



## EFFECTS OF FADAMA III COMMUNITY INFRASTRUCTURE PROVISION ON INCOME OF MEMBERS OF FADAMA USER GROUPS (FUGS) IN ANAMBRA STATE, NIGERIA

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### ABSTRACT

The study determined the effect of Fadama III community infrastructure on income of members of Fadama User Groups FUGs in Anambra State. The specific objectives of the study addressed the influence of rural market, processing facilities, water borehole and credit support facilities on income of members of FUGs in Anambra State. A sample size of 375 beneficiaries was drawn from a rural community in the state. A structured Questionnaire administered was administered to respondents. Regression analysis was used to determine the influence of community infrastructure (Rural markets, borehole, processing facilities and credit support) on members of Fadama User Group's income. Findings revealed that Fadama III Community Infrastructure had significant and positive influence on the income of members of Fadama User Groups. The *f*-ratio of 5.50 was significant at 1% level. This implies that the independent variable (rural market, water borehole processing facilities and credit) had a substantial influence on the dependent variable (income). Equally, the *t*-statistics of coefficient of all independent variables was significant at 1% level. *T*-values (2.655, 1.105, 1.936 and 2.057) were all significant at 1% level. The null hypotheses were all rejected and alternate hypotheses were all accepted, which implied that rural market, water borehole, processing facilities and credit support have a significant influence on the income of FUG members. The rural market had the most significant influence on the income of Fadama User Groups. In view of the findings, the research recommended that the project should be replicated in other states that have not benefited and that rural communities should be effectively mobilized to join FUGs to take advantage of the programme where there is the absence of community infrastructure

**Keywords:** Fadama, Community, Infrastructure, Income.

### INTRODUCTION

Nigeria is plagued with the problems of under development, uneven distribution of resources and incomes, low productivity, food insecurity, poor public infrastructure, among others (Ekong, 2003).

FAO statistics on the profile of rural development in Nigeria shows that 70% of Nigerians live in rural areas, 73% of the poor people are rural dwellers, and 95% are extremely poor, living below poverty line. Nigeria is thus categorized as low income, food deficit country (FAO, 2012). Similarly, FMARD (2001) reported that Nigeria's rural communities are characterized by the following; Lack of portable water and, the prevalence of water borne disease, low income and employment opportunities, poor access roads and means of transportation, malnutrition and under-nutrition, poor shelter, health, educational facilities with prevalence of environmental and ecological hazards such as desertification and erosion. Economists generally agree that a major way to break the prevailing cycle of poverty is through an efficient infusion of capital and adequate infrastructure facility. According to Olayiwola and Adeleye (2005), infrastructural facilities refer to those basic services without which primary, secondary and tertiary productive activities cannot function. Broadly, this includes all public services like transportation, water supply and communication. Developed Countries of the world ensure the provision of infrastructure to improve the livelihoods of their citizens and their quality of life (Khoza, 2009). Infrastructure is seen as an

umbrella term for many activities and basic structure and facilities necessary for a country to function efficiently. It is designed as the totality of basic physical facility upon which all other economic activities in a system depend.

Rural infrastructure, according to Abumere (2002), is the system of the physical, human and institutional form of capital which enables rural residents to perform better in their production, processing and distribution activities, as well as help improve the overall quality of life. The talk of transforming rural-Nigeria has remained the focus of successive governments in recent years. Rural transformation in Nigeria has become imperative in view of the fact that rural Nigeria constitutes the largest percentage of the Nigerian society.

Government over the years has introduced programmes meant to improve the infrastructural facilities towards increasing agricultural productivity and income of farmers. Prominent among them are; Directorate of Food, Rural Road and Infrastructure (DFRRI), River Basin Development Authority (RBDA) and National Agricultural Land Development Authority (NALDA). In spite of the above efforts, infrastructural developments in rural place suffered a long set back. Top-down planning approach was mostly used to implement development programmes, particularly infrastructure, which had negative impact. This had mainly led to the development and execution of infrastructure that failed to match the needs of community (Idachaba 2006).

The design of National Fadama Development Projects (NFDP), was thus a strategic response by the stakeholders to alleviate the aforementioned problems among rural dwellers. The project has been in phases NFDP I, NFDP II and NFDP III. The success recorded in the Fadama phase I and II by participating States culminated in the third phase of the National Fadama Development Project (NFDP III). Fadama III has 6 components, and they include; Capacity building, local governance and communication, Small-scale community-owned infrastructure, Advisory service and input support development, Support to the Agricultural Development Programmes, (ADPs) sponsored research and on-farm demonstrations, Asset acquisition for individual Fadama Users Groups (FUGs)/Economic interests and Project management, monitoring and evaluation The Development objective of National Fadama Development Programme (NFDP III) is to sustainably increase in the income of farmers and other economic groups and to empower communities (World Bank 2004). The project is anchored on Community-Driven Development (CDD) approach which gives the control of resources and decisions to the benefiting members of Fadama User Groups. The project is being funded by World Bank, FGN, State Government, local government councils and the benefiting cooperatives. This is a credit to Federal Government but grants to States and benefiting communities (World Bank, 2009). The provision of efficient infrastructure is now widely recognized as indispensable to agricultural process as it is a known fact that infrastructure can support economic growth, reduce poverty and make development sustainable (Fakayode, 2008). Though rural infrastructure serves as catalyst for development and income generation, most of them in Nigeria are either not available or in deplorable conditions and this militates against the prospects of better living standards, employment, income and other forms of economic activities (Ale, Abisuwa and Ologinagha, 2011). For example, before Fadama III interventions, there were deplorable conditions of rural markets in the study area for evacuation of agricultural produce, the absence of market leads to perishability of agricultural produce, which eventually leads to damages and mostly reduces price of agricultural produce. Also, transportation cost of travelling long distance looking for available market for sales was high. This equally encourages consuming all that is produced and discourages production for commercial purposes. This has led to loss of income of farmers in Anambra state. There was no availability of borehole facilities in the area to support agricultural and other related activities. Most of the farmers in the area cultivate cassava and rice. They lack processing mills Majority of

them travel long distance looking for processing mills, which waste time and money Basically, failure to process farm produce adds little or nothing to the value and price of the produce. Ahmed (2013) reported that post-harvest losses were making Nigerian farmers poor. Farmers find it difficult to procure farm input (seedlings, fertilizers. Etc), which adversely affects their income. Whereas Chizari and Zare (2000) stressed that effect of credit on agricultural production is positive and significant, Limao and Venables (1999), cited in Inoni and Omotor (2009) observed that poor infrastructural facilities were responsible for poor productivity in agriculture which affects farmers' income negatively. These have been prevalent in the agricultural areas in Anambra State. Despite the recent success in addressing the state of infrastructure through Fadama I and Fadama II projects, much more remains to be done to improve the existing low level of infrastructure and services. The operation of Fadama III is designed to allow communities to identify and act on their most urgent needs of infrastructure, thereby impacting positively on income of rural dwellers. The issues indeed raised our interest to investigate the state of establishment of infrastructure that will boost income of FUG members in Anambra State.

The broad objective of the study was to ascertain the effect of Fadama III community infrastructure on the income of Members of Fadama User Groups (FUGs) in Anambra state. The specific objectives were to:

- i. ascertain the Fadama III Community infrastructure executed by FUGS members
- ii. determine the influence of rural markets on the income of members;
- iii. examine the influence of rural borehole on the income of members;
- iv. identify the influence of cassava processing facilities on the income of members; and,
- v. ascertain the influence of credit support on the income of member

#### **Hypotheses of the study**

- H<sub>0</sub>1 The establishment of rural markets has no significant influence on the income of FUGs members.
- H<sub>0</sub>2 The provision of water borehole has no significant influence on income of FUGs members.
- H<sub>0</sub>3 The provision of cassava processing facilities has no significant influence on income of FUGs members
- H<sub>0</sub>4 Credit support facilities has no significant influence on the income of FUGs members

#### **METHODOLOGY**



**Study area** – The study was carried out in Anambra State in Southern Eastern Nigerian. The State has a population of 4,055,038, with density of 846/km<sup>2</sup> (2,200/sqm) and a total land mass of 4,854km<sup>2</sup> (NPC, 2006) Anambra is rich in natural gas, crude oil bauxite, ceramic and has an agricultural resources percent arable soil. Its Boundaries are formed by Delta state to the west, Imo state and Rivers state to South, Enugu state to the east and Kogi to the North. The population of the study consists of all members of registered Fadama User Groups (FUGs) that benefited from Fadama III Community Infrastructure in Anambra State. There are 245 FUGs that benefited from Community Infrastructure of Fadama III. The FUGs had membership strength of 6,125 (ADP, Fadama Office, Awka). For the purpose of this research, a multi-stage sampling procedure was adopted. There are four (4) Agricultural zones in Anambra state (Anambra, Awka, Aguata and Onitsha). In the first stage, two (2) Agricultural Zones were randomly selected out of the four (4) agricultural zones. These are; Anambra and Awka agricultural zones. The zones were selected because they are dominant in agricultural activities. In the second stage, three (3) local government areas were selected from each of the 2 agricultural zones, making a total of 6 LGAs. Third stage, three (3) communities were selected from each of the (6) LGAs, making a total of 18 communities. One FUGs was randomly selected from each community, given a total of 18 FUGS. The researchers used two trained enumerators to administer and collect the questionnaire from the respondents. 375 copies of the questionnaire were administered, while 351 were returned.

Using Taro Yamane (1967) formulae to determine the sample size from the population of 6,125, a sample size of 375 was established.

**Sources of data** – The data for the study were sourced mainly from primary and secondary sources. Primary data were sourced from the respondents through structured questionnaire.

**Method of data analysis** – A Theoretical mean of 2.5 was taken as a criterion to judge the mean for all items. Therefore, any item that equals 2.5 and above was accepted, while an item with less than 2.5 was rejected. The Hypotheses were tested using one way ANOVA, multiple regression was run to determine the influence of infrastructure on the income of users. Descriptive statistics (mean, frequency counts, percentages) were employed to describe the socioeconomic characteristics of the respondents, Also inferential statistics such as multiple regression analysis was employed to address issues raised in research questions and hypotheses 1 to 4. It was analyzed to determine the influence of Fadama III Community Infrastructure on the income of members of fadama User Groups Multiple regression models were used

to test the entire hypotheses in order to ascertain the effect of Fadama III Community Infrastructure on the income of Fadama User Groups. The regression was run using SPSS package to determine the effect of the independent variables on the dependent variable. The t-test was used also to perform a test of significance of the explanatory variables at the alpha level of 5%.

Community Infrastructure = Independent variables  
Income = Dependent variable

The model is implicitly specified as follows;

$$Y_i = f(X_1, X_2, X_3, X_4 \dots X_n + e_i)$$

The models are further explicitly specified as follows.

$$Y_i = b_0 + b_1X_{1i} + b_2X_{2i} + b_3 X_{3i} + b_4 X_{4i} + e_i$$

Where

- 1 = Rural Market,
- 2 = Borehole facilities
- 3 = Processing facilities
- 4 = Credit support

Components of independent variables are; rural markets, water borehole facilities, cassava processing facilities, credit support.

### Regression Analysis

Y = Income

X<sub>1</sub> = Rural markets

X<sub>2</sub> = Water borehole facilities

X<sub>3</sub> = Processing facilities

X<sub>4</sub> = Credit Support

e<sub>i</sub> = Error Term design to capture the effects of unspecified variables in the model.

Income (Y) = F (Fadama III community infrastructure)

## RESULT AND DISCUSSION

### Socioeconomic Characteristics

Respondents on Socioeconomic characteristics on table 1 shows the sex, age, marital status, educational qualification, monthly income, monthly farm output, Fadama Projects benefited from. The Table shows that 55 % are females, while 45% are males. This shows that female folk are more involved in Fadama III projects than males. Majority of the respondents fell within the age bracket of 41-50 years with highest percentage of 39%. This is followed by those that fall within the age bracket of 51-60 representing 28%. This shows that the FUGs beneficiaries are still in their productive age and carrying responsibility in their various households.

Also majority 72% of the respondents were married, while a good number (46%) had First School Leaving Certificate, followed by those (35%) having SSCE with 35%. The remaining fifteen percentages (15%) have no formal education and only 2% had Bs.C/HND. Majority (51%) of the respondents have been in cooperative (FUGS) between 3 – 5 years. Their average years of



membership of FUGS are 3years. Fourth-four percent (44%) of the respondent have had 11 – 15 years farming experience, and their average farming experience stood at 11years. This shows that agriculture has to being a major and dominant

occupation in the agricultural zones of Anambra state. Fourty-five percent 45% of the respondents earned between N11,000-N15,000 while 23% made between N16,000 and N20,000 per month. Their average monthly income was N26,000.00

**Table 1: Distribution of respondents by their socioeconomic characteristics**

Variables	Frequency	Percent	Parameters
<b>Gender</b>			
Male	157	44.73	
Female	194	55.27	
<b>Age (Years)</b>			
21 – 30	28	7.98	Mean = 45.18
31-40	53	15.09	
41-50	137	39.03	
51-60	98	27.92	
61-Above	35	9.97	
<b>Marital status</b>			
Single	84	24	
Married	253	72	
Divorced	8	2.3	
Widowed	6	1.7	
<b>Educational Status</b>			
No Formal Education	53	15	
FSLC	163	46	
Senior Secondary School Certificate	123	35	
NCE/OND	10	3	
HND/BSc	2	1	
<b>Duration of membership of FUG (years)</b>			
< or = 1	14	4	Mean = 3.35
1-3	123	35	
3-5	179	51	
> 5	35	10	
<b>Farm experience (Years)</b>			
< 5	63	18	Mean = 11.36
6 – 10	74	21	
11-15.	154	44	
16- 20	42	12	
> 20	18	5	
<b>Monthly Income (N)</b>			
< 1000	0	0	Mean = 26,105
1,000 – 5,000	31	8	
6,000 – 10,000	48	14	
11,000 – 15,000	157	45	
16,000 – 20,000	80	23	
21,000 – 50,000	35	10	
Above 50,000	0	0	
<b>Total</b>	<b>351</b>	<b>100.0</b>	

Source: Field survey: 2016

**Fadama III community infrastructure executed by of FUGs members**

The use of 4 point likert scale was applied to ascertain the Fadama III Community Infrastructure executed by FUGs members in which 2.5 mean (x) was adopted as the decision threshold therefore, for each of the item listed in table 3 depicting rural markets; water-borehole

facilities; cassava; processing mills; and credit support facilities, any response below means (x) = < 2.5, indicates non execution, while responses of mean (x) > ≥ 2.5, it indicates execution based on the result, all the members of Fadama user groups in the study area accepted that Fadama III community infrastructure were executed in the study area since the entire mean were above 2.5.



**Table 2: Distribution of respondents by the various Fadama III community infrastructure projects executed by members of FUGs**

<b>Fadama III community Infrastructure provided</b>	<b>Mean</b>	<b>Decision</b>
<b>Rural market</b>		
Rural markets are established in each rural community	3.87	Accepted
Programme managers see to the uplift/maintenance of rural markets	3.57	Accepted
Members of FUGs are allocated stalls on the basis of equality	3.34	Accepted
Members are exempted from paying market tolls	3.01	Accepted
FUG members/participants are permitted to transact every day	3.64	Accepted
<b>Water Borehole facilities</b>		
Water borehole facilities are established in every community	3.32	Accepted
Members see to the maintenance of the facilities	3.24	Accepted
Members of FUG are exempted from paying for the water	2.92	Accepted
Members benefit from the water facilities which they use in their processing and other Agricultural endeavour	3.48	Accepted
The water rush all week day and members use them for domestic use	3.34	Accepted
The money realized is used for maintenance of the of the borehole facilities	3.32	Accepted
<b>Cassava processing mills</b>		
Processing facilities are established in each rural community	3.5	Accepted
Managers/members see to the maintenance and uplift of the processing facilities	3.24	Accepted
Members are exempted from paying fees during processing	2.96	Accepted
Money realized from the processing mills are used in maintaining the machines thereby saving member the cost	3.38	Accepted
<b>Credit support facilities</b>		
Members obtain credit facilities without collaterals	3.78	Accepted
Members obtain facilities for productive activities	3.66	Accepted
Rigorous documentation procedures are avoided, unlike formal financial institutions	3.20	Accepted
Repayment scheme is structured to lessen the burden of members .	3.56	Accepted
Loan to members are interest-free	2.66	Accepted

Source: Field Survey, 2016

#### **Effect of FADAMA III community infrastructure on rural income**

From the regression result in Table 3, it is seen that all the independent variables (rural markets, rural boreholes, processing facilities and credit support) had positive and significant influence on rural income. The coefficient of N59,327.93 for rural markets suggests that a one unit increase in rural markets will result in more than N59,000 increase in rural income; a coefficient of N26,290.96 for water borehole suggests that a one unit increase in the establishment of water boreholes will result in an increase of more than N26,000 in rural income; a

coefficient of N41,579.487 for cassava processing facilities suggests that an increase of one unit in cassava processing facilities will result of one unit in cassava processing facilities will result in an increase of more than N41,500 increase in rural income; and a coefficient of N44,996.328 for credit support suggests that an increase of one unit in credit support will lead to an increase of more than N45,000 in rural income. It was also observed that though the coefficient of multiple determinations was less than three percent, the F ratio of 5.50 was significant at 1% level, thus, suggesting that the independent variables had a substantial influence on the dependent variable.

#### **Regression Estimates (Effects of FADAMA III Community Infrastructure on Rural Income).**

<b>Model</b>	<b>Coefficient estimates</b>	<b>t-value</b>	<b>p-value</b>
(Constant)	-208231.941	-1.606	0.109
X <sub>1</sub> –Rural markets	59327.926	2.655	0.008
X <sub>2</sub> –Rural boreholes	26290.956	1.105	0.053
X <sub>3</sub> –Processing facilities	41579.487	1.936	0.054
X <sub>4</sub> –Credit support	44996.328	2.057	0.040
R <sup>2</sup>	0.060		
Adj R <sup>2</sup>	0.049		
F	5.497 (Sig. @ 0.001)		

## Tests of Hypotheses

### Hypothesis one

The establishment of rural markets has no significant influence on the income of FUG members. In testing hypothesis one, which states that establishment of rural markets have no significant influence on the income of FUGs members; it has been observed that the t-statistic of the coefficient of the rural market variable (N59,327.926) was significant at the 1% level. Therefore, the null hypothesis is rejected and the alternative hypothesis which states that establishment of rural markets has a significant influence on the income of FUGs members is accepted. This supports the submission of Olagunju (2012) which stressed that provision of market and road infrastructure will improve the income of the rural households in the rural areas and will reduce rural-urban migration. And equally corroborate with views of FAO (2003) which says that efficient market system can provide better prices for producers, reduces cost and increases income.

### Hypothesis two

The provision of water borehole has no significant influence on the income of FUG members.

In testing hypothesis two, which states that provision of water boreholes have no significant influence on the income of FUGs members; it has been observed (in table 4) that the t-statistic of the coefficient of water boreholes variable (N26,290.956) was significant at the 1% level. Therefore, the null hypothesis is rejected and the alternative hypothesis which states that provision of water bore holes has significant influence on the income of FUGs members is accepted.

### Hypothesis three

The provision of cassava processing facilities has no significant influence on the income of FUGs members. In testing hypothesis three, which states that establishment of processing facilities have no significant influence on the income of FUG members; it was been observed (Table 4) that the t-statistic of the coefficient of cassava processing facilities variable (N41,579.49) was significant at the 1% level. Therefore, the null hypothesis is rejected and the alternative hypothesis which states that establishment of cassava processing facilities has a significant influence on the income of FUG members is accepted. This finding corroborates with the submissions of Oluwasola (2010) which states that cassava processing facilities enterprises help in the development of sub-sector to generate income and employment for farmers household. He stressed further that it reduces post-harvest loss, add value to farm products and enhanced the food security of a nation.

### Hypothesis four

Credit support facilities have no significant influence on the income of the FUGs members.

In testing hypothesis four, which states that credit support has no significant influence on the income of FUG members; it was observed (Table 4) that the t-statistic of the coefficient of cassava processing facilities variable (N44,996.328) was significant at the 1% level. Therefore, the null hypothesis is rejected and the alternative hypothesis which states that credit supports have a significant influence on the income of FUG members is accepted. This is in line with the views of Ijere (1998), opined that agricultural credit is considered as the catalyst that activates other factors of production and makes under-used capacities functional for increased production and income. Also, IFAD (2000) cited in Jumare (2006), stressed that primary aim of credit programmes is to alleviate poverty by increasing borrowers' earnings.

## SUMMARY AND CONCLUSION

The result shows that Community infrastructure had a significant influence on the income of members of Fadama User Group in Anambra State. The result shows that for a given unit of Community Infrastructure, income increases. Rural market, processing facilities and credit support facilities have been identified as indispensable in increasing the income of FUGs members in Anambra State.

Accordingly, the theory of Community Driven Development has been useful in actualizing Fadama III project because it provides control of development process, resources and decision making authority directly to the communities. In order to consolidate and strengthen this project, the researchers hereby recommend as follows:

- i. i That, the project should be replicated to other rural areas and state that have not benefited from the project.
- ii. ii That, project tenure should be extended so that rural people would benefit immensely from the project.
- iii. iii That, Government should encourage rural farmers to join FUGs and take advantage of the project. Government should organize sensitization programme to advocate the need for people to take advantage of the project.
- iv. iv That other Agricultural projects to be implemented should take cue from Fadama III Project. The management and the implementation processes have shown that it is beneficial to the fadama users



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