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COMMUNITY DRIVEN DEVELOPMENT: THE CASE OF FADAMA II COOPERATIVES IN ALLEVIATING POVERTY IN A DEVELOPING COUNTRY

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SUMMARY

This study investigated the effects of Fadama II cooperatives on poverty status of farming households in Oyo State, Nigeria. Specifically, the study assessed the level of participation in Fadama II cooperatives among the participants; determined the factors influencing the level of participation in Fadama II cooperatives; examined the poverty status of the participants in Fadama II cooperatives; and determined the effects of Fadama II cooperatives on the poverty status of the participants. The study was conducted in Oyo State, south-western Nigeria. A multi-stage sampling procedure was used to select respondents for this study. A total number of 150 farmers were selected for the study. Data were analyzed using descriptive statistics, participation index, multinomial logit regression model, Foster, Greer and Thorbecke (FGT) index, and Probit regression model. The result showed that the respondents participated in the designated activities carried out within their respective Fadama II cooperatives, with the maximum participation in payment of counterpart fund (100%), followed by participatory rural appraisal process (86.7%). Participation index revealed that the majority (46.7%) of the respondents had their level of participation above the grand mean. Interestingly, gender, farming experience and income from Fadama II cooperative positively and significantly influenced both partial and full participation in Fadama II cooperatives. The poverty line is observed to be ₦44300 per month (\$115.36 per month). The incidence, depth and severity of poverty are estimated to be 0.28, 0.067 and 0.013, respectively. Probit estimates revealed that Fadama II cooperatives had significant and positive effect on alleviating the poverty status of the participants. Following the findings of the study, government and non-governmental organizations are encouraged to ensure that more farmers participate in Fadama II cooperatives. In addition, the approach of Fadama II cooperatives should be adopted for intervention programmes in developing countries that depend on agriculture not only for feeding their population but also as a business venture.

Key words: Community Driven Development, Fadama II Cooperative, Poverty flora

INTRODUCTION

In spite of Nigeria's vast resources, the country is still one of the poorest nations in the World (Odion, 2009). The issue of poverty in Nigeria has been described as widespread and severe (Ike, 2012). According to Ichoku et al. (2012), poverty statistics in Nigeria showed a continued downward trend in the indicators of welfare. Within the period of 7 years (2003 to 2010), the proportion of the Nigerians living in absolute poverty jumped from 54 percent to 70 percent. This shows that poverty in Nigeria is absolute rather than being relative. Recent poverty and inequalities statistics in Nigeria show that about 100 million people subsist on below \$1.90 per day (World Bank, 2016), while nearly 90 million people are living in abject poverty, which is nearly 41% of its estimated population (Adekola, 2017; Elem 2018; Dauda, 2019; NBS, 2019). Meanwhile, agriculture is the locus of poverty in Nigeria (World Bank, 1996), employing about 70% of the working population. The prolonged incidence of poverty has really

resulted in low agricultural productivity among farmers. This has serious implications on welfare of the farmers and economic development of the country. In an attempt to break this vicious cycle of poverty, it became imperative that policy geared at alleviating poverty take agriculture into cognizance.

Consequently, a number of programmes have emerged to address this important challenge and to promote the livelihood of the beneficiaries who participate in such programmes. According to Abo (2009) and Adejuwon & Tijani (2012), such programmes include the National Accelerated Food Production Programme (NAFPP) (1974), River Basins Development Authorities (RBDA) (1975), Operation Feed the Nation (OFN) (1976), Green Revolution (GR) (1979), Integrated Rural Development Projects (IRDP) (1980), Agricultural Development Programme (ADP) (1985), National Directorate of Foods, Roads and Rural Infrastructure (NDFRI) (1988), World Bank-Assisted National Agricultural Research Projects (1991), National Agricultural Support Programme NASP (1992), National Programme on Food Security NPFS (1999), among others. However, these programmes have not yielded the much expected results as many of them have collapsed or stagnated. According to Ajibefun & Aderinola (2004) and Muhammad et al. (2011), the programmes collapsed or stagnated because they are government-designed programmes and the external support for such programmes ceased. There is therefore an urgent need for people-designed programmes, where rural people themselves will be involved in both project selection and implementation to improve their existing economic and social conditions. In light of the above mentioned, Fadama II cooperatives was introduced and it is the bottom-up approach which uses Community-Driven Development (CDD) approach that negates the top-bottom approach employed by other programmes (Dongier et al., 2001). The programme focused on poverty reduction with deliberate efforts to include the poor and vulnerable people because they are deprived of human well-being assets, vulnerable to a lot of adverse conditions beyond their control, lack dignity in society and ability to enjoy freedom and values of life (Dongier et al., 2001; Dasgupta & Beard, 2007; Labonne et al., 2007).

Consistent with CDD approach, the cooperative activities are centered on Fadama Users Groups (FUGs) and Fadama Community Association (FCAs). The FUGs, which comprise the vulnerable group (such as widows, less dominant and marginal Fadama users, facilitators and others), form the FCAs. The FUGs are encouraged to pool resources together and participate in different stages of the project development in their community. The basis of the programme is active participation of the members in the project design and implementation. Oni & Olaniran (2011) noted that participation in such programme is necessary and assists rural people in alleviating their poverty. However, non-involvement of the beneficiaries in the design and implementation can lead to bad project design, less cost-effective and untimely delivery of project inputs and inequitable distribution of project benefits (Mustapha, 2004). Therefore, participation of rural farmers in the programme is imperative. However, the level of participation in Fadama programme has been low and this has been attributed to a number of factors.

Several authors including Adegbite et al. (2008), Muhammad et al. (2011), Ike (2012), Innih & Dimelu (2013) and Alabi et al. (2014) have studied the effects of Fadama II cooperatives on different economic outcomes such as the beneficiaries (FUGs) livelihood, resource use efficiency, optimal plan for Fadama farming, and socio-economic status of the farmers. Meanwhile, few studies have been carried out on the effects of Fadama II cooperatives on poverty alleviation among the farmers, leaving a gap in literature. Therefore, this study is aimed at determining the effects of Fadama II cooperatives on poverty alleviation among the farmers. In view of this, this study provides answers to the following questions: What are the levels of participation in Fadama II cooperatives among the participants? What are the factors affecting level of participation in Fadama II cooperatives among the participants? What is the poverty status of the participants in Fadama II cooperatives? What are the potential contributions of Fadama II cooperatives in alleviating poverty among their participants?

MATERIAL AND METHODS

The study was conducted in Oyo State, South-western Nigeria. The State lies between the latitude 7°N and 19°N of the equator and between 2.5°E and 5°E of the prime meridian. It is a humid tropical area with distinct dry and wet seasons. The rainfall is usually high between April and October with a slight drop in August, while it is very low between November and March and it is this period of dry season that justifies the practice of Fadama in the area. The temperature is moderately high throughout the year with a narrow range between the mean monthly minimum and maximum temperature. The peak of the maximum temperature, which varies from 20.90°C to 33.80°C , is usually between February and March, just before the onset of rain, while the lowest minimum temperature varies from 21.0°C to 25.0°C , and it is usually between December and January during the harmattan. The relative humidity is moderately high all the year round with the highest figures recorded during the dry season at 2100hrs. The lowest figures are recorded at 1500hrs daily. The soil type is determined to be very rich because of its abundance in clay, kaolin and aquamarine and it is suitable for growing arable and tree crops. There are also vast Fadama lands with

rich underlying flood plains all over the area. Agriculture is one of the main occupations of the people in Oyo State. This climate is favorable for cultivation of crops. A multi-stage sampling procedure was employed to select respondents for this study. The first stage was purposive selection of two Agro-ecological zones in the State, so Ogbomoso and Ibadan/Ibarapa zones were selected. The selection was based on the people's participation in Fadama II cooperatives. The second stage was purposive selection of Surulere from Ogbomoso zone while Akinyele was considered from Ibadan/Ibarapa zone. This selection was based on the numbers of Fadama II cooperative community associations (FCAs) in the LGAs. The third stage was the simple random sampling of five registered FCAs in each LGAs. The fourth stage was a simple random selection of three Fadama II cooperative user groups (FUGs) in the selected FCAs. The final stage involved a simple random selection of 5 participants of Fadama II cooperative for the study. A total number of 150 respondents were selected for the study.

Analytical techniques

Data were analyzed using descriptive statistics, participation index, multinomial logit regression model, Foster, Greer and Thorbecke (FGT) index and Probit regression model.

Participation index

Following Ovharhe & Gbigbi (2016) and Nwoye & Nwalieji (2019), the participation index was constructed by means of a 3-point Likert scale. The respondents were asked to indicate their level of participation (to a great extent, to an extent and to no extent) in Fadama activities. The 3-point scale was used as follows: to a great extent = 3, to an extent = 2, and to no extent = 1. The mean score for participation was calculated by adding the three responses to obtain 6, which was further divided by 3 to obtain 2.0. The 2.0 was regarded as the grand mean to determine the level of participation of the farmers in Fadama activities, where low participation is the number of respondents with mean participation scores below 2.0; partial participation is the number of respondents with mean participation scores within 2.0, high participation is the number of respondents with mean participation scores above 2.0.

Multinomial logistic regression

Decision to participate in Fadama II cooperatives is assumed to be the outcome of a complex set of factors. These are certain social and institutional factors that could affect the likelihood of participating in Fadama II cooperatives. The estimated model is specified as follows:

$$Y_i = \beta_0 + \beta_1 \text{AGEHHED} + \beta_2 \text{FFEDU} + \beta_3 \text{POCC} + \beta_4 \text{FAMEXP} + \beta_5 \text{HHSIZE} + \beta_6 \text{INFAD} + \beta_7 \text{ACCREDIT} + \beta_8 \text{GENHHED} + \beta_9 \text{FAMSIZE} + e_i \quad (1)$$

Where:

Y_i - a single dependent variable with three categories (category 1 is low participation; category 2 is partial participation; category 3 is full participation)

The definitions of independent variables are as follows:

AGEHHED - age of the farmers (years)

FFEDU - the number of years of formal education (years)

POCC - primary occupation (dummy variable 1= farming, 0= otherwise)

FAMEXP - the number of years of farming experience (years)

HHSIZE - farm household size (#)

INFAD - income from Fadama II cooperative (₦)

ACCREDIT - access to credit (1= Access, 0= otherwise)

GENHHED - gender of household head (0= female, 1= male)

FAMSIZE - farm size (ha)

e_i - random error term

Foster, Greer and Thorbecke (FGT) index

Following Foster et al. (1984), FGT index was used to estimate the poverty status among Fadama II cooperative participants. The index is specified as shown below:

$$FGT_\alpha = \frac{1}{n} \sum_{i=1}^I \left(\frac{Z - Y}{Z} \right)^\alpha \quad (2)$$

Where:

n - total number of farmers

Z - poverty line

Y_i - income of the poor farmers

l - number of farmers below the poverty line

α - FGT value

' α ' can take a value of 0, 1 or 2. However, when $\alpha = 0$, FGT measures incidence of poverty, when $\alpha = 1$, FGT measures the depth of poverty. When $\alpha = 2$, FGT measures the severity of poverty. Nevertheless, the closer the value of FGT index is to 1, the greater the poverty level.

Probit regression model

Probit regression model was used to determine the effect of Fadama II cooperatives on the poverty status of the participants. The participants were classified as poor or non-poor based on estimations of the poverty line to give a dummy variable with two categories; 1 = Participants above the poverty line, 0 = Participants below the poverty line. Then the dummy variable was used as dependent variable in the probit regression model.

The explicit function is expressed as follows:

$$Y_i = \beta_0 + \beta_1 GF + \beta_2 HHS + \beta_3 IFP + \beta_4 FXP + \beta_5 EDL + \beta_6 HHE + \beta_7 MMS + e_i \quad (3)$$

Where:

Y - the poverty status (dummy variable; above the poverty line =1, below the poverty line =0)

The definition of explanatory variables included in the model is:

GF - gender of farmer (dummy variable; 0= female, 1= male)

HHS - household size (number)

IFP - income from participating in Fadama II cooperative (₦)

FXP - farming experience (years)

EDL - education level (years)

HHE - household expenditure (₦)

MMS - membership of cooperative society (dummy variable; 0= non-member, 1= member)

e_i - random error term

RESULTS AND DISCUSSION

Socio-economic characteristics of Fadama II cooperative participants

Socio-economic characteristics of Fadama II cooperative participants are presented in Table 1. The mean age of the respondent is 51 (± 9.1) years, which is in line with the research findings of Ike (2012), and which implies that the farmers are economically active. The majority (70%) of the respondents are males, indicating that male farmers dominate Fadama II cooperatives. Similarly, the majority of the respondents (90%) are married. This finding implies that married farmers have more responsibilities which would induce them to participate in Fadama II cooperatives to make economic gain so as to meet their family financial obligations. It is also observed that the majority of the respondents (93%) have formal education, which suggests that the majority of the respondents are literate. This is a good indicator for proper understanding of the activities in Fadama II cooperatives, and it is in line with the research findings of Adeyemi et al. (2020). The average household size of the respondents in the study area is 9 (± 3.4), which implies that the respondents have relatively larger household sizes. The average farm size in the study area is 5 (± 4.5) hectares. It showed that most of the respondents are small-scale farmers. The average farming experience is 19 (± 8.0) years, which suggests that the respondents have many years of farming experience.

Table 1. Socio-economic characteristics of Fadama II cooperative participants

Variables	Fadama II Cooperative Participants
Male (%)	70
Age (years)	51(9.10)
Married (%)	90
Farm size (ha)	5(4.5)
Formal education (%)	93
Household size (#)	9 (3.4)

Years of farming experience	19(8.0)
Data source: Field survey, 2017.	

Participation level of farmers in Fadama II cooperatives

Participation in the designated activities carried out within their respective user group is presented in Table 2. All (150) of the respondents participated in the payment of counterpart fund, followed by attendance of training workshop (142), followed by participatory rural appraisal process (130). Table 3 revealed that the participation level of the majority (46.7%) of the respondents was above the grand mean. This implies that majority of the respondents participate in various designated activities of Fadama II cooperatives, which is in line with the findings of Tiarniyu et al. (2015). This is expected to improve the social, economic and financial status of the members of the group.

Table 2. Level of participation in designated activities

Project activities	To a great extent	To an extent	To no extent	Mean score	STD
Payment of counterpart fund	150	0	0	3.000	0
Payment of dues and levels	109	24	17	2.613	0.683
Participation in PRA	130	16	4	2.840	0.435
Attendance of training workshop	142	7	1	2.940	0.265
Election of association executives	113	31	6	2.713	0.535
Advisory services	103	35	12	2.607	0.633

Table 3. Participation level in Fadama II cooperative

Level of participation	Frequency	Percentage
Low participation	56	37.3
Medium participation	24	16.0
High participation	70	46.7
Total	150	100.0
Data source: Field survey, 2017.		

Factors influencing participation in Fadama II cooperatives

The factors influencing farmer's decision to participate in Fadama II cooperatives are presented in Table 4. The log likelihood of Chi-squared was significant ($P=0.0002$), suggesting strong explanatory power. The pseudo R^2 was 0.2448, indicating that explanatory variable explained about 24.5% of the variation in the level of participation. This is indicative of good fit and the correctness of the estimated model. Interestingly, gender, farming experience and income from Fadama II cooperative positively and significantly influenced both partial and full participation in Fadama II cooperatives. This implies that the male farmers had higher probability of being both partial and full participant in Fadama II cooperative. This could be attributed to the fact that the responsibility saddled with being a male farmer would push the farmers to participate more in Fadama II cooperatives. Also, longer farming experience increases the probability of being both partial and full participant in Fadama II cooperatives.

This result suggests that experienced farmers are more willing to participate in Fadama II cooperatives, which is in line with the findings of Kankwenda et al (2000), Ironkwe (2011), Ezech (2012) and Danjuma et al. (2016) that farmers with many years of experience participate more in Fadama programmes. Furthermore, growth in income from Fadama increases the probability of being both partial and full participant in Fadama II cooperatives. This suggests that farmers will participate more in Fadama II cooperatives if it increases their level of income. This result is in consonance with the findings of Nkonya et al. (2008), Ibeagwa (2011) and Inyang (2014) that more income from Fadama II cooperatives will motivate their continuous participation in the programme.

Table 4. Factors influencing participation in Fadama II cooperative

Variables	Partial participation	Full participation
Gender	3.960*** (3.16)	2.043*** (3.35)
Age	0.102 (1.63)	-0.005 (-0.17)
Years of Education	-0.020 (-0.24)	0.019 (0.399)
Household size	0.005 (0.03)	0.092 (1.05)
Primary occupation	-0.578 (0.53)	-0.297 (-0.71)
Farm size	-0.016 (-0.12)	-0.015 (-0.28)
Farming experience	0.090** (2.11)	0.076** (2.19)
Access to credit	16.297 (-0.01)	7.071 (0.610)
Income from Fadama	0.018** (2.16)	1.696** (2.04)
Constant	1.806*** (3.01)	3.399** (3.45)

The base outcome or category is low participation, Numbers of observation = 150, figures in parenthesis represent P-values, Log likelihood = -90.595, LR chi-square (26) = 58.73, $\text{Prob} > \chi^2 = 0.0002$, Pseudo $R^2 = 0.2448$, ***= significant at 1%, **= significant at 5%,

Source: Field survey, 2017

Poverty status of Fadama II cooperative participants

The poverty line was calculated as two-third mean per capital household expenditure of the participant's households. The participants with mean per capital household expenditure below this poverty line were classified as poor, while those above the mean per capital household expenditure were classified as non-poor. The results obtained from FGT index for the incidence, depth and severity are presented in Table 5. The poverty line was observed to be ₦44300 per month (\$115 per month). The incidence, depth and severity of poverty in the study were estimated to be 0.28, 0.067 and 0.013, respectively. This implies that about 28% of the sampled respondents were affected by poverty. The result showed that Fadama II cooperative has made an appreciable impact on poverty reduction among the farmers in the study area. This finding is in line with the findings of Ezech (2009), Ibeagwa (2011), Ezech (2012) and Ogbonna & Nwaobiala (2015) that Fadama projects help in alleviating poverty among farmers in Nigeria. About 6.7% were moderately poor. These sets of Fadama participants need more income to get above the poverty line while 1.3% experience extreme poverty. This shows that these sets of Fadama participants spend much of their income on household expenditure, which places them within the vicious cycle of poverty (Adeyemo et al., 2017).

Table 5. Poverty status of Fadama II cooperative participants

Poverty incidence	Frequency	Percentage
Poor	42	0.28
Poverty depth	10	0.067
Poverty severity	2	0.013

Data source: Field survey, 2017

Effects of participation in Fadama II cooperative on the poverty status of the participants

Effects of participation in Fadama II cooperative on the poverty status of the participants is presented in Table 6. Log likelihood function and pseudo R^2 were -72.15 and 0.2197. The entire model was significant at 1%. This implies that the model is of best fit. Household size and net income accruing from Fadama II cooperative participation were found to significantly influence the poverty status of the participants. However, the coefficient of household size had a negative sign, indicating that an increase in household members by a person decreases probability of a farmer not being poor. On the other hand, the coefficient of net farm income from Fadama II cooperative had a positive sign. This implies that an increase in net farm income of farmers helps in reducing their poverty status. This finding is in line with the findings of Oni & Olaniran (2011), Girei et al. (2013), Olaolu et al. (2013) and Moses (2017), which reveal that Fadama II project improves the welfare of the participants.

Table 6. Effects of participation in Fadama II cooperative on the poverty status of the participants

Variable	Coefficient	T-values
Sex of respondent	-3.169	-0.99
Age of respondent	-0.074	-0.48
Years spent in formal education	0.024	0.89
Respondent primary occupation	-0.104	-0.69
Respondent farm size	-0.028	-0.86
Respondent farming experience in years	-0.011	-0.58
Respondent membership of any association	-0.480	-0.66
Respondent access to credit facility	-0.269	-0.36
Participation level	2.038	1.23
Income from Fadama participation	4.474***	2.83
Respondent household size	-0.200***	-4.13
Constant	2.907**	2.21

Data source: field survey, 2017. ***, **, level of significant at 1% and 5% respectively

CONCLUSION

This paper investigated the effects of Fadama II cooperatives on the poverty status of the participants in Oyo State, Nigeria. A multi-stage sampling procedure was used for selecting respondents for this study. A total number of 150 farmers were selected for the study. This study concluded that the participants of Fadama II cooperative are in the peak of their productive age with fairly large household size. Gender, farming experience and income from Fadama II cooperative positively and significantly influenced both partial and full participation in Fadama II cooperative. The probit estimate revealed that Fadama II cooperatives had significant effect on alleviating the poverty among the participants. Following the findings of the study, government and non-governmental organizations are encouraged to ensure that more farmers participate in Fadama II cooperatives. In addition, the approach of Fadama II cooperatives should be adopted for intervention programmes in developing countries that depend on agriculture not only for feeding their population but also as a business venture.

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