables	Coefficient	Z	P>|z|
Constant	-2.64	-2.28	0.022
Age	2.50E-02	0.95	0.343
Educational level	.2.78E-01**	2.31	0.021
Household size	1.72E-01**	2.29	0.022
Off-farm income	-9.75E-06*	-1.75	0.080
Number of extension contacts	4.28E-02*	1.80	0.072
Membership of cooperative	-1.97E-01	-0.41	0.683
Access to credit	6.26E-01	1.10	0.271
Farm size	-6.48E-01***	-3.06	0.002

Note: ***represent significance level at 1%, ** represent significance level at 5% and *represent the significance at 10%
Source: Field Survey, 2016

Table 1 shows the factors influencing the adoption of improved rice production technologies among rice farmers in Nasarawa State. The results of the regression model indicated the explanatory variables that influenced the probability of the adoption of improved rice production technologies were all statistically significant. These include education, household size, off-farm income, number of extension visits and farm size.

It could be observed that farm size and off-farm income showed a significant but inverse effect on the adoption of improved rice production technologies. This implies that an increase in these variables will lead to a decrease in the level of adoption of improved rice production technologies. The findings revealed that off-farm income was statistically and negatively significant (p<0.10) which influenced the level of adoption of improved rice production technologies. This is suggesting that farmers' access to other sources of income would invariably have a negative influence on their involvement in agricultural activities. Farm size was statistically and negatively significant (P<0.01) and influenced the level of adoption of improved rice production technologies. This implies that a unit increase in farm size would

lead to 1.38 decrease in the level of adoption of improved technologies. This is contrary to the findings of Kagbu et al. (2016) which submitted that a positive and significant relationship was found between women rice farmers' farm size and adoption of recommended rice production practices (2.635, p<0.01).

Education was significant at 5% and had a positive effect on the level of adoption of improved rice production technologies. This implies that farmers with a higher level of education have the tendency of adopting improved rice production technologies than those with a lower level of education. This is contrary to the findings of Umar, Ndanitsa & Olaleye (2009)'s study which submitted that there was no relationship between education and adoption. Tambo & Abdoulaye (2012) reported that the level of education of a farmer not only increases his farm productivity but also enhances his ability to understand and evaluate new production technologies.

Household size was significant at 5% and showed a positive relationship with the level of adoption of improved technologies. This implies that larger household size has more family labor for rice production activities which invariably reduces the cost of production. This finding was in line with Onyeneke (2017)'s study which asserts that Household size of farmers significantly increased the likelihood of adopting improved rice varieties, improved line spacing, planting depth, use of fertilizer, and optimum seed rate.

The number of extension visits was significant at 10% and had a positive relationship with the level of adoption of improved technologies. The implication of this is that regular and timely extension visits provide information on improved technologies for rice farmers. This will also proffer solutions to the challenges that farmers would likely face in the adoption of improved technologies. This finding is in agreement with Umar, Ndanitsa & Olaleye (2009) that more extension visits would increase the adoption of improved rice production technologies. Extension workers are supposed to provide farmers with reliable information on a variety of agricultural innovations. Extension visits serve as an important source of information on agricultural production. Farmers who have significant extension contacts have better chances to be aware of various management practices that they can use to increase production.

Table 2: Effect of Improved Technologies on Productivity of Rice Farmers

Adoption status of rice farmers	Distribution of rice farmers	Mean Productivity(kg/ha)
Partial Adopters	101(63.13)	1551.06 (596.27)
Full Adopters	59(36.87)	3636.85 (1030.11)
Total	160	2320 (1276.61)
Mean Difference		2085.77

(t=-16.2373; p<0.005)
Source: Field Survey, 2016

The results above indicated that most of the partial adopters (63.13%) had the mean productivity of 1551.06kg/ha. On the other hand, the full adopters (36.87%) had the mean productivity of 3636.85kg/ha. This implies that full adoption of improved rice production technologies contributed 2085.77Kg/ha to the productivity of rice farmers (t=-16.2373; p<0.005). This is in line with the findings of Awotide et al., (2012)'s study which submitted that the mean difference between adopters and non-adopters showed that there was a significant

difference of 165.94kg/ha in rice productivity. This could be interpreted as the change in rice productivity that is attributable to the adoption of improved agricultural technologies.

CONCLUSION
This study concludes that the full adoption of improved rice production technologies significantly increased rice productivity. Although the effect is proportional to the level of adoption of improved technologies; the mean productivity of full adopters was significantly higher than partial adopters. This was determined by the socio-economic characteristics of rice farmers.

RECOMMENDATIONS
i. The study recommends that rice farmers should be provided with subsidized farm inputs to fully adopt improved rice production technologies to help improve rice productivity.
ii. Also, large household size influenced the availability of labor for rice production activities. In view of the increasing labor requirement in rice production, the farmer should be assisted with better access to labor-saving devices by making available necessary farm tools and equipment.
iii. In addition, it will make it relatively easier for farmers with large farm sizes to be able to cope with the challenges of applying improved technologies on large farms. Since off-farm income has a negative implication on the adoption of technologies, rice farmers should imbibe a value-chain approach to rice production. This way, farmers will be able to earn income from different value-chain activities in rice and not venture into non-farm activities as a way of improving their household income.
iv. Lastly, education should be encouraged among farmers; this is so because education was found to be a significant factor influencing the adoption of improved technologies.
v. Rice production in the study area should involve an integrated and policy approach that will promote education among farmers.

REFERENCES
Ajala, A. S. &Gana, A. (2015). Analysis of Challenges Facing Rice Processing in Nigeria," *Journal of Food Processing*. Article ID 893673, 6 pages. Available online at https://doi.org/10.1155/2015/893673.
Audu, S.I., Salu, O.J&Ukwutenu, S.O. (2008). Analysis of costs and returns of rice production in Ankpa Local Government Area of Kogi State, Nigeria. Proceeding of 42nd Annual Conference, Agricultural Society of Nigeria. Ebonyi State University, Abakaliki. October 19th – 23rd. Pp. 768 – 774.
Awotide, B.A., Diagne, A. Awoyemi, T.T&Ojehomon, V.T. (2010). Farm level constraint and adoption of improved rice varieties in Nigeria. *Journal of Agricultural and Environmental Studies,* 1(2), 12-29.
Doss, R.C&Morris, M.L. (2001). How does gender affect the adoption of agricultural innovations? The case of improved maize technology in Ghana. Agric. Econ., 25, 27-39.
Food and Agriculture Organization of the United Nations (2019) "Nigeria at a Glance" Available online at: http://www.fao.org/nigeria/fao-in-nigeria/nigeria-at-a-glance/en/
Kagbu, J.H, Omokere, D.F &Akpoko, J.G.(2016). Adoption of Recommended Rice Production Practices among Women Rice Farmers in Nasarawa State, Nigeria. *Journal of Agricultural Extension*, 20 (1),107 – 120.
Okoruwa, V.O, Ogundele, O. O&Oyewusi, S.O. (2006). Efficiency and Productivity of

Farmers in Nigeria: A Study of Rice Farmers in North Central Nigeria. Poster Paper Presentation at the International Association of Agricultural Economists Conference, Gold Coast, Australia. August 12-18, 2006.

Onuk, E.G., Anzaku, T.A.K. & Luka, E.G. (2010). Challenges in Rice Production under theYouths-In-Agriculture Programme: Lessons from Nasarawa State Western Agricultural Zone and the Way Forward. *PATNSUK JOURNAL,* 6 (2), 109-118.

Onyeneke, R.U. (2017). Determinants of Adoption of Improved Technologies in Rice Production in Imo State, Nigeria. *African Journal of Agricultural Research,* 12(11), 888-896.

Rahji, M.A.Y & Adewumi, M.O. (2008). Market Supply Response and Demand for Local Rice in Nigeria: Implications for Self Sufficiency, *Central European Agriculture Journal*. 9(3), 567-574.

Tambo, J.A& Abdoulaye T. (2012). Climate Change and Agricultural Technology Adoption: The Case of Drought Tolerant Maize in Rural Nigeria. Mitigation Adapt. Strateg. *Global Change*, 17, 277-292.

Umar, S I,Ndanitsa, M.A & Olaleye, S.R. (2009).Adoption of Improved Rice Production Technologies among Youth Farmers in Gbako Local Government Area, Niger State. *Journal of Agricultural Extension*, 13(1), 1 – 8.

Waggoner, P.E. (2004). Agricultural technology and its societal implications. *Technol. Soc*., 26, 123-136.

CONSTRAINTS TO INFORMATION COMMUNICATION TECHNOLOGIES (ICTS)USE AMONG AGRICULTURE RESEARCHERS IN EDO STATE, NIGERIA

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ABSTRACT
This study assessed constraints to Information and Communication Technologies (ICTs) use by agriculture researchers in Edo State, Nigeria. Purposive technique was used to select 96 researchers in the state. Data were analyzed using descriptive statistics and Pearson Product Moment Correlation (PPMC). Results showed that video/video CD ($\bar{x}$ = 2.72) and radio (= 2.64) were most accessed by respondents for research work, GSM ($\bar{x}$= 2.74) was most frequently used, respondents were most competent in the use of multimedia projector (= 2.68) and electronic slide ($\bar{x}$ = 2.53, the most serious constants encountered by respondents in the use of ICTs for research were poor ICTs unit management ($\bar{x}$ = 3.22), poor internet access ($\bar{x}$ = 3.10), and high cost of ICTs ($\bar{x}$ = 2.93). There was a significant relationship between inadequate finance of = 0.42; P<0,05), lack of regular internet network r = - 0.43: p<0.05) lack of regular internet network r = - 0.4: p<0.05) and poor ICTS unit Management r = - 0.37: p< 0.05). Agriculture researchers are highly constrained and selective in their frequency in use of various ICTs for research. The study recommends the need of Government to provide research allowance and incentive to cover ICTs access, especially those technology sources such as electronic slide, internet that are not presently accessed by researchers
Keywords: Constraints, ICTs, Agriculture researchers, Edo State, Nigeria

INTRODUCTION
The importance of agriculture in the economy of Nigeria is profound. Despite the involvement of larger percentage of the population in agriculture, the country continues to experience perpetual food shortage and continue to spend the lean foreign reserve on importation of food Idiake-Ochei., Onemolease & Ikoyo-Eweto (2016). According to Nwankpa (2012), 70% of Nigerians are engaged in agriculture, of which 64% operate at subsistence level. Idiake-Ochei et al. (2016) also asserted that for the agricultural sector to be transformed, there is urgent need for farmers to imbibe the culture of innovativeness and utilization of modern method in farming. This innovation should be cost efficient not only in the long run, but also effective in meeting the farm family goals of increased productivity, income and a better living standard. According to Okoedo-Okojie (2015) Agriculture researchers are scientists who have been trained in various disciplines in agriculture and rural development. They play the critical role of linking technology sources such as fixed satellites and radio to technology users such as farmers and agropreneur operators. This definition goes beyond the traditional role of extension workers to assessment and articulation of researchers technology needs; development of new technology testing ; evaluation of new technology and transfer to farmers The ICTs involve the use of many electronic based communication systems such as computers, radios, television, and global system of mobile communication (GSM). It is obvious that it is new in agricultural extension and rural development Nnadi et al. (2012). Agriculture researchers have a crucial role in bridging the technology gap between the existing scientific knowledge base, and information and knowledge in the hands of farmers. Agriculture researchers use ICTs for data

processing, access of agricultural related information for (experimentation) and dissemination to farmers. The agriculture researchers in different types of agricultural field no doubt have need for ICTs, for various activities, such as National Horticultural Research Institute (NITHORT) and Edo state agricultural development programme (EADP), which have national and state mandate respectively. Considering the importance of ICTs to agricultural research, this study therefore assessed the access and use of ICTs by the agricultural researchers in Edo State. Information and Communication Technologies (ICTs) are increasingly seen as essential tools in development project. ICTs create new sources of income, make for transparency and accessibility in governance, improvement in education and healthcare, and overcome of social exclusion and discrimination. The greatest problem of developing countries, such as Nigeria is poverty (World Bank,1996). The agriculture researchers/facilitators is a dispense of knowledge and must be well enriched, a resource person who can help the farmers acquire the knowledge they seek. (Salami 1999), recommended that the facilitators must be able to communicate effectively and must be able to give a clear, logical and competent reasoning. Hence it becomes imperative to find out the extent of internet usage in conduct of research works by agriculture researchers in Edo State. Knowledge is acquired and sustained through efficient ICTs system based on the technology level attained. Agriculture researcher in any country who fail to use and master new technologies would definitely lack behind.

The usefulness of ICT and staff training as means of information literacy in order to enhance the research by agriculture researchers has been established in extent literature.
According to Albert (2014) Constraints to use of ICT ranged between poor infrastructure and financial capacity of respondents. It is obvious that the ICT situation in the study area is hampered mostly by electricity which culminates in non functional equipment thus reducing the time when ICT can be assessed. This therefore limits the proficiency of users which is to be acquired after several usage. The result is that many cannot access information as desired and sources of information are also limited. The level of education of the users is also important here as the illiterates may not be able to follow the user prompts available with use of most hardware and software. Of lesser concern is proximity to ICT centers and this may be because they are usually located in easily accessible areas. In response to these problems, this study assessed constraints to Information and Communication Technologies use among agriculture researchers in Edo State, Nigeria. Specifically, the study examined researcher's access to ICTs in their Work Place, their frequency of use of ICTs for research purpose, examined respondent's competence in ICTs use and identified constraints faced by respondents in ICTs use in agriculture research

METHODOLOGY
This study was conducted in Edo State. The state is located in the Southern part of Nigeria in the rainforest zone. Geographically the state is accommodated between longitudes 5000 and 6,450 and latitudes 180 and 230 South Okoede-Okojie (2015) some of the internet services providers in the state MTN, Glo Airtel Etisalat Smile telecommunication companies. There are two major public agriculture research institutes in the state, namely Nigerian Institute for Oil Palm Research (RRIN).
Data were gathered by means of questionnaire validated by expert judgment; purposive sampling was used in selecting available agriculture researchers.

All the 48 researchers in RRIN were purposively selected for the study in addition to the 48 researchers which were selected from NIFOR; this gave a total of 96 respondent for the study. Frequency of ICTs use for research work by respondents was measured in a 3 point rating scale of frequently: (used ICTs for research work twice in 2 weeks to 2 months) this was score 3 not

frequent use in the range of every 3 month interval and beyond) this was scored 2, and do not use ICTs for research work" was scored 1.

A mean score of 2.0 ($3+2+1=$$^{6}/_{3}$$ = 2.0$) was taken to mean that respondent frequently use a particular ICT for research work.

Constraints limiting respondents in the use of ICTs for research work was measured in a 4 point rating scale of very serious scored 4, serious scored 3, not serious scored 2, and not a problem scored 1.

A mean score of 2.50($4 + 3 + 2 + 1 =$$^{10}/_{4}$$ = 2.50$) and above was taken that a particular constraint was serious.

Pearson product moment correlation (PPMC) was used for hypothesis testing. A null hypothesis formulated for the study is that there is no significant relationship between constraints encountered in ICTs used and Frequency of ICTs use for research by respondents.

RESULTS AND DISCUSSION

Researchers' access to ICTS in Work Place
Table 1:   Researchers' Access to ICTS

ICT	Mean	Std. Dev.
Interactive board	2.15	0.57
Computers	2.28	0.72
Electronic chats and posters	2.01	0.97
Television	2.29	0.80
Multimedia projector	2.24	0.71
Radio	2.64	0.59
Electronic slide	1.81	1.13
Video/video CD	2.72	0.70
Fax machines	2.14	0.63
Internet	1.62	0.95
GSM	2.39	1.03
Video conferencing	2.06	0.84

Source: field survey, 2019   *Mean $\geq$ 2.0 = Accessible

Table 1 shows the researchers' access to ICTS. The majority of the respondents have access to GSM (Mean = 2.39), internet (Mean = 1.62) and computers (Mean =2.28), television (Mean = 2.29), radio (Mean = 2.64) and video/video CD (Mean = 2.50). The access to these ICTs could be as a result of their education. The least accessible ICTs are electronic slide (Mean = 1.81) and video internet (Mean = 1.62). The order of access to the respondents may be a situation at work place ,where some ICTs cannot be accessed.

Frequency of use of ICTs
Table 2 shows the frequency of ICTs use by the respondents. The results shows that interment (Mean = 2.02), GSM (Mean = 2.74) and computer (Mean = 2.29) were frequently used ICT tools by researchers. However, radio (Mean = 1.08) and interactive board (Mean = 1.55) were the least used ICTs. This implies that the access to ICTs has a positive relationship with the frequency of ICT use because of the vast information gotten from internet and researchers tend to rely mostly on the internet for information.

Table 2: Frequency use of ICTs

ICT	Mean	Std. Dev
Interactive board	1.55	1.11
Computers	2.29	0.92
Electronic chats and posters	2.22	0.80
Television	2.50	0.80
Multimedia projector	1.62	0.79
Radio	1.08	0.43
Electronic slide	2.26	1.03
Video/video CD	1.66	0.87
Fax machines	1.65	1.02
Internet	2.02	1.24
GSM	2.74	0.81
Video conferencing	2.20	0.95

Source: Field survey, 2019   Mean $\geq$ 2.0 = used

It is observed that respondents have low access to electronic slide (mean 1.81) and internet mean (1.62) (Table 1) but they however frequently use these ICTs. This observation could be explained as the respondent could have no access in office/work place, they may rather frequently access in office/work place, they may rather frequently access these ICTs outside their workplace and carry out their research.

Competence in ICTS use
Table 3: Competence in ICTs use

ICT	Mean	Std. Dev.
Interactive board	2.48*	0.73
Computers	2.25*	0.36
Electronic chats and posters	2.51*	0.47
Television	2.39*	0.54
Multimedia projector	2.68*	0.43
Radio	2.30*	0.37
Electronic slide	2.53*	0.51
Video/video CD	2.51*	0.68
Fax machines	2.05*	0.52
Internet	2.32*	0.40
GSM	2.32*	0.82
Video conferencing	1.41	0.51

Source: Field survey, 2019   *high competence (Mean $\geq$ 2.0

Results presented in Table 3 shows respondents competence in the use of ICTs. The result shows that most of the respondent are competent in the use of internet (Mean = 2.32), GSM (Mean = 2.32) and computer (Mean = 2.25). This implies that the respondents can make good progress in their work and hence can understand the constraints to the use of ICTs. This agrees with the findings of Olalekan, Saturday & Saheed (2013) who reported that the spurt of ICT in the 21st century has brought dramatic changes in research activities. Abdusalam Olaifa & Frederick (2016) also found that the presence of internet is very useful for present day agriculture. Most of this researchers are literates, so they prefer to go for the contemporary this ICTS.

Constraints faced by researchers in agriculture in the use of ICT
Table 4: Constraints faced by researchers in agriculture in the use of ICT

Variable	Mean	Std. Dev.	Correlation (r)	P-value	Decision
Inadequate finance	2.87*	0.45	0.42*	0.05	s
poor internet	3.10*	0.53	0.39*	0.05	S
High cost of ICT	2.93*	0.65	-0.61**	0.05	S
Limited ICT facilities	2.91*	0.61	0.84**	0.05	S
Lack of internet regular network	2.64*	0.69	-0.43*	0.05	S
Poor management	3.22*	0.68	-0.37*	0.05	S
Lack of confidence	2.51*	0.90	0.09	0.05	NS
Lack of trained personnel	2.51*	0.69	-0.17	0.05	NS

Source: Field survey, 2019   *Serious constraints (Mean ≥2.50)
   ** Sig at 0.01 level of significance
* Sig at 0.05 level of significance

Table 4 shows constraints faced by agriculture researchers. This findings shows that the respondents are constrained by lack of internet access (mean = 3.10), poor management (mean = 3.22), high cost of ICTs and software (mean = 2.93), limited number of ICT facilities (Mean = 2.91), and poor finance and lack of funds (mean = 2.87). However, lack of confidence in operating modern ICTs and the lack of sufficiently trained computer personnel are the least constraints militating against the effective use of this ICT tools in carrying out researches by agriculture researchers with a mean of 2.51 and 2.51 respectively. This supports Table 4 that respondents are competent in the use of most ICTs

Hypothesis
There is no significant relationship between constraints encountered in ICTs use and frequency of ICTs use.

Relationship between the constraints encountered in the use of ICTs and frequency use of ICTs
The following constraints, inadequate finance (r 0.42,p 0.05), poor internet access (r 0.39, p <0.05) lack of regular network (r 0.43,p 0.05) and poor management (r -0.37,p< 0.05) were all statistically significantly related to frequency of ICTs use at 0.05 level this means that respondent are limited. While high cost of ICTs (r= -o.61: p< 0.01`), limited ICTs facilities (r=0.84; p<0.01) were at 0.01 level. The positive correlation for inadequate finance, irregular internet access, limited ICTs facilities and lack of confidence though not considerable at the critical value, indicates that the problems limit the frequency, of using ICTs for research work by the respondents; The positive sign of the constraints serving as a restriction were common to all the respondents. Negative correlation exist between high cost of ICTs, lack of regular network poor management, lack of trained personnel and frequency of ICTs use by respondents indicates that these particular constraints though negates to the solution of achieving frequent use of ICTS by respondent is are optimal problem that must be checked is not a restriction common to all the respondent, though perceived as very serious constraints. The negative sign is an indication that these constraints were are felt by particular respondents or some respondents have personal emotion from the experience of these constraint. These constraints affect the achievement of struck moral or ethical code of the performance of their research mandate.

CONCLUSION
From the forgoing the study concludes that agriculture researchers in Edo State are highly constrained were selective in their frequency use of various ICTs, are yet to have holistic access to ICT's use for research purpose, they are however competent in the use of the various ICTs except for video conferencing.

RECOMMENDATIONS
Based on findings of this study the following recommendations are made:
Concerted efforts should be made by relevant stakeholders in agriculture to strengthen agricultural extension system through quality research by address the constraints faced by researcher in the use of ICTs on their job, the Government should come up with policies to enrich and standardize the ICTs units in the research institute through:
   i. Provision of research allowance and incentive to cover ICTs access, especially those that are not presently accessed by researchers e.g. electronic slide and internet
   ii. Government and stakeholders should provide funds for procurement and maintenance of ICTs facilities
   iii. Limited ICT facilities Government should provide more ICTs facilities and measures to monitor them.
   iv. The extension personnel should be trained on how to surf or use the internet is now the quickest and fastest way of accessing information. An ICTs unit with internet facilities should be made available and staff can have access to it in the office.

REFERENCES
Albert, C. O (2014). Constraints to Effective use of Information Communication Technology (ICT) among Extension Professionals and farmers in extension delivery in Rivers State, Nigeria. *Singaporean Journal of Business Economics, and Management Studies,* 2 (11)

Abdusalam A., Olaifa, T.P & Frederick, A (2016). The complimentary role of Information Communication Technology (ICT) in agricultural knowledge management in Nigeria. *Greener Journal of Agricultural Science*, 6(2), 173-17.

Adekoya, A.E (2006). Use of Information Communication Technology (ICT) among rural people in Oyo State, Nigeria. *Journal of Applied Science*, 1:101-105

Adesoji, S. A., Farnide, A. J. & Ajayi, O.A. (2006). Determinants of training needs of fadama farmers in Osun state. *Pakistan Journal of Applied Science,* 6(15), 3082-3088.

Auvine, B, B. Densmore, M. Extrom, S. Poole & M. Shanklin. M. (2002). What do we mean by facilitation. Group Facilitation. *A Research & Applications Journal*, 4: 53-55.

Idiake-Ochei, O., Onemolease, E.A. & Ikoyo-Eweto (2016). Assessment of the Information Sources, Preferences and Perception of Agricultural Extension Personnel.

Nnadi, F., Chikaire, J., Atoma, C., Egwuonwu, & Echetama, J. (2012). Information Communication Technology (ICT) for Agriculture Knowledge Management in Nigeria: Lessons and Strategies for Improvement.

Nwankpa ,N. (2017). Sustainable Agricultural Development in Nigeria: A Way out of hunger and poverty. *European Journal of Sustainable Development*, 6(4), 175-184

Okoedo –Okojie D.U. (2015) Constraints to information and Communication Technologies Use in Adoption of integrated Pest Management among Oil Palm Farmers in Delta State Nigeria. *International Journal of Applied Environmental Science,* 10(3), 1019-1029

Olalekan, A., Saturday E & Saheed A. (2013). The Impact of Information and Communication Technology on Research Output of Scientist in Two Selected Nigerian Agricultural Research Institutes

Omotayo, O. M. (2005). "ICT and Agricultural Extension: Emerging issues in transforming agricultural technology in developing countries. Adedoyin S.F. (ED). Agricultural Extension in Nigeria, AESON, pp. 145-58.

World Bank (1996). Nigeria: poverty in the mist of plenty, the challenge of growth with inclusion, A world bank poverty assessment, Washington, D.C.

INTRA-HOUSEHOLD CONFLICT AMONG RURAL DWELLERS IN ANAOCHA LOCAL GOVERNMENT AREA OF ANAMBRA STATE

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ABSTRACT
The study assessed rural intra-household conflict in rural communities of Anaocha Local government area of Anambra State. The study assessed rural household perception of conflict with a view to capture their understanding of conflict hence making it easy to effectively assess the rural conflict trend as well as adequately addressing their peace building needs. Five out of ten towns in the Local Government Area was used for the study. Five Focused Group Discussions and In-depth interviews were used to collect data. Findings showed that intra-rural household conflict is mainly perceived among the respondents as disagreement over values, beliefs, interests and needs. It is mainly caused by lack of communication, poor understanding of roles and status, selfish interests, extended family and friends interference, economic hardship, childlessness, unresolved prior conflict, infidelity and unhealthy personality or temperament. Intra-rural household conflict effect the psychological and behavioural development of children and household sustainability as well general town development. Resolution could be achieved through better understanding of self and household members, respect for each person's role and status in the family, better knowledge of marriage/family life and family heads, kindred or village chief's intervention. Expansion in the scope of agricultural extension programme to incorporate household conflict management, more effective marriage classes by the different Christian denominations and increased social services by government and NGOs were recommended.
Keywords: intra-household; rural dwellers; conflict; causes; management; resolutions

INTRODUCTION

The changing socioeconomic, political, environmental and climatic atmosphere in Nigeria and other developing countries across the globe has continued to aggravate the living conditions of most households especially those living in the rural areas (Isaac, 2009), thus leaving households with a lot of recurrent intra-household issues to contend with. Conflict has been described from different perspectives but most times from the perspective of the area of interest in a specified context. Generally, it is seen as a disruption in the procedural process of decision making; an obstruction in the orderly process of decision making in a social system. Simon in Onyeche (2013) defined conflict as a breakdown in the standard mechanism of decision-making; so that individuals or groups experience difficulty in selecting alternatives. Coser in Onyeche (2013) looked at conflict from the industrial point of view, and defined it as any perceived divergence of interest, between groups that are involved in the direction, coordination and execution of work processes in any work organization. Ashimolowo and Otufale (2012) described conflict as fight, struggle, quarrel, a bitter argument, opposition, difference and strong case between contradictory impulses or wishes. Many authors hold the view that conflict is an inevitable occurrence in every relationship, institution or organization but the difference lies in manner and method of resolution (Agboeze, 2004; Peters, 2006; Aja, 2007)

Conflict is a dynamic process and how it is handled will determine the resulting post conflict circumstance. The World Bank, International Monetary Fund (IMF) and Organization for Economic Co-operation and Development (OECD) are beginning to recognize that conflict is one of the major obstacles to development (The causes of conflict in Africa-consultation document-March 2001). Peace and security depend on major changes in attitude within society, the rural societies inclusive Ekong (2010) defined conflict as a form of social interaction in which the actors seek to obtain scarce reward by eliminating or weakening other contenders thereby militating against community development. On the other hand, Okonkwor (2016) describes conflict within the context of family life. It explained a necessary part of healthy relationship since two people cannot be expected to agree on everything at all times hence learning how to deal with conflict rather than avoiding it is very crucial. He further explains that when conflict is mismanaged, it can harm the relationship but when handled effectively, it provides opportunity for growth and strengthening of bonds between family members. The contribution of rural households to the economy of a nation cannot be overemphasized; this is evident in their contribution to national development through various activities particularly farming. Ashimolowo and Otufale (2012) stated that for any meaningful agricultural development to take place in Nigeria, the entire farm-family structure (household) which includes the men, women and the children has to be properly coordinated and united in agricultural production activities. These rural households serve as the bedrock of rural development as most of the rural community development activities stem from the households. The households are the basics of the rural community, hence could be addressed as the basic or primary rural communities. The preliminary or first interaction of every human begins in the household, hence, the great role household socialization play in the formation of human behavior. When household members are properly nurtured with the basic and fundamental knowledge of the society, they tend to have respect for other humans, resources and the society at large. Tendencies towards social vices are reduced to the barest minimum through healthy household education. This facilitates rural development efforts as the inhabitants are better disposed to appreciate these developmental efforts as well as support them.

Rural development goes beyond infrastructural development. It involves the development of the inhabitant's intellectual, better understanding and disposition to resources and project, increased respect for and acceptance of other humans as well as public projects, improved team working spirit, better understanding of ethics and etiquette, increased appreciation and acceptance of one's strength and weaknesses. Establishing gigantic developmental projects among poorly orientated rural dwellers is one of the major reasons for vandalism, theft and neglect. Personal development is a prerequisite for rural community development. Rural dwellers will appreciate developmental efforts better when they are properly enlightened. It is against this background that this study assessed the intrahousehold conflict among rural dwellers in Anaocha local government area of Anambra state with a view to address their peace building needs and as well identify possible windows of opportunities in intrahousehold conflict hence contributing to the overall sustainable development in the rural area. The specific objectives include examining rural household perception of conflict, identifying causes of conflict among rural households, and identifying the effects and effective methods of managing and resolving conflicts among the rural households in the study area.

METHODOLOGY
Anaocha local government is one of the twenty-one local government in Anambra state. It is made up of ten towns namely: Aguluzigbo, Agulu, Neni, Ichida, Adazi-ani, Adazi-Enu, Adazi-Nnukwu, Akwaeze, Nri and Obeledu with Neni as the headquarters. Focused Group Discussions (FGD) and In-depth Interview (IDI) were used to collect data for this study. Out

of the ten towns that make up the local government area, five were randomly selected for the study. Two FGDs and five IDIs were conducted in each town giving a total of ten FGDs and twenty-five IDIs conducted for the study. The discussants in each FGD comprises of two male and female household heads (married for at least 20 years), two kindred heads, the village head, one male and female married for at most seven years and three youths between the ages of eighteen to thirteen while the IDIs were conducted for the village heads in charge of settling family disputes, village heads, town union president and key informants. These discussants were purposely selected to include people who are known to have experienced conflict in their households and as such could give relevant answers to the questions. The discussion guide focused on their perception of conflict, causes and effects and ways of managing and resolving intra-household conflict.

RESULTS AND DISCUSSION
Rural dwellers perception of intra- household conflict
Majority of the discussants perceive intrahousehold conflict to be misunderstanding between members of a household. It could be between the mother and father, father and children; mother and children, parents and children, between the biological children of the household and extended family children living with them or among children of same parents. According to them, the most common category is between father and mother. One of the discussant stated: "Even though we know that there is conflict between members of the family, the major one that is always causing big problem is the one between husband and wife who are the major custodians of the household". Conflict does not just comprise minor misunderstanding; it could take the form of fist fight, strong opposition, threats or even total annihilation. Furthermore, conflict could even be within a household member thereby making the person to exhibit irritating behavior towards other members of the family resulting to intra-household conflict.

Causes of intra-household conflict among rural dwellers in the study area
The discussants mainly opined that the causes of intra-household conflict are numerous depending on the category of conflict. Majority agreed that lack of effective communication between household members is a major cause of intrahousehold conflict in the area. Communication leads to better understanding of issues and reduces discrepancies. According to them, many households do not have time for themselves again due to increasing economic pressure, they work longer than normal during the day and come back late exhausted and tired that they could hardly chat with family members. One of the discussant had this to say:

"I remember very well in the olden days, evening times are always for family discussions. We all gathered in the front of my father's hut and discuss how our day has fared. Those that didn't carry out their responsibilities well were scolded and corrected while "papa" and "mama" will thrash out some issues after they have dismissed us to retire inside. But today those things are no longer obtainable, almost every member of my family come back late and tired. Even the little time left before they sleep, they use it to press their mobile phones"

Another major cause of intra-household conflict is the finance. The discussant pointed out that the times are hard and many of them are finding it difficult to live up to their family financial needs resulting in undue stress and deprivations which culminate to conflicts among family. According to them the income generated from their farming and other activities is hardly sufficient enough to cater for their family needs. Unfortunately, sometimes members of the family failed to understand the situation causing misunderstanding and consequent conflict. Mr. A has this to say:

"When the economy was good and I was earning enough for my family upkeep, I command a lot of respect in my family and there was peace because I met everybody's basic needs. But recently, it has not been possible for me to meet up in terms of their needs. This has resulted to insults of different manners from my family members including my wife".

Also, one of the discussants has this to say;
"The English people say that a hungry man is an angry man. Many of our women are misbehaving because their husbands cannot provide their basic needs and that of their children. Some of them in order to ensure that their households are not exterminated by hunger do very tedious work meant for men leaving them very exhausted at the end. They come back home weak and sober thereby disrupting the family peace"

In-laws and extended family members and friends interference was also listed by the discussants as one of the major causes of intra-household conflict. For some people, lack of understanding of procedural family process and their limitations and boundaries as regards their relative's families have caused a lot of chaos. One of the discussants noted that;

"There are people who naturally cannot mind their business. When you marry such person's child, you must be ready for undue interruptions because they will always want to know and even control what is happening in your family. And some of their children who are not matured enough to stand their ground yield to the influence thereby causing conflicts in their families"

One of the village chiefs added that:
"Our town is known to live a communal life. People tend to care about what happen to their neighbours and relatives and in so doing some do not know where to stop hence they cross boundaries and interfere in their relatives households"

Other causes of intra-household conflict mentioned by the discussants include; neglect of household chores and responsibilities, infidelity, poor understanding of roles and status, selfish interests, economic hardship, childlessness, unresolved prior conflict, bad habits and unhealthy personality or temperament. They noted that level of infidelity is on the increase and it is the root of many intra-household crises. According to them, once a spouse becomes unfaithful to their marital vows, other vices such as lack of respect for the spouse, neglect of household chores, selfishness etc. will set in. The village chiefs noted that over seventy percent of the household conflict cases brought to the palace was caused by infidelity. Okorocha (2001) stated that marital instability is attributed to such factors as sexual incompatibility between couples, insubordination due to equal social or economic status, age of spouses, polygamous marriage, tradition and culture. Ezea (2001) outlined the major sources of family conflict to be external interference particularly from in-laws, sexual incompatibility between couples, infertility of either of both couples, poverty especially of the bread winner, infidelity/lack of faithfulness, peer group influence, quest for women liberation, religious differences, differences in educational attainment, drunkenness and related social vices and procreation of only female children, etc. Childlessness is also noted to be one of the major causes of intra-household conflict in some cases; it is not actually childlessness but the quest for a male child. The town is a traditional Igbo setting that believes in the traditional inheritance system whereby a man's name is upheld by his male children after his death. Any man without a male child is seen as lost as there will be no continuity in the family name upon his death hence some of the names they bear like "Amaefula meaning my name should not be lost", "Uzoechina meaning my family should not be extinct".

Effects of intra-household conflict on sustainable development in the study area

The discussants agreed that the household is the basic institution for developing a child's sense of responsibility and noted that intra-household conflict disrupts this development in children thereby pumping into the society uncultured and untamed children. This according to them result to various vices and social problems in the community like public juvenile delinquency, project vandalism, alcoholism, robbery, rape, prostitution, and truancy. Problems such as rape, vandalisation of properties, robbery, etc. are caused by children from problem households. This disrupts community development efforts significantly. The psychological and physical wellbeing of members of such household whether adult or children is affected. One of the women discussants described her experience as follows;

"The day I had quarrels and incidentally fought with my husband. I was not able to come out for almost two weeks due to the pain I suffered from his beating as well as the shame I feel. Most of the maize I planted was due for harvest but due to my inability to go to farm, a large quantity was eaten up by birds"

They noted that the energy and resources which would have been spent on beneficial tasks are sometimes wasted during conflicts. In addition, they stated that intra-household conflict has ripple effect in the sense that children brought up in such homes have a greater tendency to misbehave in their own family when they have theirs. Surprisingly, some of the discussants opined that conflict could also be beneficial if handled properly. According to them, conflict brings to light or awareness, some hidden problems that can degenerate to greater ones if not handled. Also, they noted that conflict sometimes bring about change, some persons cannot take correction unless more
severe measures are taken to correct them. One of the discussants noted that;

"My wife cannot take my words seriously unless we quarrel about it. The only way to make her know am serious about a particular issue is to shout on her and this brings up quarrel between us"

They all agreed that well-handled conflict provides opportunity for growth and as well strengthen the relationship between household members

Effective methods of managing and resolving intra-household conflict in the study area

The study area according to the discussants has both individual and institutional ways of resolving conflict. The government has the customary court in place to deal with issues of household conflict but people rarely sought such services because of the fact that their kindred will regard such as a sign of disrespect to the traditional system of resolving conflict. Traditionally, when conflict arises in any household, most people first seek the intervention of their close friends or relatives, where the issue failed to be resolved by such individual arrangement, the extended family and family heads are invited. If the problem still could not be resolved, the kindred (umunna) or Umuada is invited into the case. The Umunna and Umuada are strong family institutions in the study area. Whatever they resolve in any household dispute is seen as final but where the parties do not agree to their resolution. The case is either taken to a more inclusive group comprising many traditional groups related to the parties involved such as the age grade, in-laws (ndiogo), neighbours (agbata obi) and the town union. They also noted that many people prefer to sort the intervention of the church leader's instead of the traditionally instituted groups. Furthermore, they opined that one of the facilitating factors in resolving intra-household conflict is to properly counsel the different aggrieved parties, enlightening them more on the need for peace and less self-centered actions.

This they said bring change in the individual's understanding, knowledge and attitude resulting in lasting peace when eventually the conflict is resolved.

CONCLUSION

Conflict is inevitable in any relationship. The role of conflict resolution is indispensable in the creation, maintenance and optimization of any form of relationship. It can be deduced from the study that intra-rural household conflict is majorly perceived among the respondents as disagreement over values, beliefs, interests and needs. It is mainly caused by lack of communication, poor understanding of roles and status, selfish interests, extended family and friends interference, economic hardship, childlessness, unresolved prior conflict, infidelity and unhealthy personality or temperament. Intra-rural household conflicts affect the psychological and behavioural development of children and household stability as well general town development. Resolution could be achieved through better understanding of self and household members, respect for each person's role and status in the family, better knowledge of marriage/family life and family heads, kindred or village chief's intervention.

RECOMMENDATIONS

i.   More effective marriage classes by the different Christian denominations in the area, an enhanced traditional system of marriage that could showcase the importance of peaceful family were recommended.

ii. Furthermore, agricultural extension agency may consider expansion in the scope of their services to incorporate household conflict management as this will boost their agricultural activities.

iii. In addition, government specifically the national orientation agency as well as NGOs should intensify efforts in rendering social services rather than infrastructural development.

ACKNOWLEDGMENTS

REFERENCES

Agboeze, P.C. (2004). Conflict Resolution Methods used by Nigerian Women in Settling Disputes in their homes. Sub-Department of Social work, University of Nigeria Nsukka.

Aja, A. (2007). Basic Concepts, Issues and Strategies of Peace and Conflict Resolution. Keny and Brothers Enterprise. (Nig.) Enugu.

Ashimolowo, O.R & Otufale, G.A. (2012). Assessment of domestic violence among women in Ogun State. *Greener Journal Social Sciences*, 2(3), 102 -114.

Ekong E.Ekong (2010). Rural sociology. Dove Educational Publishers. Uyo, Nigeria.

Ezea, S.O. (2001) Family Conflict in Nigeria: A case Study of Nsukka Local Government Area B.Sc Thesis, ESUT, Enugu.

Isaac B. O. (2009) Poverty and Income Diversification Among Households In Rural Nigeria: A Gender Analysis Of Livelihood Patterns, A Paper Presented At The 2nd Instituto De Estudos Sociaise Económicos (IESE) Conference On 'Dynamics of Poverty And Patterns Of Economic Accumulation In Mozambique. Maputo, Mozambique. 22-23 April, 2009

Okonkwor, A.I. (2016). Conflict resolution in marriage. Rex digital press CKC, Aba

Okorocha, N.A. (2001) Marital Instability; A Case Study of Owerri Municipal Council Imo

State   B.Sc. Thesis, ESUT,   Enugu.

Peters, I. (2006). Conflict Management, Prevention and Resolution. The Institute of Medical Research and Training, University College Hospital Ibadan.

Local   government   areas   in   Anambra   State dated   July   21,   2007; https://anambrastate.gov.ng/our-   maplgas/, accessed October 4, 2007