



**CONTRIBUTIONS OF *FADAMA* II IN THE PROVISION OF RURAL
INFRASTRUCTURE IN SHIRA LOCAL GOVERNMENT AREA OF
BAUCHI STATE, NIGERIA**

¹Abdullahi, S., ¹Danwanka, H. A. and ²Haruna, U.

¹Department of Agricultural Economics & Extension, Faculty of Agriculture and Agricultural Technology, Abubakar Tafawa Balewa University, Bauchi, Nigeria

²Department of Agricultural Economics & Extension, Federal University Dutse, Jigawa State
Corresponding Authors' E-mail: salisuabdullahi360@gmail.com Tel: +2348035750805

ABSTRACT

The research examined the contributions of *Fadama* II in the provision of rural infrastructure in Shira Local Government Area of Bauchi State, Nigeria. A total of 120 respondents were randomly selected from eight *Fadama* community Associations in the various parts of the Local Government Area. Data were collected through administration of questionnaire using a five-point Likert-scale. The data collected were analyzed using a combination of statistical models, including descriptive statistics such as frequency, percentage and mean. The inferential statistics used include regression analysis and cross tabulation Chi-square. The analysis shows that the average age of the respondents was 38.37 years, 80.2% of the respondents were male with only 19.8% of them female. Most (88.6%) of the total respondents were married with the remaining respondents falling into the class of divorced and widowed. Majority of the respondent had formal education with an average household size and occupational experience of 12 persons and 19.43 years, respectively. The regression analysis also reveals that infrastructure provided by *Fadama* II was significant at $P < 0.001$ in improving the occupational activities of the respondents. The Chi-square cross tabulation results of asymptotic Chi-statistic was significant at $P < 0.001$ on the contributions of infrastructure; culverts, feeder-road, water source and market structure, only funds was not significant. Therefore, it can be concluded that the infrastructure provided has positive contribution on the respondents, even though it is not provided in sufficient quantity. In view of the above the need for more funding in the area of infrastructural development cannot be overemphasized. This is because sufficient provision of infrastructure will improve the life of the rural dwellers, reduce rural-urban migration and alleviate poverty.

Keywords: Community, *Fadama*, Infrastructure, Migration, Poverty, Rural.

INTRODUCTION

The Nigerian agricultural sector is characterized by continuous reduction in production and productivity thereby limiting the ability of the sector to perform its traditional role in economic development. In order to break this cycle and improve the performance of the agricultural sector, the Nigerian government over the years introduced and implemented several policies and programmes aimed at revamping the sector (Ajibefun and Aderinola, 2004). In spite of the dominant role of the petroleum sector as the major foreign exchange earner, agriculture remains the mainstay of the economy. Apart from contributing the largest share of Gross Domestic Product (GDP), it is the largest non-oil foreign exchange earner, the larger employer of labour and a key contributor to wealth creation and poverty alleviation, as the largest percentage of the population derive their income from agricultural and related activities (NEEDS, 2004). However, the rate of growth in agricultural production has stagnated over the years and failed to keep in pace with the needs of the rapid growing population



resulting in a progressive rise in import bills for food and industrial raw materials. Yet, only one third of 72 million hectares of cultivable land is being put to productive use almost entirely by small scale farmers (cultivating less than three hectares) using rudimentary techniques with very low yield (NEEDS, 2004).

The Nigerian peasant farmers are constrained by production difficulties, poor access to modern inputs, credit facilities, marketing difficulties (due to limited rural feeder roads), low level of irrigation, processing difficulties and inadequate research and extension services. Despite government effort in the design and implementation of numerous agricultural development programmes, and huge agricultural potentials of the country, Nigeria continues to experience food deficits, huge import bills and has lost its place in the export market. Between 1990 and 1997 demand-supply gap stood in deficit of 51.7 metric tons of grains equivalent, also there was a sharp increase in the country's food import bill from 8.2% in 1982 to 20.5% in 1997 (Akuh, 2000).

National *Fadama* I Development Project (NFDPI) focused mainly on crop production and largely neglected support of post-production activities such as commodity processing, storage and marketing (downstream agricultural sector). The emphasis was on providing boreholes and pumps to the crop farmers through simple credit arrangement aimed at boosting aggregate crop output (Nkonya *et al.*, 2008). This was an era of *Fadama* I which many states of the federation were involved. The project NFDPI, was adjudged successfully both at national and international levels and that culminated in the Federal Government of Nigeria regressing the World Bank for the preparation of follow-up project (World Bank, 2003; Blench and Ingawa, 2004). The National *Fadama* II Development Project (NFDPII) is one of the major instruments for achieving overall development of the agricultural sector in Nigeria. The project was designed also to assist project-contractor facilitators and participating local government area to undertake project-related activities at the level of *Fadama* community Associations (FCAs) and other beneficiary groups. *Fadama* II was designed to operate for six years (2004-2010) with a goal of contributing to poverty reduction in Nigeria. Actual implementation did not begin until September 2005, however. The project set a target of 50 percent male and 50 percent female *Fadama* resource users to benefit from the project supported activities.

Attempt at solving the rural problems had been the concern of government over the years. Government has created projects and programmes like; Directorate for Food Road and Rural Infrastructure (DFFRI), State Integrated Rural Development Programme, Better life for Rural Women, National Poverty Eradication Programme (NAPEP), Agricultural Development Programme (ADP) etc. All these project and programmes are aimed at increasing the productivity of the areas, reducing poverty as well as bettering the lives of the rural populace. The problem of implementation lapses, corruption and misplacement of priorities deemed the success of these programmes/projects resulting to their failure to achieve their objectives. The National *Fadama* Development Project II is intended to increase the productivity, income, living standard and capacity of the economically active rural communities while increasing efficiency in delivery implementation service to an estimated four million rural beneficiaries household (NFDO, 2005). The project also seeks to address the problems of demand-driven rural infrastructures such as small-scale irrigation, livestock development system, feeder and access road, community storage and marketing and other infrastructure that *Fadama* resource users may name as priority and agree to implement, operate and maintain by themselves.

The broad objective of this study was to assess the contributions of National *Fadama* Development Project II in the provision of rural infrastructure. The specific objectives of the research were to: examine the socio-economic characteristics of the respondents; investigate



how the provision of the rural infrastructure improves the standard of living of the respondents; determine the contributions of the various types of rural infrastructural; facilities provided.

MATERIALS AND METHODS

The Study Area

The study was conducted in Shira Local Government Area, which is located between latitude 11° 21 North and longitude 10° 31 East. Shira LGA has a land mass of 2,016.38 square kilometer with an evenly distributed population of 234,014 people (NPC, 2006). The area experiences an average annual rainfall of about 400mm. Vegetation of the area is a typical Sudan savannah with wide range of soils ranging from sandy loam, sandy and heavy clay soils along the river bank that supports the production of varieties of arable crops (Shira, 2008).

Sampling Technique

The study used simple random sampling design in extracting information. Through this method the *Fadama* User Groups (FUGs) were selected using simple random sampling technique, and then respondents were further drawn from each sampled FUGs through simple random sample techniques. There were eight registered *Fadama* community Associations namely; Shira, Beli, Disina, Disina east, Disina II, Faggo, Gagidiba, and Tsafi. The FCAs have about 116 unequal numbers of FUGs with membership of 1234 male and 269 female who participated in NFDPII. Each FCAs was given a chance to participate through drawing 15 respondents which were randomly selected from the participating FUGs to give a fair representative sample. This resulted in a sample size of 120 respondents drawn from the eight FCAs used for the study.

Data Collection

The data were collected through the administration of a close ended questionnaire using a five-point Likert-scale to sample the opinion of 120 respondents drawn randomly from the study area.

Data Analysis

Combinations of different statistical tools were used to analyze the data, namely; descriptive and inferential statistics. Descriptive statistics was used to describe the profile of the respondents in the study area by using frequency, mean and percentage. On the other hand, different types of inferential statistical tools were used which include regression analysis and cross-tabulation chi-square.

Regression is the process of predicting one variable from another by statistical means using previous data. Simple linear regression analysis was used to determine the contribution of infrastructure provided by *Fadama* II on the standard of living of the respondents. The simple linear regression allows the testing of relationships between the variables dependent (y) and independent (x). It is mathematically expressed as:

$$Y_1 = B_0 + Bx_1 + e \quad \dots(1)$$

where;

Y_1 = the dependent variables on x's and is subjected to untroubled sources of error.

X_1 = the dependent variables whose values are controlled by experiments

O = is an intercept term which is constant.

l = regression coefficients which are determined from the rate and

e = a random disturbance or error which are dependently and normally distributed with mean zero and variance.



The cross tabulation chi-square (X^2)

According to Terry (2004), chi-square statistic is used where there is need to test for statistical significance. It is used primarily to find out whether or not there is significant level of association or relationship between two variables. It is also used to test the goodness of fit for a frequency distribution. The use of chi-square in hypothesis testing is applicable where data can be represented in form of contingency table. A contingency table consists of cross tabulation of categories or classes of observations with the frequency of each cross tabulation shown. It provides a measure of discrepancy between expected and obtained frequencies.

It is mathematically expressed as;

$$X^2 = \sum (F_0 - F_e)^2 / F_e \quad \dots(2)$$

where;

F_0 = obtained / observed frequency in a cell

F_e = expected frequency

Σ = summation which is taken from overall cells in the contingency table.

The tool was used to test the contributions of the type of infrastructure provided by *Fadama II*.

RESULTS AND DISCUSSION

Table 1 presents the socio-economic characteristics of the respondents. The result in Table 1 shows that majority (60.42%) of the respondents ranges between 22 to 61 years, while the mean age is 38.37 years. This means that the average respondent falls within the middle age, which implies economic active age that could have positive effect on adoption and the used of economic opportunities. This conforms to the findings of Haruna (2002), who reported that farmer's age may influence his resource allocation, reasoning and management ability. Table 1 also reveals that 80.2% of the respondents were male. This indicates that there is gender marginalization in the respondents' participation in *Fadama II*. This is similar with the finding of Anyawu (2004), which postulates that, there is a general belief that women are marginalized in terms of economic opportunities and should therefore have separate promotional agenda. The result further reveals that 88.6% and 63.2% of the respondents were married and had family members of 1 to 10 respectively. This indicates that all the respondents are responsible men that have family burden and therefore there is need for more economic effort to meet up the challenges that are experienced by the family. The result in Table 1 disclose that majority (58.4%) of the respondents were formally educated. The study also reveals that 59.4% of the respondents have income of less than N50, 000. This indicates that majority of respondents were low income earners.

Table 2 presents the contribution of the infrastructure on the standard of living of the respondents using regression analysis. The result of regression analysis shows that infrastructure provided was only significant ($p < 0.001$) in improving the occupational activities of the respondents. Even though statement 4 have positive coefficient but the p-value is not significant. The R^2 adjusted value shows that the contribution of *Fadama II* on the standard of living explains only 30.3% of the total respondents. The low R^2 may be as a result of low infrastructural facilities provided by the *Fadama* which touch only few respondents. The significant contribution on the standard of living conforms with the finding of Kudi *et al.* (2009), which asserts that *Fadama II* has brought about harmony among the rural dwellers, with 98% of the respondents agreeing that there is no doubt that the harmonious condition raised output and standard of living.



Table 2: Analysis of Contribution of *Fadama* II on Standard of Living

Predicator	Coefficient	S.E Coefficient	T	P
Constant	-0.2799	0.3722	-075	0.454
S ₁	-0.00957	0.3907	-024	0.804
S ₂	-0.03455	0.06690	-0.52	0.607
S ₃	-0.00838	0.05278	-0.16	0.874
S ₄	0.07442	0.06424	1.16	0.249
S ₅	0.24312	0.03736	6.51	0.000***
S = 0.374028	R ² = 33.6%		R ² (adj) = 30.3%	

Sources: Field survey, 2011 keys *** p< 0.001

The results of the cross tabulation chi-square of the contributions of infrastructure provided by *fadama* II was presented in Table 3. Table 3 reveals that the two sided asymptotic significant of chi-statistic is found to be significant at α -level of $p<0.001$. So the differences between the variables are not due to chance variation which implies that each respondent respond to different level of agreement. Based on the counts, 66% of the respondents agreed and strongly agreed that feeder-road provided by *Fadama* II project have significant ($p<0.001$) contribution on them. It was also observed that 68% of the respondents agreed that the culverts provided by *Fadama* II project have significant contribution on their activities. Table 3 further reveals that the two sided asymptotic significance of statistic is greater than 0.10. It is safe to say that the differences in response are due to chance variation. Based on the count it is found that 38.7% of respondents stand undecided whether the provision of fund by *Fadama* II project has contributed or not on the activities of the respondents while 34.8% of respondents agreed that the funds provided have contributed to their activities, 26.3% of them disagreed i.e., in the contrary. This can be attributed to low-level of beneficiaries of funds disbursed by *Fadama* II in the study area.

In addition, the two sided asymptotic chi-statistic is significant at α level of $P<0.01$. So the difference in the response is not due to chance variation, which implies that, each respondent respond to different level of agreement. From the counts, 68.8% of the respondents agreed that water sources have contributed to their activities. It was gathered from the respondents that water-sources proximity saves the time of the people in rural areas which is used in their occupational activities. It also helps women in doing their domestic activities without much difficulty. It also reduces the migration of pastoralist in search of water. From the result, the two sided asymptotic chi-statistic is significant at α level of $P<0.001$. So the differences are not due to chance variation and from the table counts, 74.5% of the respondents agreed that the storage structure has contributed on their activities.



Table 3: Chi-square Cross Tabulation

Infrastructure		Cross Tabulation					Total	Pearson X ²	Chi-square Asymptotic	
		S D	D	U D	A	SA			Likelihood Ratio	Linear by linear Association
Feeder road	Had no effect count	7	12	2	7	1	29	0.000	0.000	0.000
	% total	6. 6	11 .3	1. 9	6.6	0.9	27.4			
	Had effect count	1	1	5	46	24	77			
	% total	0. 9	0. 9	4. 7	43.4	22.6	72.6			
	Total count	8	13	7	53	25	106			
	% of total	7. 5	12 .3	6. 6	50.0	23.6	100.0			
Culvert	Had no effect count		9	8	9	3	29	0.000	0.000	0.000
	% total		8. 5	7. 5	8.5	2.8	27.4			
	Had effect count		3	6	45	23	77			
	% total		2. 8	5. 7	42.5	21.7	72.6			
	Total count		12	14	54	26	106			
	% of total		12 .3	13 .2	50.9	24.5	100.00			
Fund	Had no effect count	3	2	16	6	2	29	0.170	0.155	0.549
	% total	2. 8	1. 9	15 .1	57.2	1.9	27.4			
	Had effect count	5	15	25	23	9	77			
	% total	4. 7	14 .2	23 .6	21.7	8.5	72.6			
	Total count	8	17	41	29	11	106			
	% of total	7. 5	16 .0	38 .7	27.4	10.4	100.0			
Water source	Had no effect count		5	5	17	2	29	0.001	0.001	0.001
	% total		4. 7	4. 7	16.0	19.0	27.4			
	Had effect count		0	9	56	12	77			
	% total		0. 0	8. 5	2.8	1.3	72.6			
	Total count		5	14	73	14	106			
	% of total		4. 7	13 .2	68.9	13.2	100.0			
Storage structure	Had no effect count	2	5	2	18	2	29	0.001	0.000	0.000
	% total	1. 9	4. 7	1. 9	17.0	1.9	27.4			
	Had effect count	2	0	3	49	23	77			
	% total	1. 9	0. 0	2. 8	46.2	21.7	72.6			
	Total count	4	5	5	67	25	106			
	% of total	3. 8	4. 7	4. 7	63.2	23.6	100.0			

Note: SD = strongly disagree; D = disagree; UD = undecided; A = agree; SA = strongly agreed

Source: Field survey, 2011



CONCLUSION AND RECOMMENDATIONS

Emanating from the findings of this study, the contributions of infrastructure provided by the *Fadama II* project is positive on the respondents in Shira LGA. The project has contributed to the improvement of their occupations, enhanced their accessibility to markets and also save the time and labour that were formally wasted in fetching water to other areas of production. The need for more funding by the *Fadama* project, Governments and other Non-Governmental Organizations in the area of infrastructure cannot be over emphasized. This is because of the fact that the provision of rural infrastructure will increase agricultural productivity, as well as reduce the rate of rural-urban migration and hence it has the potential for alleviating rural poverty.

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