Effect of *Fadama* III project on rice farmers in Abakaliki Local Government Area, Ebonyi State, Nigeria

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Abstract

This study was carried out to examine the effect of Fadama 111 project on rice farmers in Abakiliki L.G.A, Ebonyi State. The specific objectives of the study were to; examine the sociolect-economic characteristics of Fadama 111 in the study area, assess the change in outputs and income of the beneficiaries, determine the factors influencing the income level of beneficiaries, identify the constraints encountered by the beneficiaries in the study area. Results from this study shows that average output of respondents increased from 217, 825.00 tonsto 316, 275.00 tons implying a 45.1% increase. Average income of beneficiaries also increased from \$648, 952.95 to \$2, 169,623.00 also implying a 234.33% increase in income as a result of participation in the project. The OLS regression analysis had the Exponential equation as the lead equation. The R^2 was 0.696. Variables such as age of respondents and quantity of seeds were negatively significant at 5%, while, household size and farm size were positively significant at 1%. The study recommends that a pool of manpower should be put in place for ease of access by older farmers and that the project should link farmers to source of certified seeds.

Keywords: Fadama, Project, Rice Farmers

Introduction

Rice (*oryza sativa*) is one of the most common staple food crops in Nigeria. Rice consumption and rice related products has increased overtime, although this increase is attributed to the common belief that rice is a meal reserved for festive season and all special occasions coupled with the fact that rice is simple to prepare for consumption, hence there is great demand for its product both by the rich and poor alike (Food and Agricultural Organization, 2019). With the growing population in Nigeria, rice production will be critical as it plays a key role in the provision of food and employment, as well as in enhancing farmers' income and food security (Okpe *et al.*, 2018). According to FAO (2021), Nigeria's rice production rose from 3.7 million metric tons in 2017 to 4.0 million metric tons in 2018. In spite of this, only 57 percent of the 6.7 million metric tons of rice consumed in Nigeria annually is locally produced leading to a deficit of about 3 million metric tons, which is either imported or smuggled into the country.

Between 2005 and 2015, Nigeria's monthly import bill on rice stood at between N148b to N917b (Ogunsumi et al., 2013). As it stands, Nigeria spends about N7 trillion on the importation of food items and most unfortunately even with the increased rate of about 12.2 million rice farmers as at 2018, rice production is yet to equate its demand, (Odogwu, 2018). Majority of rice farming in Nigeria as well as the study area is carried out in swamps as an alternative to irrigation farming as these farmers mostly depend on natural water flow or precipitation as a means of irrigation to the farmland.

Ebonyi state, is one of the States in Nigeria that prides herself as one of the major producers of rice in the country. Even at that, the average yield per hectare given as 2 tonnes per hectare is quite low compared to 8 and 10 metric tonnes per hectare in Australia and Egypt respectively. In Nigeria, 3.2 million metric tonnes of rice is produced annually as against an annual demand of 5 million metric tons yearly indicating a demand gap of 1.8 millon metric tonnes (Federal Ministry of Agriculture and Rural Development, FMARD, 2012). In a bid to combat this shortfall, Governments have come up with various programs to close this demand/supply gap in rice production in Nigeria. These programs include National Food Production Programme [1972],

Agricultural Development Program [1975], Operation Feed the Nation [1975], National Land Development Authority [1988] and the *Fadama* project.

The *Fadama* project is an initiative of the World Bank whose implementation started in 1993 with Fadama 1. Fadama projects were implemented in phases, (Fadama 1, Fadama 11, and Fadama 111) in selected States of the Federation. Fadama I programme was implemented in nine states of the Federation; Bauchi, Federal capital territory, Kaduna, Kebbi, Lagos, Niger, Ogun, Oyo, and Taraba). It was initiated mainly for crop production and largely neglected support of post production activities. such as commodity processing, storage, and marketing. However, it had major shortfalls among them being the neglecting of downstream activities such as processing, preservation, conservation and rural infrastructure to ensure the efficient evacuation of farm products to markets, (Okechukwu, 2015). The success recorded in Fadama I led to the establishment of Fadama II. The Fadama III project is believed to have raised the income status of its beneficiaries in Ebonyi state as well as commercialize rice farming in the state. However, the level of impact evident by the amount of physical and economic changes in the study area is yet to be ascertained since after 2019, when the implementation of Fadama 111 project was concluded in the State, hence the need for this study. The general objective of this

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study is to analyze the effect of *Fadama* III Development project on rice farmers in Abakaliki Local Government Area of Ebonyi state.The specific objectives are to; i. examine the socioeconomic characteristics of the beneficiaries in the study area, ii. assess the change in outputs and income of the *Fadama* III beneficiaries in the study area, iii. determine the factor influencing the income level of *Fadama* III beneficiaries in the study area, iv. identify the constraints associated with *Fadama* III rice farmers in the study area.

Materials and Methods

Study area

The study was conducted in Abakaliki Local Government Area of Ebonyi state located in the south eastern part of the country Nigeria. It lies between latitude 6° 19' 23 .02" North and longitude 8º 06'43 .24" East, and shares common boundaries with Benue state to the North, Enugu State to the West, Imo and Abia States to the South and Cross River State to the East. The state has 13 local government areas with Abakaliki being among them. The state has a climate typical of the tropical zone, because of its location. Its climate is quite pleasant: A minimum temperature of 27°C and 31°C maximum have been recorded while rainfall varies for different locations with annual rainfall recorded as 1950.7 mm. Major crops suitable to the state ecological conditions are rice, groundnut, cassava, yam,

maize, potatoes, sorghum, melon, mangoes, citrus and vegetables. The state covers a landmass of 5,533 km² (2,136 sq. mi). it's population density is about 630/km². The area is always swampy in nature due to availability of water all year round which is a favorable environment for swamp rice production as well as yam cultivation. The forest soil, which are rich in humus, and laterite soils are found in most parts of the state.Abakaliki Local Government Area (LGA) is located in the North senatorial district of Ebonyi State, Nigeria. It is situated at latitude 6^0 19' 23 .02" North and longitude 8° 06'43.24" East and 117 meters' elevation above the sea level. Abakaliki is a big town in Nigeria, having about 915,438 people (National Population Commission, 2019). The Area is blessed with fertile land with dual season - the rainy (April-November) and the dry season (December - March) (Ezeibe et al., 2016). Lowland and upland rice are cultivated in the area, however, majority of the farmers cultivate rice under lowland ecology of the available inland valleys in the area. Basically, a greater percentage of the Abakaliki populations are farmers who practice mostly mixed type of cropping. (Ezeibe et al., 2016).

Data collection

Data used for this study was collected in from Primary and Secondary sources.Primary data was collected using well-structured questionnaires and personal interviews. Secondary data was

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collected using Agricultural Development Project Baseline Survey Data from the *Fadama* II1 office in the State as well as other existing information on *Fadama* III project such as textbooks and journals.

Sampling technique

A multi-stage sampling methodology was used to select respondents from the study area. The first stage involved the purposive selection of five (5) out of the seven (7) communities based on the fact that the communities are predominantly occupied by rice farmers who participated actively in the *Fadama* 111 Project. The second stage involved selection of 2 villages each out of the 5 communities making up a total of 10 villages. 10 beneficiaries each were selected from the 10 villages making up a total of 100 respondents.

Data analysis

Data was analyzed using descriptive statistics, Ordinary least square. The socioeconomic characteristics of respondents were analyzed using, frequencies, percentages and means. Factors Influencing the Income level of *Fadama*111 Beneficiaries in the study area was analyzed using the Ordinary Least Squares multiple regression analysis.

The model is implicitly presented as follows;

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

The explicit function is given as;

 $Y = Q_0 + Q_1X_1 + Q_2X_2 + Q_3X_3 + Q_4X_4 + Q_5X_5 +$ $Q_6X_6 + Q_7X_7 + Q_8X_{8+}Q_9X_9...Q_nX_n$ Where: Y = Dependent Variable (Income level) $Q_1 - Q_8 =$ Regression parameters $X_1 = Age of the farmers (years)$ $X_2 = Sex (male=1 \text{ or female=0})$ X_3 = Level of education (yrs.) X_4 =Household size (number) $X_5 =$ Farming experience (years) X_6 = Association (member=1, otherwise =0) $X_7 =$ Farm size (ha) $X_8 =$ Quality of seeds used (kg) $X_9 =$ Ouantity of labor (man days) ϵ = Stochastic error term The Likert scale was used to measure the

opinions of the farmer concerning the constraints they face as *Fadama* beneficiary farmers. Several conditions will be given and each opinion will be assessed a score based on the severity of the problem. Their response were categorized as: Very serious (VS) = 3; serious (S) = 2; and not serious (NS) = 1. Descriptive statistics was then used to analyze and interpret the collected data and presented results.

Results and discussion

Socioeconomic Characteristics of Respondents

Results from table 1 shows that more male benefited from the project (75.3%) than their female counterparts (24.7%). This is not unconnected to the fact that Abakaliki L.G.A has more male rice farmers than female as females mostly play the supporting role (family labor as well as other post planting activities). This is in line with the findings of Egenti (2020) in his study where there were more male beneficiary

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than the female farmers. Also, majority of the respondents sixty four point seven percent (64.7%) were within the age range of 40-59 implying that, most of them were in their active period in life as at when they were enrolled to participate in the program. The study also shows that majority of the respondents, (84.7%) were married, while (3.5%) were (11.8%) were widow. This result was consistent with the findings of Shelleng and Tabitha (2021) on the study of the effects of Fadama III Development Project on Rural Rice Farmers in Yola-North Local Government Area of Adamawa State, Nigeria where 71.2% of the beneficiary farmers where married. Fifty two point nine percent of the respondents attained tertiary education, (25.8%) attained Secondary education, (11.8%) attained Primary school while (9.5%) had no formal education. This result implied that majority of the respondents had reasonable level of education. The household size range of 6-10 had the highest percentage of sixty percent (60%) followed by the 1-5 range with (31.8%). This result confirms the fact that Fadama 111 beneficiaries in Abakiliki have a mean family size of 7, thus benefited greatly from the available family labour. From the results presented in Table 1, majority of the beneficiary cultivated on farm lands below 1Ha. This is because land is majorly gotten through inheritance and only those with sufficient financial capabilities can afford large areas of land for their farming activities. Farmers with

experience of 11-30 years were majority (65.9%) of the respondents. This result implies that respondents have been into rice farming for a long time and as such they will be combining experience and innovations in their rice farming. Majority of the respondents, 59.4% have contact with extension agents before accessing the project. This is a confirmation that majority of the respondents were abreast with modern technology and this helps a lot to in boosting their productivity.

Change in Output and Income of Rice farmers in Abakaliki L.G.A.

Table 2 shows that the average output of respondents increased from 217, 825.00 tons per annum before participation in the project to 316, 275.00 tons per annum after participation in the project. The difference between the two figures (98,450 tons) indicate that output of beneficiaries increased by 45.1%. This increase is as a result of the participation in the project which led to adoption of new techniques. The average income of beneficiaries also increased from №648, 952.95 before participation to ₩2, 169,623.00. The difference between the two levels of income amounted to (₩1,520,670.00)implying a 234.33% increase in income as a result of participation in the project. This result agrees with the findings of Shelleng and Tabitha (2021) on the study of the effects of Fadama III Development Project on Rural Rice Farmers in Yola-North Local Government Area of Adamawa State, Nigeria.It

was shown that there was a significant increase in the income of the respondents before and after participation in the program.

Factors Influencing the Income Level of Fadama111Beneficiaries in Abakaliki L.G.A

Table 3 presents four functional forms (linear, double log, semi log and exponential) of the OLS regression equations. The Exponential equation form served as the lead equation. The coefficient of determination, R^2 was 0.696, implying that of the variation in income of the 69.6% respondents was accounted for by the explanatory variables in the model, the F-test given as 7.820 was also significant. Variables such as age of respondents and quantity of seeds were negatively significant at 5%, while, household size and farm size were positively significant at 1%. From the result presented, a unit increase in the age of respondents and quantity of seed will lead to a 0.16% and 0.12% reduction in the income level of rice farmers in the study area. Practically, as the farmer gets older, he is unable to attend to the strenuous and rigorous task of farming and such experiences lead to a decline in his output and thus income. Also, a unit increase in household size and farm size will lead to a 0.51% and 12.73% increase in the income level of rice farmers in the study area. An increase in he household size will imply more hands in the form of family labour and the variable cost in terms of labour that would have

been expended will be saved, thereby increasing the income of the farmer.

Challenges faced by respondents in the course of project implementation

Table 4 presents the ranking of the various challenges faced by respondents in the course of implementing Fadama 111 project in the study area. Out of the nine challenges identified, pest (grass cutters, birds) ranked first (75%), this is true because grass cutters and birds constitute great nuisance to rice farmers in Abakiliki. Rice farmers are still practicing the traditional method of bird scaring and setting of traps to catch the birds. High cost of input came second (54%). Due to inflation currently witnessed in the nation, this has led to high cost of farm inputs in Nigeria. The least in rank among the challenges is unavailability of improved seedlings this might not be unconnected to the fact that Fadama 111 had a component that was entrusted with the mandate of providing improved seedlings to beneficiaries. The challenges listed here truly reflect what the farmers were facing.

Conclusion

In view of the findings of this study, it can be deduced that even though the *Fadama* III rice farmers faced numerous challenges in the course of project implementation, the project still had positive impact on beneficiaries in terms of increase level of income and output over time.

Recommendations

findings Based on the above. the study recommends the following; i. In recruiting beneficiaries for agricultural Projects, operators of such projects should set age limit for beneficiaries and adhere strictly to it. In order to accommodate the elderly, the project should be designed such that there will be a meeting point between the older people and the youth such that a pool of readily available labour would be made available at any time for the elderly farmers to hire for work at any point in time. In terms of seeds, the project should link rice farmers to seed production companies where they can access improved seeds during planting season to enable them improve on their yields. Improved method of pest management should be taught to rice farmers to enable them effectively combat the menace. Government can intervene in the market side of input supply by subsidizing the cost of major inputs and supply directly to true farmers from source.

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Table 1:Socio-economic Characteristics of Rice farmers in Abakaliki L.G.A.					
Socioeconomic Characteristics	Frequency	Percentage			
Sex					
Male	64	75 3			
Female	21	24 7			
Total	85	100.0			
Age		10010			
20-29	9	10.6			
30-39	19	22.4			
40-49	25	29.4			
50-59	30	35.3			
60-69	2	2.4			
Total	85	100.0			
Mean Age = 44.5					
Marital Status					
Single	3	3.5			
Married	72	84.7			
Widowed	10	11.8			
Total	85	100.0			
Educational Level					
None	8	9.5			
Primary	10	11.8			
Secondary	22	25.8			
Tertiary	45	52.9			
Total	85	100.0			
Household Size					
1-5	27	31.8			
6-10	51	60.0			
11-15	6	7.1			
15-20	1	1.2			
Total	85	100.0			
Mean household size = 6.88					
Farm Size					
0.1-0.25	39	45.9			
0.26-0.50	28	32.9			
0.51-0.75	8	9.4			
0.76-1	10	11.8			
Total	85	100.0			
Mean farm size = 0.32					
Farming Experience					
1-10	20	23.5			
11-20	36	42.4			
21-30	20	23.5			
31-40	6	7.1			
41-50	3	3.5			
Total	85	100.0			
Mean Farming Exp. = 17.97					
Access to Extension Agents					
Have access	59	59.4			
Do not have access	26	30.6			
Total	85	100.0			

Source: Field Study 2022

Table 2. Changes in Respondents Farm Output after participation						
	Before (1998-2003)	After (2004-2009)				
Average output	217, 825.00 tonns	316, 275.00 tonns				
Average income	₩648, 952.95	₩2,169, 623.00				
Source: Field Study 2022						

Table 2: Changes in Respondents Farm Output after participation

Table 3: Multiple Regression Analysis of factors influencing the income of FADAMA III beneficiary farmers in the study area

	LINEAR ESTIMATE DOUBLE LOG		SEMI LOG		EXPONENTIAL			
PARAMETERS								
	Coefficien	t-val	Coefficie	t-val	Coefficient	t-val	Coefficient	t-val
	t		nt					
Intercept	356802.54	3.178	22.365	11.000	1170756.98	2.628	12.592	35.687
						-		
Age (X1)	-5414.917	-2.562***	-0.659	-1.962**	-149146.29	2.026*	-0.016	-2.470**
						*		
Sex (X2)	24535.093	0.690	0.156	0.869	35306.00	0.896	0.081	0.728
Years in School (X3)	-3047.680	-0.858	-0.153	0.315	33054.02	-0.891	-0.012	-1.075
Household Size (X4)	18122.996	2.969***	0.127	0.326	28082.95	1.316	0.051	2.681***
Farming Experience (X5)	2347.286	0.933	0.189	0.213	33006.05	1.006	0.010	1.269
Association Membership (X6)	21448.449	0.699	0.023	0.145	21048.97	0.612	0.030	0.310
Farm Size (X7)	301663.98	3.575***	0.340	4.040** *	18423.27	2.800* **	1.273	4.801***
Quantity of Seed (X8)	-3276.011	-1.990**	-0.206	-1.686	26836.54	-1.185	-0.012	-2.377**
Quantity of Labour (X9)	-5257.566	-1.013	-0.016	-0.211	16170.85	-0.319	-0.016	-0.973
DIAGNOSTIC STATISTICS								
R2	.6.	39	.6()1	.526		.6	96
Adjusted R2	.4.	39	.30	51	.277		.48	84
F-statistics	5.7	59	4.0	75	3.194		7.8	20
DF	9)	9	1	9		9)
Observed	8	4	84	4	84		8	4

(*), (**) and (***) expresses 10%, 5% and 1% significance level, respectively

Source: Field Study 2022

S/n	Constraints	Frequency	Percentages (%)	Rank
1	Pests (grasscutters, birds, etc.)	51	51*	1st
2	High cost of farm inputs	54	54*	2nd
3	Poor marketing systems/bad roads	51	51*	3rd
4	Rice crop diseases	46	46*	4th
5	High cost of labor	32	32*	5th
6	Insufficient Capital	25	25*	6th
7	Inadequate irrigation facilities	18	18*	7th
8	Unfavorable weather	17	17*	
	conditions/climate	17	17.	8th
9	Unavailability of Improved seedlings	10	10*	9th

Table 4: Challenges faced by rice farmers in the course of project implementation

Source: Field survey, 2020

* Multiple responses (n =100)