



## Impact of National Fadama Development Project III in Alleviating Poverty among Small-Scale Rice Farmers in Nasarawa State, Nigeria.

O.K. Ishiaku<sup>1</sup>, U. Haruna<sup>2</sup>, H.A. Danwanka<sup>3</sup> and H.R. Suleiman<sup>4</sup>

<sup>1</sup>National Agricultural Seed Council 6<sup>th</sup> Floor BOA Plaza Central District Abuja.

<sup>2&3</sup>Department Of Agricultural Economics Abubakar Tafawa Balewa University Bauchi.

<sup>3</sup>Department Of Agric And Natural Resources, Nasarawa State Local Government Commission Lafia.

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**ABSTRACT:** This paper examined the impact of National Fadama Development Project III on their socio-economic status, poverty issues and equally assesses the extent to which participation in the programme has reduce poverty among participants. The study relied primary data collected using structured questionnaire and personal interview. The analytical tools used include descriptive statistics and Foster Greer Thorbecke poverty index. The result of the analysis revealed that the per capita expenditure for participants ₦750,167.64 per annum. While that of non participants was ₦605833.57 per annum. The poverty line for the participants and non participants were ₦500,111.36 and ₦403,889.05 the poverty head count were 18.20% and 41.30%, the gap index was 10.20% and 25.90%, poverty severity index was 3.30% and 6.90% respectively. All the poverty indices showed that non participants were poorer than the participant's household in the study area. The poverty line and core poverty for participants were found to be higher than that of the non participants, indicating that the participants had better standard of living when compare with non participants, meaning the programme have positive impact on their consumption expenditure through increased in income accrued. Hence, more participants were non poor than the non participants. Therefore, federal government should as a matter of deliberate policy initiated moves towards forcing state and local government through direct deduction from statutory allocation to pay counterparts fund for sustenance of the project.

**Keywords:** Core poor, Moderately poor, Poverty incidence, Poverty gap, Poverty severity, Poverty line.

### I. INTRODUCTION

Agriculture is key for national economic growth and poverty reduction. With the share of 42.7% of the total GDP in 2003, agriculture is the largest contributor to the Nigerian economy, by far surpassing wholesale and trade (17.3%) and the oil and gas sector (17.54%). It is also the single largest contributor to the welfare of the rural poor, sustaining about 86% of rural household in Nigeria. Further, there is a significant gender dimension to agriculture too, as about 80% of the rural female populations are engaged in agricultural activities (Okoro and Ujah, 2010). NBS (2008) that, the working population data indicates that growth rate of agricultural working population seems to be the driver of the growth rate in total working population. The growth rate of agriculture working population dropped from 3.73% in 2003 to 1.94% in 2007, while that of the total working population dropped from 4.46% in 2003 to 3.22% in 2007. This suggests that agriculture holds the potentials for tackling unemployment in the country at least in the short run.

Several governments initiated programmes were aimed at improving and sustaining agricultural production. Prominent among these are; National Accelerated Food Production Programme (NAFPP) in 1972, Agricultural Development Programme (ADP) in 1975, Operation Feed the Nation (OFN) and River Basin Development Authorities (RBDAs) both in 1976, the Green Revolution (GR) in 1980 and Directorate of Food, Roads and Rural Infrastructure (DFRRI) in 1987 among others. These are in addition to financial institutions such as the Nigerian Agricultural and Credit Bank (NACB) now Bank of Agriculture (BOA) and Agricultural Credit Guarantee Scheme (ACGS) establish in 1973 and 1977 respectively. Worthy of mention also are the numerous research centres spread across the country such as the National Agricultural Research Institutes, faculties of Agriculture and Universities of Agriculture.

\*Corresponding Author: O.K. Ishiaku<sup>1</sup>

<sup>1</sup>National Agricultural Seed Council 6th Floor BOA Plaza Central District Abuja.

Adoption of rice production has been considered as a pride among small scale farmers in Nigeria because rice is considered as a high value crop. Production resources are seldom combined in proper manner by small scale farmers (Abdullsalam, et al. 1998). Taking production status of rice cultivation and ecological endowment, Nigeria could be said to have an undoubted comparative advantage for the expansion of its production as food and raw materials thereby becoming self sufficient and indeed becoming an exporter of the commodity (Idi, 2003). Most of the rice produce in Nigeria is accredited to small scale farmers. The small scale farmers operate in small distantly fragmented farm land with technical and allocative inefficiencies in the use of available farm resources (Hamidu, 2000). With the growing awareness to maximize welfare through economic development, there is need to reduce unemployment, the rapid population growth rate, and poverty among rural dwellers. Various agricultural programmes and policies have been instituted; one of such projects is the Third National Fadama Development Project. It is believed that if all the farmers are aware of the potential benefits of participating in the project, they would get involved. The study will provide information on the impact of Third National Fadama Project on the beneficiaries in the study area. The study will also bridge the knowledge gap on the socio-economic factors that could enhance economic efficiency of Fadama 111 rice farmers in Nasarawa state. Meaningful policy recommendation will be made from the findings of the study and the outcome will serve as a guide to policy makers on issues relating to financial supports for agricultural development programmes in Nigeria.

A gain, a study on the impact of fadama programme in Nasarawa State has not been conducted before now. Information available is a draft report of medium-term impact of national fadama III project in Nasarawa State by Ibrahim and Ahmed (2012) which concluded as follows:

The findings of this study suggested that a Fadama III Project has impacted on the welfare and social capital of the project beneficiaries in Nasarawa state. The results also show that Fadama III Project was effective in job creation, poverty reduction, and provision of rural infrastructures and savings mobilization in the project communities. This further illustrates the potentials of The Community Driven Development (CDD) approach to poverty reduction and community development initiatives. A lot more can still be achieved within the remaining life span of the project by strengthening the process of implementation, conduct of more monitoring and evaluation visits and hastening of fund disbursement for sub project activities. For sustainability of the project impact beyond Fadama III, Local Government Councils need to provide support to Fadama communities especially in the provision of rural infrastructures. The findings of this study suggested that a Fadama III Project has impacted on the welfare and social capital of the project beneficiaries in Nasarawa state. The results also show that Fadama III Project was effective in job creation, poverty reduction, and provision of rural infrastructures and savings mobilization in the project communities. nters and markets are very critical in strengthening the FUGs and FCAs. To ensure the financial sustainability of FUGs and FCAs beyond Fadama III, it is imperative that savings into the Fadama Users Equity Funds (FUEF) be increased. Most importantly, it is very vital that sub project supervision by external bodies be conducted at various stages of sub project implementations for the purpose of continuity and to ensure proper mobilization and allocation of project funds. The broad objective of the study is to asses' s the impact of National Fadama Development project III on poverty reduction among small scale rice farmers in Nasarawa state, Nigeria.

Specifically the study intends to;

- i. describe the socio-economic characteristics of Fadama III rice farmers in the study area.
- ii. determine the effect of fadama III on farm income and output.
- iii. determine the poverty status of rice farmers in the area of study.

## **II. METHODOLOGY**

### **The Study Area**

Nasarawa state as described by Nasarawa state Economic Empowerment and Development Strategy (NASEEDS), Drafting Committee (2006). The area, which is known as Nasarawa state, was formally a geographical unit under Benue and Plateau provinces of northern Nigeria, with a clamour for the creation of more states in Nigeria; Nasarawa state was eventually carved out of plateau state by the General Sani Abacha led military government, October, 1 1996. The state is located in the middle belt zone of the country. It lies between latitude 7° and 9° North and longitude 7° and 10° East, and shares common boundaries with Benue state to the South, Kogi state to the West, the federal capital territory (FCT), Abuja, to the North West, Kaduna and plateau states to the North East, and Taraba state to the south East. The state has a climate typical of the tropical zone, because of its location. Its climate is quite pleasant: A mean temperature of 60° F and 80° F maximum have been recorded while rainfall varies from 313.73cm in some places to 145cm in other areas. The month of December, January and February are cold (sometimes quite cold) due to the very dry harmattan winds blowing across the state from the North-East. It is characterized by two distinct seasons: dry and wet. The dry season

start from November to February, while the rainy season is from March to October. Average daily sunshine in the state is 6.2 hours and average daily vapour pressure is 26hpg.

The physical features of the state are largely mountainous. It covers very large area of the state, much of which are rocky and of undulating highlands to average height of about 1,400m above sea level. The coastline of river Benue and its trough created alluvial fertile soil, which is very good for crop production. Other smaller rivers cover most parts of the state and empty into the river Benue. The sediments are generally comprised of sandstones, siltstones and subordinate inter-bedded clays all of cretaceous age. Alluvial soils are found along the Benue trough and their flood plains. These are always swampy in nature due to availability of water all the year round. The forest soil, which are rich in humus, and laterite soils are found in most parts of the state. The 1991 census put the state's population at 1.2million. The state's population by 2003, estimated at the national average growth rate of 2.83% per annum, is projected to 2.0million. However, with the influx of people particularly into Karu and Keffi LGAs, due to their proximity to the federal capital territory, Abuja, as well as into Lafia, being the state capital, places the current estimated population of the state at 2,040,097 (NPC, 2006). Males constitute 51% and females 49% of the population. Over 80% of the people of the state are subsistence farmers and live in rural areas. Major crops suitable to the state ecological conditions are rice, sesame, soya beans, groundnut, cassava, yam, maize, cashew, sorghum, melon, mangoes, citrus and vegetables. There is an estimated water surface area of over 5,645 square kilometer and favourable climatic conditions for the fish industry.

**Population and Sampling Procedure**

The target population for the study is the Fadama III participating and non participating rice farmers in Nasarawa state, the state was stratified according to the three agricultural zones (south, north and west). The sampling procedure comprise of a two stage sampling procedure. The first stage involve random selection of two local government areas from each agricultural zones noted for intensive production of rice from the thirteen local government areas participating in the Fadama III project, for sample reliability one more local was selected giving a total number of seven local government areas. The seven local government areas noted for intensive production of rice sampled during preliminary survey were southern zone (Lafia, Doma and Awe), Northern zone (Nasarawa Eggon and Kokona) and Western zone (Karu and Toto). Stage two; from the 100 registered Fadama III rice farmers group (see appendix) in the seven local government areas with 1589 participating rice farmers, 700 participating Fadama III rice farmers were selected for the study by simple random sampling technique. A proportionality factor was use to determine the number of participating rice farmers from each local government area. As in table 1, the proportionality factor is specified as;

$$n = nL / NL * 700 \text{ ----- (1)}$$

Where

n = Sample size per local government area.

nL = Number of Fadama users group members per local government that are into rice farming.

NL = Total number of Fadama users group members that are into rice farming.

**Table 1: Number of Participating Fadama rice Farmers to be Sampled.**

| LGA            | Number of Registered FUG into Rice Production. | Number of Registered members into Rice Production. | Number of Fadama Rice Farmers to be Sampled. |
|----------------|--|--|--|
| Lafia          | 20   | 321  | 141  |
| Awe            | 26   | 638  | 281  |
| Nasarawa Eggon | 9  | 172  | 76   |
| Kokona         | 10   | 188  | 83   |
| Karu           | 3  | 56   | 24   |
| Toto           | 8  | 181  | 80   |
| Doma           | 2  | 33   | 15   |
| <b>Total</b>   | <b>78</b>                                      | <b>1589</b>  | <b>700</b>                                   |

**Source:** preliminary Survey, 2016

From the 1400 questionnaires distributed for participating and non participating rice farmers 1200 were returned, 600 for participating and 600 for none participating.

**Data Collection Techniques**

Primary data were collected with the aid of questionnaires which was administered by the researcher as well as trained enumerators (seven facilitators of the Nasarawa state Fadama III project). The pre- test of the questionnaires and actual data collection was done in the dry season, that is, between November and December; and between January to April respectively. The data collected covered farmers' socio economic and crop production variables.

The socio economic variables will include age, level of education, farm size, house hold size, house hold members engaged in rice farm and farming experience. Data on inputs and outputs as well as their current market prices were collected. Sizes of farmers’ field were determined by stepping method to estimate the dimensions where there is no record. The unit of measurement is hectares. Information on labour use were collected throughout the study period; the labour requirement for various farm operations were gauge and also evaluated, the relative contribution of family and hired labour. Each workers age and genders were noted. Mandays equivalence was calculated using Norman (1973) conversion table. Quantities of seed, fertilizer and herbicide used were measured; in kilograms for seed and fertilizer and litre for herbicide. These inputs were estimated at the prevailing market price. Fixed inputs of matchet, sprayers and wheel barrow were taken and depreciation charged assuming a useful life of 10 years, using straight line method of calculating depreciation.

Total farm output were obtained by recording the amount harvested in each farm during the harvesting period. The outputs were estimated by multiplying the unit sales of price obtained from the farmers and/or local markets by the quantity of total farm output. Estimates of household consumption were determined and estimated. Also secondary data were sourced from the Nasarawa state fadama development office NFDO. Annual report and periodic evaluation papers on the project publication on the subject matter relating to the study were sorted.

**Variables and Model Specification.**

To analyze the socio-economic characteristic of respondents in the study area; percentage, frequency distribution and t-test were employed. The differences of means in income and output of the participating and non-participating rice farmers were computed to test for significant difference.

The Model

$$Z = \frac{\mu_1 - \mu_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}} \quad (2)$$

**Variables’ Measurement**

- i.  $\mu_1$ = Mean parameters of participating fadama rice farmers in the study area.
- ii.  $\mu_2$ = Mean parameters of non-participating fadama rice farmers in the study area.
- iii.  $\sigma_1^2$ = Variance of parameters of participating fadama rice farmers in the study area.
- iv.  $\sigma_2^2$ = Variance of parameters of non-participating fadama rice farmers in the study area.
- v.  $n_1$ = Number of participating fadama III rice farmers sampled in the study area.
- vi.  $n_2$ = Number of non-participating fadama rice farmers sampled in the study area.
- vii. Z= Test statistics to be used for the study.

To estimate the level of poverty incidence, depth and severity among participating and non participating fadama III rice farmers in the study area.

**The Model**

The model that is applied to this study had been previously used by Eze and Nwachukwu (2010); employed a mathematical model developed by Foster, Greer and Thorbecke (1984), known as the FGT model of poverty decomposition. This was adopted to determine the incidence, depth and severity of poverty in the study area. Poverty line will be calculated on the basis of mean data on household expenditure.

**Measuring the Poverty Status of the Respondents.**

The respondents’ per capita expenditure will be used in classifying non poor, poor and core poor;

- Non poor: These are farmers whose per capita expenditure is above two-third of the poverty line i.e  $NP > 2/3$  of the mean expenditure.
- Poor: These are farmers whose expenditure is below the poverty line i.e  $P < 2/3$  of the mean expenditure.
- Core poor: These are farmers whose expenditure is below one-third of the mean expenditure poverty line i.e  $P < 1/3$  of the mean expenditure

The poverty lines were set at 2/3 and 1/3 of the mean expenditure (World Bank, 2000).

The FGT measures, which is an approach to absolute poverty is express as;

$$P_\alpha = \frac{1}{n} \sum_{t=1}^q \frac{[z - Y_t]^\alpha}{z} \quad \alpha \geq 0 \quad (3)$$

**Variables' Description and Measurement.**

- i. n; Total number of farmers in each group.
- ii. q; the total number of farmers below the poverty line.
- iii. Z; poverty line (Mean expenditure of farmers).
- iv. Y; the per capita expenditure of household
- v.  $\sum_{i=1}^q Y_i$  in the individual group (the sum was taken only on those individuals who are poor).
- vi. Z – Y; gap between poverty line and the income for each poor individual (representing the depth of poverty, is the mean distant separating the population from the poverty line with non poor given a distance at zero).
- vii.  $\alpha$ ; the degree of concern for the depth of poverty, it takes on the value of 0, 1 and 2 for poverty incidence, poverty gap and severity respectively.

Therefore,

When  $\alpha = 0$

$$P_0 = \frac{1}{n} \sum_{i=1}^q \frac{[z - Y_i]^0}{Z} \text{-----(4)}$$

When  $\alpha = 1$

$$P_1 = \frac{1}{n} \sum_{i=1}^q \frac{[z - Y_i]^1}{Z} \text{-----(5)}$$

When  $\alpha = 2$

$$P_2 = \frac{1}{n} \sum_{i=1}^q \frac{[z - Y_i]^2}{Z} \text{-----(6)}$$

**III. RESULTS AND DISCUSSION**

**Socio-economic Characteristics of Respondents.**

Age is an important factor that affects agricultural activities of individuals. The comparison of the age distribution of participants and non participants is shown in Table 1. It shows that most of participants (76.31%) fall within the age bracket of 30-49 years while most (77.66%) of non participants fall within the age bracket of 30-49 years. Age range of less than 20years has 6.17% (37). The minimum age for participants and non participants were 18 years and 17 years respectively and their maximum age was found to be 70 years for both groups. However, inspite of the variability of age distribution between the two groups, no significant difference was observed between the mean age of participants (48years) and that of non participants (49years). This therefore shows that majority of the two groups are within their economically productive age (15-64 years). The finding affirms the claim of [1], who stated that, the farmers' average of 47.5 years and 48.8 years are still within a productive and active working age range, hence their ability to participate or produce to earn some revenue in the fadama project in the study area. The distribution of respondents according to years of experience in rice farming, the results showed years of farming experience favours non participating group. The non participants category have largest group of the respondents 430 (71.67%) having 1-10 years of farming experience, 170 (28.33%) of them have more than 11 years of farming experience. In the participants category 1-10years of farming experience have the largest (408) number of respondents. Significant difference was found between the mean years of farming experience of participant category (8.76) and that of non participants' category (8.27). This finding implied that non participating farmers were more experience in rice farming as such could manage risk better than the participating farmers. The longer experience in rice production by non participating farmers may also imply better production efficiency. However, due to input supply and close supervision and monitoring by fadama officials, the influence of farming experience may not manifest in participants productivity.

There is a similarity in household size distribution pattern of the respondents. Household with 1-10 persons constitutes the majority for both participant and non participant categories with 393 (65.50%) and 413 (68.83%) respectively. This is followed by household size with 11-20 persons with 148(24.67) and 100(16.67) for participants and non participants respectively. The next range is 21-30 persons and has 36 (6.99%) of participants and 60 (10.00%) of non participants. The least group is that of 40 and above with only 23 (3.83%) of participants and 27(4.50%) of non participants. The similarity in distribution of this parameter result in having no significant difference in the mean household size of participants 9 and that of non participants 10. This mean household size is in agreement with those of [2] for maize producer in Kaduna state 9 persons. [3], for sorghum producers in Zaria L.G.A. Kebbi state 9 persons. This large household size of both groups suggested the polygamous nature of families in the study area. The result also implied the availability of family labour among both groups. Larger household size was seen as synonymous to availability of family labour

which sometimes can lead to over utilization of family labour input in production process [4]. The importance of education towards boosting the efficiency and effectiveness of farming enterprise cannot be overemphasized. This is because it is what enables the farmers to be competitive, more efficient, more responsive to consumer demands and able to adopt new technologies easily. The participants categories were found to be more educated having 166(27.69%) of them with tertiary education, 156(26.15%) with secondary education and 111(18.46%) having primary education. However, four of them have no any form of education. The non participants' category also has appreciable level of literacy, though not as that of participants. The result revealed that tertiary, secondary and primary levels of education were attained by 18(3.08%), 111(18.46%) and 156(26.15%) of non participants respectively. The result of t-statistic showed a significant difference between the educational levels of participants' and non participants' categories. This implied that educated people have ease to programme participation than uneducated ones in the study area. This result is in line with [5] who maintained that education is an essential element in all human endeavors. The educational level of a farmer helps him or her in making rational decision regarding efficient production method, sales of farm produce, inputs utilization, enterprise selection and even access to fadama project grant or fund.

The marital status of the two categories of respondents; the result showed that married farmers forms the majority in both participants (545) and non participants (563) categories, constituting about 90.77% and 93.85% respectively. The result indicated a higher degree of responsibilities in both the groups and hence they are capable of taking rational decisions. Married people were found to be more involved in agricultural production so as take care of their dependents [6].

**Table 2. Socio-economic Characteristics of Respondents**

| Variables                             | Participants    | Non Participants | t-test            |
|---------------------------------------|-----------------|------------------|-------------------|
| Age (years) < 20                      | 37(6.17)        | 23(3.83)         | 1.6 <sup>NS</sup> |
| 20-29                                 | 78(13.00)       | 28(11.83)        |                   |
| 30-39                                 | 223(37.17)      | 230(58.33)       |                   |
| 40-49                                 | 236(39.33)      | 236(39.33)       |                   |
| >50                                   | 26(4.33)        | 40(6.67)         |                   |
| <b>Total</b>                          | <b>600(100)</b> | <b>600(100)</b>  |                   |
| <b>Mean</b>                           | <b>48</b>       | <b>49</b>        |                   |
| Farming experience 1-10               | 405(67.50)      | 430(71.67)       | <b>1.93*</b>      |
| 11-20                                 | 174(32.33)      | 168(28.00)       |                   |
| >20                                   | 1(0.17)         | 2(0.33)          |                   |
| <b>Total</b>                          | <b>600(100)</b> | <b>600(100)</b>  |                   |
| <b>Mean</b>                           | <b>8.76</b>     | <b>8.27</b>      |                   |
| Household Size 1-10                   | 393(65.50)      | 413(68.83)       | 0.63*             |
| 11-20                                 | 148(24.67)      | 100(16.67)       |                   |
| 21-30                                 | 36(6.00)        | 60(10.00)        |                   |
| >30                                   | 23(3.83)        | 27(4.50)         |                   |
| <b>Total</b>                          | <b>600(100)</b> | <b>600(100)</b>  |                   |
| <b>Mean</b>                           | <b>9</b>        | <b>10</b>        |                   |
| Educational level - Never been school | 37(6.15)        | 240(40.00)       | <b>4.75***</b>    |
| Primary education                     | 111(18.46)      | 156(26.15)       |                   |
| Secondary education                   | 156(26.15)      | 111(18.46)       |                   |
| Tertiary education                    | 166(27.69)      | 18(3.08)         |                   |
| Arabic education                      | 55(9.23)        | 28(4.62)         |                   |
| Adult education                       | 74(12.33)       | 46(7.69)         |                   |
| <b>Total</b>                          | <b>600(100)</b> | <b>600(100)</b>  |                   |
| Marital status Single                 | 28(4.61)        | 9(1.54)          |                   |
| Married                               | 545(90.77)      | 563(93.85)       |                   |
| Widow                                 | 19(3.08)        | 28(4.61)         |                   |
| Divorced                              | 9(1.54)         | 0(0.00)          |                   |
| <b>Total</b>                          | <b>600(100)</b> | <b>600(100)</b>  |                   |

**Note:** Values in bracket are percentage of the total.

\* Significant at P<0.10; \*\* Significant at P<0.05; \*\*\* Significant at P<0.01

**Source:** Field Survey, 2016.

**Poverty issues of respondents.**

The table presents indicators such as daily feeding, source of drinking water, place of medical treatment and time taken to trek to medical treatment. Table 2 daily feeding, the result shows that 31.67 percent, 40.00 percent, and 28.33 percent of non participating Fadama III rice farmers feed their families daily with one meal, two meals, and three meals respectively. The result also shows that 17.50 percent, 33.50 percent and 49.00 percent of participating Fadama III rice farmers feed their families daily with one meal, two meals, and three meals respectively. The participating farmers feed their families three with a larger percent of 49.00 while non participants having 28.33 percent feed their families three times daily. Reasons given by the two groups of farmers for not feeding their families promptly were high cost of food items, inflationary rate; children school

fees, high cost of living and global economic recession. Distribution of respondents based on average minutes of trekking to get drinking water for non participants shows that 49.83 percent, 27.83 percent and 16.00 percent trek 10 minutes, 5 minutes and 30 minutes respectively while 50.67 percent, 31.33 percent and 12.67 percent of participants trek 5 minutes, 10 minutes and 30 minutes respectively. The respondents state reasons for long distance to get drinking water as inability to have pipe and borehole close to residence and low income earning. The result showed that others type of house other than single room, room and parlour, two rooms and parlour and three rooms and parlour apartment have 334(55.67%) and 401(66.83%) for participants and non participants respectively. The reasons given by respondents for their inability to own such apartments were low income earning, high cost of building materials, family size and children school fees. The distribution of respondents according to place of medical treatment; the result revealed that most participants 207(34.50%) received their medical treatment at government hospital, which is closely followed by 197(32.83%) who engaged in self medication, while most non participants 206(34.33%) engaged in traditional herbs, followed by 187(31.17%) received their treatment at government hospital. The distribution of respondents based on time taken to trek to the nearest medical centre. Most participants 277(46.17%) spent 20-30 minutes to trek to the nearest medical facilities, while most non participants 317(52.84%) spent 30minutes to 1hour to trek to the nearest medical center. Indicating non participants spent more time to reach the nearest medical centre, resulting in more distance trekking than the participants. The distribution of respondents based on time taken to trek to the nearest medical centre. Most participants 277(46.17%) spent 20-30 minutes to trek to the nearest medical facilities, while most non participants 317(52.84%) spent 30minutes to 1hour to trek to the nearest medical center. Indicating non participants spent more time to reach the nearest medical centre, resulting in more distance trekking than the participants.

**Table. 3** Poverty Issues of Respondents.

| Variables                       | Participants    | Non Participants |
|---------------------------------|-----------------|------------------|
| Daily feeding (No of times)     |                 |                  |
| 1 time                          | 105(17.50)      | 190(31.67)       |
| 2 times                         | 201(33.50)      | 240(40.00)       |
| 3 times                         | 294(49.00)      | 170(28.33)       |
| <b>Total</b>                    | <b>600(100)</b> | <b>600(100)</b>  |
| Trekking to get drinking water- |                 |                  |
| 5 minutes                       | 191(31.83)      | 167(27.83)       |
| 10 minutes                      | 304(50.67)      | 299(49.83)       |
| 20 minutes                      | 29(4.83)        | 38(6.33)         |
| 30 minutes                      | 76(12.67)       | 96(16.00)        |
| >1 hour                         | 0(0.00)         | 0(0.00)          |
| <b>Total</b>                    | <b>600(100)</b> | <b>600(100)</b>  |
| Type of house own –             |                 |                  |
| Single room                     | 47(7.83)        | 36(6.00)         |
| Room & parlour                  | 104(17.33)      | 85(14.17)        |
| Two rooms & parlour             | 50(8.33)        | 40(6.67)         |
| Three rooms & parlour           | 65(10.83)       | 38(6.33)         |
| Others                          | 334(55.67)      | 401(66.83)       |
| <b>Total</b>                    | <b>600(100)</b> | <b>600(100)</b>  |
| Place of medical treatment-     |                 |                  |
| Traditional                     | 86(14.33)       | 206(34.33)       |
| Self medication                 | 197(32.83)      | 107(17.83)       |
| Medicine store                  | 106(17.67)      | 98(16.33)        |
| Govt hospitals                  | 207(34.50)      | 187(31.17)       |
| Private clinic                  | 4(0.67)         | 2(0.33)          |
| <b>Total</b>                    | <b>600(100)</b> | <b>600(100)</b>  |
| Distance to medical place-      |                 |                  |
| 5 minutes                       | 38(6.33)        | 41(6.83)         |
| 10 minutes                      | 79(13.17)       | 68(11.33)        |
| 20 minutes                      | 126(21.00)      | 131(21.83)       |
| 30 minutes                      | 151(25.17)      | 148(24.67)       |
| 1 hour                          | 181(30.17)      | 169(28.17)       |
| >1 hour                         | 25(4.17)        | 43(7.17)         |
| <b>Total</b>                    | <b>600(100)</b> | <b>600(100)</b>  |

**Note:** Values in bracket are percentage of the total.

**Source:** Field Survey, 2016.

### **Evaluation of Annual Household Expenditures and Poverty Line**

The respondents' annual household expenditure is presented in table 4. The result were use to determine the poverty line of participants and non participants in the study area. A mean expenditure of ₦750,167.04 and ₦605,833.57 were determine for participants and non participants respectively. The respondents were classified into one exclusive group separated by the line either as core poor, moderately poor and non poor. Based on the mean expenditure, a poverty line of ₦500,111.36 and ₦403,889.05 were obtained for participants and non participants respectively. Also core poverty line of ₦250,005.68 and ₦201,944.52 were obtained for participants and non participants. The poverty line and core poverty for participants were found to be higher than that of the non participants, indicating that the participants had better standard of living when

compare with non participants, meaning the programme have positive impact on their consumption expenditure through increased in income accrued. This is evident in the net income, where the participants had higher had higher net farm income. This finding agree with that of [7] in their study of micro level impact of national fadama II project on rural poverty in Imo state, Nigeria. A higher poverty line was obtained (₦12,925 and ₦7,908) were obtained for participants and non participants respectively. The study contradict that of [8] the non participants had a higher poverty line compare to that participants, arguing that, the it is because the participants were drawn from the poorest of the poor in the study area.

**Table 4.** Distribution of Respondents by Annual Household Expenditures (Purchase and Non Purchase; Staple and non Staple Food Consumption.

| Expenditure       | Participants | Non Participants |
|-------------------|--------------|------------------|
| 200,000-300,000   | 12(2.00)     | 141(23.50)       |
| 300,001-400,000   | 17(2.83)     | 107(17.83)       |
| 400,001-500,000   | 40 (6.62)    | 33(5.50)         |
| 500,001-600,000   | 104(17.33)   | 00(0.00)         |
| 600,001-700,000   | 96(16.00)    | 90(15.00)        |
| 700,001-800,000   | 68(11.33)    | 57(9.50)         |
| 800,001-900,000   | 40(6.67)     | 58(9.67)         |
| 900,001-1,000,000 | 89(14.83)    | 38(6.33)         |
| >1,000,0000       | 134(22.33)   | 86(14.33)        |
| Total             | 600(100)     | 600(100)         |

Mean                                750,167.04                                605,833.57  
 Poverty line                                500,111.36                                403,889.05  
 Core poor                                250,005.68                                201,944.52

t-Value. 2.4345\*\*\*

Note: Values in bracket are percentage of the total.

\*\*\*Significant at P<0.01

Source: Field Survey, 2016.

**Poverty Status of Respondents Based on Poverty Line**

Table 5 shows that most (81.83%) of the participants were non poor, while (58.67%) were recorded for non participants. Hence, more participants were non poor than the non participants. This suggests that, the resources, capacity building training and services provided on the use of farm inputs by fadama III project have go long way in improving their standard of living and thereby brought them out of core poverty or moderately poor level of poverty to non poor level. This is evident in the percentage of participants who were core poor (1.33%), which is lower than that of the non participants (7.17%).

**Table 5:** Poverty status of respondents based on poverty line

|                  | Non poor   | Moderately poor | Core poor |
|------------------|------------|-----------------|-----------|
| Participants     | 491(81.83) | 111(16.83)      | 8(1.33)   |
| Non participants | 352(58.67) | 205(34.17)      | 43(7.17)  |

Data analysis, 2016.

**Measure of Poverty**

Table 6 is a measure of poverty using the Forster-Greer-Thorbecke (FGT) indices. The result reveals that, with a poverty line of ₦500,111.36 for fadama III participants, the incidence of poverty or poverty head count was 0.182, while that of the non participants poverty line of ₦403,889.05 and poverty incidence of 0.413 were recorded. These were the proportion of both groups of farmers that could not satisfy their staple food and non staple food expenditure, the value indicated that 18.20% of the participants and 41.30% of non participants' household in the study area were below the poverty line and were relatively consumption poor. The result on poverty gap implies that the poor fadama III rice farmers requires 10.20% of the poverty line to get out poverty, while the poor non participants requires 25.90% of their poverty line to get out poverty. These amount ₦51,011.36 and ₦104,607.26 is require to bridge the gap for participants and non participants respectively. The poverty severity index was 0.033 for participants and 0.067 for non participants, this indicate that poverty is not so severe in the study area. The finding agree with [9] which indicated that poverty incidence was 0.300 and 0,5536; poverty gap was 0.700 and 0.2928; poverty severity was 0.0300 and 0.1979 for salary and self employed respectively. While the work of [10] contradicted this study, indicating incidence was 0.20; gap was 0,03 and severity was 0.004.



**Table 6:** the P-alpha measures of poverty (Forster-Greer-Thorbeoke (FGT) indices.

| Poverty indicators    | Participants | Non participants |
|-----------------------|--------------|------------------|
| Incidence of poverty% | 0.182        | 0.413            |
| Poverty gap (depth)%  | 0.102        | 0.259            |
| Severity of poverty%  | 0.033        | 0.069            |

Data analysis, 2016.

#### IV. CONCLUSION AND RECOMMENDATION

The poverty line and core poverty for participants were found to be higher than that of the non participants, indicating that the participants had better standard of living when compare with non participants, meaning the programme have positive impact on their consumption expenditure through increased in income accrued. Hence, more participants were non poor than the non participants. This suggests that, the resources, capacity building training and services provided on the use of farm inputs by fadama III project have go long way in improving their standard of living and thereby brought them out of core poverty or moderately poor level of poverty to non poor level.

There is also need for fadama III participants to have access to credit, as financial assistance from fadama project cannot meet their demand for inputs. The federal government should as a matter of deliberate policy initiated moves towards forcing state and local government through direct deduction from statutory allocation to pay counterparts fund for sustenance of the project. The basis of the poverty indices of the participants, the scope of subsequent phases and disbursement should be enlarged to accommodate more willing rice farmers and ensuring that non participants are incorporated.

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