



Impact of National Fadama Development Projects on Poverty Reduction: A Case Study of Beneficiaries in Plateau State

Onyinyechi J. Onuoha¹, Alanana C. Abimiku², & Wada A. Ademu³

Department of Economics,
University of Jos,
Plateau State - Nigeria

Abstract

One major objective of all economies in the world is to curb poverty. In Nigeria, various administrations have adopted several policies and projects targeted at curbing poverty. These policies and projects in most cases have had negligible impact as the rate of poverty is still on the increase. This situation has led to the introduction of the National Fadama Projects. Thus, this study analysed the impact of National Fadama Development Projects on poverty reduction among beneficiaries in Plateau State. Data for the study were obtained from primary and secondary sources. The study adopted survey research design by which the questionnaire method of data collection was employed. Two local government areas were selected from each of the three senatorial zones of Plateau State based on simple random sampling making a total of six local government areas selected for the study. This is to ensure that all the beneficiaries have equal chance of being selected. Data collected and presented in tables were descriptively analysed. Quantitative analysis was carried out with the use of Logistic regression. The study revealed that the National Fadama Development Projects have significant impact on poverty reduction among beneficiaries in Plateau State. The study recommended, among others, that the scope of Fadama projects should be enlarged and more people should be encouraged to join the projects so as to reduce their poverty level.

Keywords: Fadama Projects, Poverty, logistic regression, Plateau State

JEL Code: Q18, Q19, I31, I38, C39

Contribution/Originality:

The originality of this study is based on the fact that other studies focused on different phases of the National Fadama Development Projects without assessing all phases of the projects collectively. This study, however, analysed all National Fadama Development Projects collectively. It has also contributed to existing literature on National Fadama Development Projects.

1.0 Introduction

Poverty is one of the major challenges to economic development confronting many economies today, particularly developing countries. It has taken the centre stage in global development issues. Poverty is considered as the manifestation of under-development that affects many aspects of human conditions. The nature, depth and severity of poverty vary between and among countries. Poverty transcends ethnic/tribal, religious and political barriers. It is a multifaceted and multidimensional problem that has economic, cultural, psychological, political and social dimension (Anyanwu, Oyefusi, Oaikhenan & Dimowo, 1997). Poverty has created disillusion, dissatisfaction, frustration and depression in the lives of Nigerians. Thus, some individuals have adopted the attitude of survival at all cost and by all means and as such, they easily give in to stealing, armed robbery, corruption, prostitution, etc in order to survive.

In Nigeria, the poverty situation is disturbing, as the human conditions in Nigeria have deteriorated, resulting from large scale poverty. Real disposable income has dwindled, while malnutrition rates are

¹ Corresponding Author's e-mail & Phone No.: onyijossy@gmail.com; +234 803-667-0934



on the increase. As population growth has outstripped the rate of food production and existing social services, the quality of nutrition, educational and health services have deteriorated (Odusola, 1997). The number of people living in poverty in the country increased from 27% in 1980 to 46% in 1985. In 1996, it further increased from 67% to 69% in 2010. It also increased to 69.7% in 2016 and 70% in 2017 (Ogwumike, 2001; National Bureau of Statistics (NBS), 2011; World Bank, 2018). This implies that the number of poor Nigerians living below poverty line has grown geometrically. Poverty is dominant in rural areas, for instance, in 1980, 28.1% of rural people lived below poverty line while 17.2% of urban people lived below poverty line. By 1985, poverty became a common feature in both rural and urban areas. Urban poverty incidence was more than doubled as it rose from 17.2% in 1980 to 37.8% in 1985. The incidence of rural poverty also increased from 28.3% to 51.4% within the period 1980-1985. In 1992, urban poverty headcount remained unchanged at 37.5% while rural poverty declined from 51.4% in 1985 to 46% in 1992. Poverty level in urban and rural areas continued to grow between 1992 and 1996 from 46% to 63.3% in rural areas and from 37.5% to 58.2% in urban areas. In 2010, urban poverty incidence grew rapidly to 61.8% along with rural poverty which grew to 73.2% (Okuneye, Fabusoro, Adebayo, & Ayinde 2004; Abimiku, 2009; National Bureau of Statistics, 2010). Poverty rate in Plateau State has fluctuated over time, as revealed by Federal Office of Statistics (1999); NBS (2011) ; NBS (2019). It stood at 49.5% in 1980 and increased to 64.2% in 1985. In 1992, it reduced to 50.2% but increased in 1996 to 62.7% and further increased to 77.8% in 2009. In 2018 it reduced to 51% but increased to 55.05% in 2019

Given these fluctuating and alarming poverty rates, which have had a negative impact, various administrations both past and present have at various times embarked on policies and projects in order to reduce poverty in Nigeria. These policies and projects in most cases have had negligible impact on the economy. In a further attempt to develop other sectors, boost productivity, improve the welfare of its citizens and reduce poverty, the Nigerian government, through the Agricultural Development Programme (ADP), introduced the National Fadama Development Projects. According to Alabi, Ogbonna, Lawal and Awoyinka (2014) and Girei, Dire, Iliya and Salihu (2013), the National Fadama development projects were aimed at boosting production, increasing income of Fadama users, increasing food security and enhancing farmer's welfare. These projects are into three phases. National Fadama Development Project (NFDP- I) focused mainly on crop production while the National Fadama Development Project (NFDP- II) was designed to sustainably increase the incomes of the Fadama users through expansion of farm and non-farm activities, and to improve the living conditions of the rural poor, contribute to food security as well as to increase access to rural infrastructure. The National Fadama Development Project (NFDP- III) is a follow-up project in collaboration with the new Agricultural Transformation Agenda which was adopted by the Government of Nigeria in 2011.

Given the myriad of agricultural policies and projects in Nigeria with poverty reduction as the underlying objective for most of them, particularly, the Fadama projects, it is necessary to investigate the extent to which this objective has been achieved. It is based on this background that it becomes pertinent to analyse the National Fadama Development Projects in order to appraise their impact on poverty reduction among beneficiaries in Plateau State.

2.0 LITERATURE REVIEW

2.1 Conceptual Explanation/Consideration

Fadama is derived from a Hausa word which meaning low-lying and floodable plains areas along major savannah rivers, which is used for irrigation purposes and fishing. Fadama development is a typical form of small-scale irrigation practice characterized by flexibility of farming operations, low inputs



requirement, high economic values, minimal social and environmental impact and hence conforms to the general criteria for sustainable development (Bature, Sanni & Adebayo, 2013). These projects are into three phases, which are Fadama I, II and III. These projects are expected to reduce poverty level of smallholder farmers through increased agricultural production. According to National Fadama Development Programme, (2013), the Fadama I and II projects were successfully refined approaches for improved utilization of these lands. Fadama II implemented an innovative local development planning (LDP) tool and building on the success of the community-driven development mechanisms. The cumulative impact of these earlier successful Bank-assisted projects attested to the robustness of the small-scale and community-based approach to Fadama development in an environmentally sensitive manner. The Fadama III aimed at scaling up the impacts and the development effectiveness of a well-performing project by aligning it more closely with the new Agricultural Transformation Agenda, adopted by the Government of Nigeria in 2011. The Fadama projects are organized by federal government through Agricultural development Program (ADP). In this case, Pooled loan from World Bank is used to finance the development of Fadama lands with the aim of introducing small-scale irrigation in states with Fadama development potentials.

Poverty, like an elephant is more easily recognized than defined, which is why it has been difficult to conceptualize a universally acceptable definition of poverty. Poverty manifests itself in so many ways and dimensions and its perception vary from society to society (Ozigbo, 2001). Because poverty affects many aspects of human life including physical, moral, and psychological, a concise and universally accepted definition of poverty is elusive. Obadan (1997) defined poverty as a situation of low income or low consumption. This approach has often been used for constructing poverty lines, which represent the values of income or consumption necessary to purchase the minimum standard of nutrition and other necessities of life. This implies that people are counted poor when their measured standard of living in terms of income or consumption is below the poverty line. Thus poverty line is a measure that separates the poor from the non-poor. Sen (1994) posited that poverty can be viewed as the lack of certain capabilities such as being able to participate with dignity in society. This means that poverty is a state of deprivation and is therefore multidimensional and not limited to income. Aku, Ibrahim and Bulus (1997) identified five dimensions of deprivation upon which poverty can be categorized. They include personal and physical deprivation, which are deprivation in form of health, nutrition, literacy, educational disability and lack of self-confidence; Economic deprivation, which are lack of access to property, income, factors of production, finance and other assets; Social deprivation that prevent full-participation in social, political and economic life; Cultural deprivation, which are deprivation in form of values, beliefs, attitudes, knowledge, information, and orientation preventing from controlling their own destinies and political deprivation.

For this study, poverty is defined as a state of deprivation in terms of personal and physical deprivation, economic deprivation, social deprivation, cultural deprivation and political deprivation. This definition of poverty is adopted as the working definition because it captured every aspect of poverty which is common in Nigeria and appeals more to the condition of farmers in Nigeria.

2.2 Theoretical Background

Theoretically, Akeredolu-Ale as cited by Uniamikogbo (1997); Tella (1997) identified four theories of poverty, which are the Necessity theory, the Individual – Attribute theory, the Natural-Circumstantial theory and the Power theory. The Necessity Theory, originally known as the social exclusion theory, was propounded by Rene Lenoir. This theory is of three variants. These are the functionalist variant, the evolutionist variant and that which has been developed in relation to capitalist entrepreneurial theory. The functionalist variant argued that specialization leads to efficiency and that since different



roles are differently evaluated, certain roles are given better rewards than others. Consequently, those who play such roles are placed high in the economic and social hierarchy in the society. This is also how the poor are seen to form or emerge. The evolutionist variant held the view that the poor in the society arise spontaneously with inequality and poverty acting as eliminators of the least fit, while the capitalist entrepreneurial variant does not support the notion of spontaneity. The theory posited that the crude exploitation of the poor by means of low wages and poor conditions of service allows for a possible rise in savings and the aggressive entrepreneurship that gave momentum to the industrial revolution in developed countries. The resultant inequality in income could result in the prevalence of poverty at lower end of society where the majority live (Uniamikogbo, 1997; Tella, 1997).

The Individual – Attribute theory, which has its root from the Classical and neoclassical perspective, was propounded by Adam Smith and David Ricardo. This theory holds the view that the poor in the society are the architects of their own misfortune. Thus, the position of an individual in the society's hierarchy of income and wealth is assumed to be determined by that individual's motivations, aptitudes, and ability. Abimiku (2009) explained that the theory emphasized on the fact that the poor were poor because they did not work hard, they squandered money on gambling, drinking and unnecessary luxuries and they had had disorder of family life. They had no ambition, no inner call for work, were fatalistic and suffered an intractable in-educability. Thus, this theory is based on the fact that only those that work hard excel and are found above the poverty line but the weak and lazy ones constitute the poor in the society.

The Natural-Circumstantial theory was propounded by Keynes and other neoliberal economics. The focus of this theory is the identification of certain important explanatory variables responsible for poverty. Among these are geographical location and the natural endowment of the individual's environment, unemployment, old age, etc. This theory is a geographically based theory of poverty, which builds on the other theories. Bradshaw (2006) explained that this theory calls attention to the fact that people, institutions, and cultures in certain areas lack the objective resources needed to generate well-being and income, and that they lack the power to claim redistribution.

The Power theory was propounded by Karl Marx. The central argument of the Power theory is determined in the structure of political society by the extent and distribution of poverty among the population. Poverty is seen as a result of the fact that a few people gain control of societal resources by the instrumentality of political and state power thereby, determining who gets what and how societal resources are distributed. This led to impoverishment as political disruptions may displace people; disrupt functioning of the market and cause severe economic breakdown. This condition will subsist, depending on the political consciousness of the people and the ability of the class of people to organize themselves and alter the existing oppressive property system (Uniamikogbo, 2007). Thus, there is the existence of political favouritism and corruption, leading to little or no economic opportunities for those that are not part of the network of those in power.

Having reviewed these theories, the major limitation of the necessity theory is the fact that hard work and the ability to carry out personal role were not taken into consideration. The individual – attribute theory incorporates hard work, but the major limitation is that it only operates within a structure of possibilities and limits set and defined by forces outside the scope of the individual. Although the natural-circumstantial theory has a more immediate bearing on policy than the other theories, but the view that poverty reduction can be attained without substantial changes in the larger economic, social and political environment is unrealistic. This is because a positive and substantial change in the environment is necessary for poverty reduction. A major implication of the power theory is that the attainment of a poverty free society requires radical altering of the structure of power in the society.



This has made the theory gloomy because of the envisaged implementation difficulty. Despite the limitation of the power theory, it is adopted for the study because it is most applicable to the Nigerian case, where major decisions of the country's economy are taken by the government and those who are part of the network of those in power have access to economic opportunities. Poverty reduction programmes and schemes are mainly organized by government and those that benefit from these programmes and schemes are part of the network of those in power.

2.3 Empirical Review

A number of studies have been carried out in different parts of Nigeria on the National Fadama Development Projects. For instance, Ezech, Anyiro, Ehiemere and Obioma (2012) examined gender issues on poverty alleviation programmes in Nigeria, using the case of the National Fadama 1 Development Project in Abia State, Nigeria. Multi-stage random sampling technique was used in the selection of the local government areas. The instrument for data collection was via well-structured and protested questionnaires. The result on the poverty gap (measures income shortfall) showed that the men required 46% and the women 48% of the poverty line to get out of poverty. In view of that, they recommended among other things that policy aimed at annulling the land tenure system and replacing it with a gender sensitive system that will redistributive the Fadama land equitably should be adopted.

An assessment of effects of Fadama 11 project on livelihood of farmers in Orire local government of Oyo State was carried out by Akangbe, Ogunyinka, Ayanda, Achem and Adisa (2012), using a random selection of six farmers from each of the 10 communities that were selected. Data were collected from interview schedule, which were analysed descriptively and quantitatively (Mann-Whitney and Kurska-Wallis test). Result from the findings showed that the project has a significant impact on the livelihood of farmers. Thus, it was recommended that the scope of the project be expanded to cover all farmers due to its potential to boost food production.

Olaolu, Akinagbe and Agber, (2013) conducted a study to examine National Fadama Development Project (II) (NFDP,II) as a panacea to poverty and food insecurity among ricefarmer beneficiaries in Kogi State, Nigeria. The study employed the use of interview schedule and questionnaire for data collection, in which descriptive statistics like frequency, percentage and mean score were used to analyse the data. Foster, Greer and Thorbecke (FGT) poverty model and food security model were used to determine farmers' food security status and poverty level. The study showed that the project had an appreciable impact on poverty reduction of the farmers by a change in the poverty incidence by 66.8% and 96.0% change in the poverty depth. It is recommended that, for rural development in Nigeria, the approach of the national Fadama development project phase two should be adopted for intervention programmes going by the impact of this project.

Girei, Dire, Iliya and Salihu (2013) analyzed the impact of National Fadama II facility in alleviating poverty on food crop farmers in Adamawa State using descriptive statistics and Foster, Greer and Thorbecke (FGT) Index. The findings from their study showed that the project has made an impact on the poverty level of the crop farmers in the study area. This may be due to the fact that the Fadama farmers engaged in different production activities resulting to increase in income thereby reducing poverty amongst them.

Ike (2012) carried out an analysis of the impact of Fadama III Project on poverty alleviation in Delta State, Nigeria through the use of Descriptive and Inferential statistical tools. Findings indicate that the real income of Fadama III beneficiaries increased by about 36.8% as a result of participation in the



project. By contrast however, average real income of Fadama III non beneficiaries increased only by 11.6%.

Based on empirical review, other studies conceptually focused on different phases of the National Fadama Development Projects without assessing all phases of the projects collectively. This study, however, conceptualized all National Fadama Development Projects collectively. This is a gap filled by this study

3.0 Data and Methodology

Data were collected from primary and secondary sources with the use of a questionnaire, administered to beneficiaries of Fadama projects in six selected LGAs in Plateau State. In this study, the target population consisted of all the beneficiaries of the Fadama Development Projects in Plateau State. The population of Fadama beneficiaries is shown in Table 1.

Table 1: Distribution of the Number of Beneficiaries in Plateau State

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S/no.	Geographical zones	Local Government Areas	Total
1	Plateau North	Jos North	2004
		Barkin Ladi	1259
		Jos East	1090
		Riyom	906
		Jos South	1058
		Bassa	1254
2	Plateau Central	Bokkos	894
		Pankshin	1262
		Kanam	1455
		Kanke	1488
		Mangu	1246
3	Plateau South	Langtang North	1444
		Langtang South	1621
		Mikang	1618
		Wase	1778
		Qua'an pan	1531
		Shendam	1044
TOTAL			22952

Source: National Fadama Development Project Coordination Office, Plateau State

Table 1 showed the number of beneficiaries in Plateau State. The total number of beneficiaries in Plateau State is twenty two thousand nine hundred and fifty two (22952). From the table, it is divided into three sub-population, which are Plateau North, Plateau Central and Plateau South senatorial zones. Each of the senatorial zones is made up of local government areas, in which two local government areas were selected from each of the senatorial zones based on simple random sampling as shown in Table 2

Table 2: Sample Distribution of Selected Local Government Areas and the Beneficiaries of the Fadama Projects

S/no.	Geographical zones	Local Government Areas	No. of beneficiaries in selected LGAs	Sampled no. of beneficiaries
1	Plateau North	Bassa	1254	303
		Jos East	1090	293



2	Plateau Central	Pankshin	1262	304
		Bokkos	894	276
3	Plateau South	Langtang North	1444	313
		Qua'an pan	1531	317
TOTAL			7475	1806

Source: Author's computation (2018).

From Table 2, the local governments selected for the study are Bassa, Jos East, Pankshin, Bokkos, Langtang North and Qua'an pan. Beneficiaries of the projects were listed and their sample was carried out using the simple random sampling technique. In this case all the beneficiaries have equal chance of being selected. In these selected local government areas, there are seven thousand four hundred and seventy five (7475) number of beneficiaries of the Fadama projects. Since the sample size is so large, Yamane formula was used in each of the selected local government areas to determine the sample size of beneficiaries, which is one thousand eight hundred and six (1806) (the number of beneficiaries selected for the study). In this case, a total number of one thousand eight hundred and six (1806) copies of the questionnaire were administered to the project's beneficiaries selected for the study. The questionnaire was analysed by applying descriptive and quantitative statistics.

This study employed descriptive statistical tools such as tables and simple percentages for clear presentation and analysis of the data collected from respondents with the use of questionnaire. Based on the quantitative analysis, the study made use of multivariate Logistic Regression Model to analyse the effect of Fadama projects on poverty reduction in the study area. Yusuf, Adesanoye and Awotide (2008) defined logistic regression as a model in which a set of supposedly exogenous explanatory variables (indicators of poverty level in this case) is regressed against a dichotomous (binomial) variable representing whether or not a household is poor. The motivation for using logistic regression in this study is due to the fact that it predicts the probability of a household being poor or not. It gives insight into variables that are important in the determination of poverty. Positive and negative values of the estimated coefficients from logistic regression reveal whether a particular variable increases or decreases the probability of reducing poverty. Moreover, interpretation of the odds ratio provides additional information on the degree of impact by the variable. The logit model for this study follows closely the works of Arosanyin, Olowosulu and Oyeyemi (2011), Ogunrinola (2011) and Achia, Wangombe & Khalioli (2010). Using the World Bank standard of \$1.90 per day, a dichotomous variable indicating whether the household is poor or not as the dependent variable was computed. That is,

$$Pov = \begin{cases} 1 & \text{if household is poor} \\ 0 & \text{if otherwise} \end{cases}$$

Where *POV* = household poverty defined as 1 if household is below the poverty line and 0 if household is above the poverty line

Since the dependent variable is binary, the relationship between the dependent and independent variables is non-linear. The logistic function, which describes this relationship, is of the form:



$$P = \frac{\exp^{(\beta_0 + \beta_i X_i)}}{1 + \exp^{(\beta_0 + \beta_i X_i)}} = \frac{e^{(\beta_0 + \beta_i X_i)}}{1 + e^{(\beta_0 + \beta_i X_i)}} = \frac{e}{1 + e} \quad (1.1)$$

Where P is the probability that the dependent variable is equivalent to 1, meaning that household is poor. Regression coefficients $\beta_i, i = 1, 2, \dots, n$, are the unknown parameters. The logistic transformation for the estimation of the β 's is stated as:

$$\text{logit}(p) = \ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \varepsilon \quad (1.2)$$

Where

$\ln\left(\frac{p}{1-p}\right)$ = natural log of odd ratio (probability of being poor and probability of not being poor)

$X_1 - X_7$ = predictor variables of poverty status (X_1 = age; X_2 = marital status; X_3 = educational level of the household head; X_4 = size of the household; X_5 = house type; X_6 = number of meals taken per day; X_7 = access to medical care). The appropriateness of these predictor variables in explaining poverty status was determined on the basis of Pearson's Chi-square statistic which determines the level of association between the predictor variables and the poverty variable.

$\beta_1 - \beta_7$ are the parameter estimates

β_0 is the intercept term and ε is the error term

Decision Rule: Reject the null hypothesis if the probability value of the likelihood ratio statistic is less than 0.05 (5%) level of significance.

4.0 RESULT AND DISCUSSION

The data obtained were analysed descriptively and quantitatively with respect to information generated on National Fadama Projects and poverty level of beneficiaries. It was on the basis of this analysis that conclusions were drawn as to reject or accept the null hypothesis.

4.1 Descriptive Analysis

Table 3: Fadama Projects and Poverty Reduction among Beneficiaries

Variables	Frequency	Percentage
Marital Status		
Single	688	44.7
Married	736	47.8
Widowed	63	4.1
Divorced	30	2.0
Separated	22	1.4
Educational level		
No formal education	192	12.5
Primary	89	5.8
Secondary	293	19.0
ND/NCE	645	41.9
HND/First Degree	263	17.1
Masters Degree	56	3.6
Others	1	0.1
Family Size		
≤ 3	494	32.1
4-6	727	47.2



7-9	244	15.9
≥10	74	4.8
No. of family members used as labourers for your business		
None	243	15.8
≤3	495	32.2
4-6	382	24.8
7-9	220	14.3
≥10	199	13.0
No. of other people employed as a beneficiary		
None	98	6.4
≤ 5	484	31.5
6-10	518	33.7
11-15	267	17.3
15-20	171	11.1
≥ 21	1	0.1
Areas poverty has affected your household		
Education	276	17.9
Health	263	17.1
Food security	198	12.9
Infrastructure	286	18.6
Housing	480	31.2
Others	36	2.4
Extent to which Fadama projects have reduced poverty		
None	27	1.8
1-20%	108	7.0
21-40%	92	6.0
41-60%	83	5.4
61-80%	1154	75.0
81-100%	75	4.8
House type of beneficiaries		
Thatched-mud house	262	17.0
Zinc house with cemented floor	1277	83.0
Medical care accessed by beneficiaries		
Herbs	135	8.8
Self-medication	757	49.2
Dispensary/clinic/hospital	647	42.0
Number of meals taken per day		
Once	00	00
Twice	66	4.2
Three times	935	60.8
More than three times	538	35.0
Level of food available for consumption before benefiting from Fadama		
None	177	11.5
1-20%	150	9.7
21-40%	120	7.8
41-60%	807	52.4
61-80%	278	18.1
81-100%	83	5.4
Extent of change in the level of food available for consumption as a beneficiary		
None	40	2.6
1-20%	73	4.7
21-40%	113	7.4



41-60%	99	6.4
61-80%	1131	73.5
81-100%	83	5.4

Source: Computed using SPSS 22 from Field Survey, 2019.

The result of the marital status of the respondents indicated that 736 (47.8%) of the beneficiaries were married; while 688 (44.7%) were single. The widowed constituted 63 (4.1%), the divorced were 30 (2.0%) and those separated constituted 22 (1.4%). This showed that the marriage institution is still cherished and an indication of economic responsibilities of the respondents in caring for dependents. Thus, projects that are economically beneficial to them, such as the Fadama Projects, are most often embraced in order to meet the needs of their family so as to reduce the incidence of poverty.

Based on the family size of beneficiaries, majority of the beneficiaries which were 727 (47.2%), had a family size within the range of 4-6. This was followed by 494 (32.1%) beneficiaries with family size of three or less than three (32.1%). Those with family size within the range of 7-9 constitute 244 (15.9%) while the least 74 (4.8%) had a family size of 10 and above. This buttressed the fact that the family size of beneficiaries is not large enough to affect beneficiaries' income and increase poverty.

The distribution of respondents based on educational level showed that 645 (41.9%) of the respondents were ND/NCE holder, 293 (19%) had secondary school certificate, 263 (17.1%) had HND/First degree, 192 (12.5%) did not have any formal education while 56 (3.6%) were M.Sc. degree holders. Thus, majority of the beneficiaries have had a form of education at different levels, which helped them to properly comprehend the activities of Fadama projects and in the adoption of new and improved innovations. This had positioned beneficiaries to be more productive, leading to increase in the income, which is positively related to improvement in standard of living as part of the strategy for poverty reduction.

With regard to the number of beneficiaries family members used as labourers for their business operations, 495 beneficiaries representing 32.2% pointed out that the number of family members used as labourers for their business operation was 3 or less than that while 382 beneficiaries representing 24.8% were of the view that the number of family members used as labourers for their business operation was within 4-6. Beneficiaries representing 243 (15.8%) agreed that no family member was involved in their business operations. It was further revealed that 220 beneficiaries representing 14.3% attested that the number of family members used as labourers for their business operation was within 7-9 while 10 or more members were used for the business operations of beneficiaries as pointed out by 199 beneficiaries representing 13%.

Considering the number of people, apart from the family members, employed by the projects beneficiaries, the result has shown that 518 beneficiaries representing 33.7% claimed that the number of workers employed for their business operation was within 6-10, 484 beneficiaries representing 31.5% agreed that the number of people hired as labourers for their business operation was 5 or less, 267 beneficiaries representing 17.3% attested that the number of workers hired as labourers for their business operation was within 11-10. It was also revealed that 171 beneficiaries representing 11.1% said that the number of workers hired as labourers for their business operation was within 15-20, 98 beneficiaries representing 6.4% revealed that no worker was employed in their business operations while 21 or more employees were hired for the business operations of beneficiaries as disclosed by 1 beneficiary representing 0.1%.

Based on the areas which poverty has affected beneficiaries and their household, 480 (31.2%), 286 (18.6%), 276 (17.9%), 263 (17.1%) and 198 (12.9%) beneficiaries claimed that they have been affected



by poverty in the areas of housing, infrastructure, education, health and food security respectively. Beneficiaries (36) representing 2.4% claimed that they had been affected by poverty in other areas other than the ones mentioned.

The extent to which Fadama projects have reduced poverty was also examined. It showed that majority of the beneficiaries (1154) representing 75% pointed out that Fadama projects have reduced their poverty within 61%-80%, 108 beneficiaries representing 7% agreed that Fadama projects have reduced poverty within 1%-20%, 92 of the beneficiaries representing 6% revealed that Fadama projects have reduced poverty within 21%-40%, 83 beneficiaries representing 5.4% were of the view that Fadama projects have reduced poverty within 41%-60%, 75 of the beneficiaries representing 4.8% disclosed that Fadama projects have reduced poverty reduction within 81%-100% while 27 beneficiaries representing 1.8% attested to the fact that Fadama projects have not reduced poverty. This is a clear indication that Fadama projects have reduced poverty among beneficiaries.

With regard to house type, the result pointed out that 83% of the beneficiaries live in zinc-house with cemented while 17% of the beneficiaries live in thatched-mud house. Based on beneficiaries' access to medical care, 49.2% resort to self-medication, 42% visit the dispensary, clinic or hospital, while 8.8% take herbs. Considering the number of meals taken per day, the result showed that most of the beneficiaries representing 60.8% eat three times daily while beneficiaries that eat more than three times and twice daily represent 35% and 4.2% respectively. No beneficiary eats once day.

The level of food availability for consumption before benefiting from Fadama was presented in Table. The result showed that 807 beneficiaries which constituted 52.4% accepted that the level of food availability for consumption has increased within the range of 41%-60%, 278 (18.1%) beneficiaries attested that the level of food availability for consumption has increased within the range of 61%-80%, 177 (11.5%) beneficiaries were of the view that the level of food availability for consumption has not changed, 150 (9.7%) beneficiaries accepted that the level of food availability for consumption has changed within the range of 1%-20%, 120 (7.8%) beneficiaries disclosed that the level of food availability for consumption has increased within the range of 21%-40% while 7 (0.5%) attested that the level of food availability for consumption has increased within the range of 81%-100%.

The extent to which the level of beneficiaries' food, availability for consumption has changed since they started benefiting from Fadama was rated. It showed that 1131 beneficiaries which constituted 73.5% accepted that the level of food availability for consumption has increased within the range of 61%-80%, 113 (7.4%) beneficiaries agreed that the level of food availability for consumption has increased within the range of 21%-40%, 99 (6.4%) beneficiaries attested that the level of food availability for consumption has increased within the range of 41%-60%. while 5.4% revealed that the level of food availability for consumption has increased within the range of 81%-100%, 73 (4.7%) beneficiaries accepted that the level of food availability for consumption has increased within the range of 1%-20% while 40 (2.6%) beneficiaries opined that the level of food availability for consumption has not changed. This is an indication that the projects have increased the consumption level of beneficiaries, which is as a result of increased output.

4.2 Impact of Fadama Development projects on poverty reduction:

4.2.1 The logistic (logit) regression approach

Hypothesis



H₀: The National Fadama Development Projects have no significant impact on poverty reduction among beneficiaries in Plateau State.

Table 4: Logistic Results for the Impact of Fadama Development Projects on Poverty Reduction

Dependent Variable: P

Method: ML - Binary Logit (Newton-Raphson / Marquardt steps)

Variable	Coefficient	Std. Error	Z-statistic	Prob.	Exp(β) (Odds Ratio)
X1	0.259673	0.118862	2.184657	0.0289	1.296506
X2	-0.792654	0.363723	-2.179281	0.0293	0.452642
X3	-0.295606	0.100968	-2.927715	0.0034	0.744081
X4	-0.140226	0.210334	-0.666684	0.5050	0.869162
X5	-0.406978	0.372759	-1.091801	0.2749	0.665659
X6	0.828324	0.284292	2.913641	0.0036	2.289478
X7	-0.267531	0.233371	-1.146377	0.2516	0.765267
C	-3.133297	1.366499	-2.292938	0.0219	0.045574
McFadden R-squared	0.075933	Mean dependent var		0.030403	
LR statistic	31.28173	S.E. of regression		0.169735	
Prob(LR statistic)	0.000055	Log likelihood		-190.3402	
Obs with Dep=0	1467	Total obs		1513	
Obs with Dep=1	46				

Source: Author's computation based on results from E-views 10

The multivariate logistic regression analysis showed that changes in age (X1), marital status (X2), educational attainment (X3), size of the household (X4), house type (X5), number of meals taken per day (X6) and access to medical care (X7) have impact on poverty reduction among beneficiaries of Fadama development projects in Plateau State. The results revealed that an addition to the households in terms of marriage (X2) reduced the odds of being poor by 54.73% (i.e. $(0.452642 - 1) \times 100$); this procedure is applied on all the odds ratios to obtain percentage changes. Also, an increase in educational attainment (X3) reduced the probability of being poor by 25.59%. The results also indicated that, a one person addition to the household (X4) and a change from thatch house to zinc house (X5) reduced the probability of being poor by 13.08% and 33.43% respectively. Similarly, an increase in accessibility to quality medical care (X7) reduced the odds of being poor by 23.47%. On the other hand, the results showed that an additional year in the age of the beneficiaries (X1) and an increase in the number of meals taken per day (X6) increase the probability of being poor by 29.65% and 128.95% respectively.

On the significance of the impacts, the result revealed that X1, X2, X3 and X6 are statistically significant at 5% level of significance given that their probability values are less than 0.05 while X4, X5 and X7 are statistically insignificant at 5% level of significance given that their probability values were greater than 0.05. Overall, the model is significant given that the probability value of the likelihood ratio statistic (prob. (LR-statistic, of 0.000055) is less than 0.05. The McFadden R-squared which is the pseudo version of the R-squared in least squares regression indicates that involvement in the Fadama development projects has reduced poverty level of the beneficiaries by 7.59%.

The study made use of the likelihood ratio (LR) statistic in testing the research hypothesis. In other to achieve the objective of the study, the null hypothesis of the study stated that the National Fadama



Development Projects have no significant impact on poverty reduction among beneficiaries in Plateau State was tested at 5% level of significance.

Decision Rule: Reject the null hypothesis if the probability value of the likelihood ratio statistic is less than 0.05 (5%) level of significance.

Decision: Since the probability value of the likelihood ratio (0.000055) is less than 0.05 ($p < 0.05$), the null hypothesis is rejected and the study concludes that the National Fadama Development Projects have significant impact on poverty reduction among beneficiaries in Plateau State.

5.0 Conclusion and Recommendations

The study was carried out in order to assess the impact of National Fadama Development Projects on poverty reduction among beneficiaries in selected Local Government Areas (LGAs) in Plateau State, Nigeria. Based on the results obtained from the findings, the National Fadama Projects have played an important role in the fight against poverty in Plateau State as there has been a reduction in the number of beneficiaries categorized as poor in the State.

This study has established that National Fadama Development Projects are fundamental to poverty reduction in Plateau State. Therefore, the research conclusively established the existence of a positive correlation between Fadama projects and poverty reduction. In view of this finding, this study recommends that the scope of Fadama projects should be enlarged to cover a larger percentage of the population. Thus, other people should be encouraged to join the projects so as to reduce their poverty level, which can be done by intensifying the awareness of the benefits of Fadama projects to the masses.

There is need to organise health talks for beneficiaries so as to advise and encourage them to take their health seriously and visit the clinics/hospitals for proper medical attention whenever they are sick. This is as a result of the finding from descriptive analysis, that majority of the beneficiaries resort to self-medication.

Given that an increase in the number of meals taken per day increases the probability of being poor, beneficiaries should form the habit of not exceeding their consumption level from their output. They should sell some of these produce to earn income in order to meet other needs and also to save from the income earned for future investment.

The authorities in charge of the Fadama projects should educate the younger beneficiaries to be actively involved in the project so as to support the aged and to also prepare for their future. This is based on the finding that an additional year in the age of the beneficiaries increases the probability of being poor.



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