

Effects of FADAMA III Programme on Productive Assets Acquisition by Beneficiaries in Kaduna and Sokoto States, Nigeria

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Abstract: This study is on the effects FADAMA III programme on productive assets acquisition on the beneficiaries. To achieve this, the study seeks to determine whether productive assets acquisition component of FADAMA III has significant and positive effects among the beneficiaries, and to find out whether significant difference exists in the level of productive assets acquisition. The study had a sample of 245 beneficiaries drawn from 12 Fadama Community Associations (FCAs) and 30 Fadama User Groups (FUG) units from Kaduna and Sokoto States, Nigeria. Pearson Product Moment Correlation (PPMC) was used to test the formulated hypothesis at 0.05 levels of significance and independent sample t-test was used to establish the differences in the level of productive assets acquisition. Results indicate that productive assets acquisition has strong and positive effects on the beneficiaries ($r= 0.701$, $p= 0.000$). The study recommends that the Nigerian Governments and donor agencies, the World Bank and African Development Bank should to initiate multi-pronged livelihood enhancing strategies that could stimulate productive assets acquisition by Smallholder farmers who produce the bulk of food stuffs in agrarian societies like Nigeria.

Keywords: Acquisition, productive assets, low productivity agriculture, capability approach

I. INTRODUCTION

The issue of low productivity in agriculture especially in the developing countries has attracted the interests of national governments, international donor agencies, independent evaluators, and other research efforts to investigate factors responsible for the continual challenges being faced by Smallholder farmers.

Since the attainment of Nigeria's independence in 1960, government efforts on food security intensification and maintenance came under different agricultural revitalization and rural development strategies with enormous human, institutional and material resources but have failed to resolve issues of low agricultural productivity and food security, over decades (Idris, 2018). In the main, Nigeria's agricultural productivity is generally considered as low, mostly due to poor access to production-enhancing inputs, low input-output technologies, considerable post-harvest losses of farm produce (an estimated 20% of grains and over 40% fruits/vegetables are lost due to poor post-harvest handling, inadequate agro-processing development, as well as poor rural infrastructure, particularly rural road and limited access to capital) (Federal Republic of Nigeria (FRN), 2012).

In recent times, however, one of the dominant strategies used especially in the developing countries is the capability approach. The capability approach is premised on the fact that where peoples' livelihoods are secured, beneficiaries could secure ownership of, or access to, resources (both tangible and intangible) and income earning activities, including reserves and assets, to off-set risks, ease shocks, and meet contingencies hence, the economic strength of a household, family or individual depends not just on its income, but also on its asset base. Accordingly, FADAMA III targeted smallholder farmers who lacked requisite productive assets. To empower the beneficiaries, FADAMA III programme contributed up to 70% of the total cost of the demanded subproject, while the beneficiary made up-front cash payment of up to 30% of the subproject cost (FRN, Project Implementation Manual (PIM), 2009).

Objectives

- i. To determine whether productive assets acquisition component of FADAMA III has significant and positive effects among the beneficiaries, and
- ii. To find out whether significant difference exists in the level of productive assets acquisition among FADAMA III beneficiaries in Kaduna and Sokoto States, Nigeria.

Hypothesis

The level of productive assets acquisition has no significant and positive effects on FADAMA III beneficiaries.

Justification

The study was prompted by the ever increasing lack of productive assets by the Smallholder farmers in Nigeria to produce beyond subsistence levels. Despite the vast amount of empirical studies which proved productive assets acquisition has significant effects on subsistent farmers (Shah, Hassan, and Khan, 2006; Bokosi, 2007; Meinzen-Dick, Kameri-Mbote and Markelota, 2007; Owuor, Ouma, and Birachi, 2007; Zezza, 2008; United Nations, 2009; Idris, 2018), many of these studies did not emphasized on the capability approach which empowers the poor to have access to agricultural land, physical capital and financial assets as new approach to measuring project effects in agriculture. Equally, the results of this study will help policy makers

(Government of Nigeria; World Bank and African Development Bank) to chart a course of action that would help sustain and scale up the impact *FADAMA III* in Nigeria.

Scope

The scope of the study covers the period of eight (8) years (2009-2017) i.e. four (4) years of project implementation (2009-2013) and four (4) years after project implementation (2013-2017).

II. LITERATURE REVIEW

In the extant literature, the relationship between lack of assets, low income and low productivity agriculture is well-documented. The International Fund for Agricultural Development (IFAD, 2001) provides that, increasing access to assets is crucial for broad-based growth in agriculture. Assets take many forms- human and social (education, health, organizations), natural (land, water and forests), technological (farm production, processing and marketing methods), infrastructural (roads, communications, health and education facilities, housing) and financial (crop sales and off-farm revenue, investment and working capital, 'savings' in the form of livestock and stored commodities). Quite a number of researchers have found a significant effects of lack of productive assets, low income among Smallholder farmers (Shah, Hassan, and Khan, 2006; Bokosi, 2007; Meinzen-Dick, Kameiri-Mbote and Markelota, 2007; Owuor, Ouma and Birachi, 2007; Zezza, 2008; United Nations, 2009; Idris, 2018). Land for example, is a critical asset particularly for the Smallholder farmers who are usually poor, as it provides a means of livelihood, and the landless. United Nations (2009) provides that, with lack of assets, limited economic opportunities, and poor education and capabilities, as well as disadvantages rooted in social and political inequalities, poor people from rural areas face specific risks in several domains, particularly those related to health, climate change and insecurity of access to land. Land can be used as collateral for loans for investment, or sold to raise capital for investment in an income generating activity.

Similar to natural capital, access and owning physical assets found to be an essential variable towards the enhancement of households' livelihoods. Owing productive and non-productive assets is vital to build up households capacities. People who had more cows, goats, hens and ducks; and people who had stored foods and other valuable things that can be transformed to liquidity had much higher mean monthly income than those who had lesser hens and ducks or those who have lesser food and equipments storage. These findings similar to Bokosi (2007) results which stated that a unit increase in the value of per capita value of livestock owned reduce the probability of being poor in Malawi by 3% between years 1998-2002. Also Owuor, Ouma and Birachi (2007) find that livestock assets significantly contribute to the reduction of the probability of being chronically poor. Households who use mechanical tractor in their agricultural activities have much higher mean monthly income than those

who use manual cultivations. These results are similar to Shah, Hassan, and Khan (2006) which indicates that adopting improved production technology increases more than 3 times over the provincial mean wheat yield in Pakistan, therefore increase farm' revenues. Owing productive assets rather than nonproductive assets, as primary source of income, significantly increases farms productivity and production. Omalehin, Ogunfiditini, and Adeniji (2007) results indicate that, those who had more livestock (cows, sheep, hens and ducks), mechanical tractors, land and fertilizers produce more. The surpluses of their production (after consuming or storing their families' needs) were sold in local markets. Therefore, marketable surplus leads to higher income generation among Smallholder farmers.

However, there are strong complementarities among asset categories. For example, building social capital by strengthening farmers' groups and improving road and communications networks can enhance the financial asset base. Secure land use rights can allow farmers to invest in technology, leading to higher farm productivity and incomes. They may then invest in improved health and nutrition status and their children's education. Davis, Winters, Carletto, Covarrubias, Quinones, *et al.* (2007) took a cross-country comparison and find that, lacking in minimum asset endowment can trap households into long-term poverty thereby challenging the survival of most peasant farmers. Therefore, sustainable agricultural growth is not possible without empowering the poor through assets acquisition. Using the *FADAMA III* beneficiaries in Kaduna and Sokoto States, Nigeria 2009-2016, Idris (2018) finds that *FADAMA III* programme has significantly improved the socio-economic conditions of the project beneficiaries from Kaduna State by 74.2% and by 95.7% of the beneficiaries from Sokoto State, respectively through productive assets acquisition component.

III. METHODS

Location; longitude and latitude

Kaduna State is one of a large city located in North-western Nigeria and it is the capital city of the State with a longitude and latitude of 7.429504 and 10.609319, respectively. Sokoto State is equally one of the large cities in the North-western Nigeria, near the rivers Sokoto River and Rima. It has a longitude of 5.247552 and latitude of 13.005873, respectively.

3.1 Sample and survey

This study used survey method with Grossman (1994) reflexive comparison design. Reflexive design treats project participants to serve as both treatment and reference group. Kaduna and Sokoto States were purposively selected (Kaduna as a facility state and Sokoto as a core state, see PIM, *FADAMA III* criteria for participation). Three (3) Local Government Areas (LGAs) per State (One LG each) were purposively selected based on intensity of *fadama* activities. Six (6) *Fadama* Community Associations (FCAs) per State and Five (15) *Fadama* User Groups (FUGs) per State in the selected LGAs were randomly

selected. Each of the Thirty (30) FUG units combined (for the Two States) has Twenty five (25) members (25x15) making up Three hundred and seventy-five (375 per State) with a total of Seven hundred and fifty (750) project beneficiaries. Krejcie and Morgans (1970) Population and sample size was used to draw the sample size where Two hundred and fifty-four (254) (34%) project beneficiaries were determined for Questionnaire distribution out of which Two hundred and forty-five (245) responded.

Two instruments of data collection were used, Questionnaire and Observation. The questionnaire was structured using Likert (1932) scaling method of Very high, High, Average, Low and Very low. Data for the study was presented and analyzed using percentage and frequencies to depict mean and standard deviation to ascertain the objectives of the study. Also, Pearson Product Moment Correlation (PPMC) was used to test the formulated hypothesis at 0.05 levels of significance and independent sample *t*-test was used to establish the differences in the level of productive assets acquisition.

IV. ANALYSIS

Table 1 Analysis of Respondents by State

State		
	Frequency	Percent
Kaduna	128	52.2
Sokoto	117	47.8
Total	245	100

Source: Field Survey, 2018

A total of 128 of the respondents or 52.2% are from Kaduna State while the remaining 117 or 47.8% respondents are from Sokoto State.

Table 2 Analysis of Respondents by LGAs		
	Frequency	Percent
Igabi	42	17.1
Kubau	43	17.5
Makarfi	43	17.5
Sokoto-south	40	16.3
Wamakko	41	16.7
Yabo	36	14.7
Total	245	100

Source: Field Survey, 2018

The respondents were categorized into the six (6) Local Government Areas selected. The first three (3) are from Kaduna State and the last three (3) from Sokoto State. Igabi LGA had 42 or 17.1% respondents. Kubau and Makarfi LGAs had 43 or 17.5% respondents, respectively. Sokoto-south LGA had 40 or 16.3% respondents. Wamakko LGA had 41 or 16.7% respondents while Yabo LGA had 36 or 14.7% respondents. This implies that among the selected LGAs in Kaduna State, Kubau and Makarfi LGAs marginally had the highest number of beneficiaries selected while in Sokoto State, Wamakko LGA marginally had the highest number of respondents.

Table 3 Beneficiary Category		
	Frequency	Percent
Crop farmers	152	62.0
Livestock owners	93	38.0
Total	245	100

Source: Field Survey, 2018

The *FADAMA* III beneficiaries selected from Kaduna and Sokoto States, Nigeria were categorized into Crop farmers and Livestock owners. Table 3 above shows that 152 or 62.0% of the respondents are Crop farmers and the remaining 93 or 38.0% are Livestock owners.

V. RESULTS AND DISCUSSION

Table 4 Analysis of Productive Assets Acquisition and its Effects on the Beneficiaries

s/n	Items	Response categories					Mean	Std.dev	Remark
		VH	H	Av	Low	VL			
1	Level of acquisition of productive assets, irrigation equipment, livestock dual equipment	4	108	127	4	2	3.4408	.0866	Positive
2	Gains in assets acquired as a result of <i>FADAMA</i> III	2	150	86	6	1	3.5959	.0711	Positive
3	Increase in Average Real Income (at least 40% increase)	146	61	28	5	5	4.3796	1.0551	Positive
4	Increase in daily expenditure (household consumption)	17	169	48	6	5	3.7633	0.841	Positive
5	Changes in people's liquid assets like purchase of plot of land, or farmland, building /maintenance of house, etc	4	76	151	11	3	3.2735	0.6246	Positive
6	Extent of bank savings	4	62	103	63	13	2.9224	0.847	Negative
7	Diversification of farm level economic activities	5	68	84	71	17	2.8898	0.646	Negative
	Cumulative mean						3.4664		Positive

Decision mean=3.000

As can be seen in Table 4 above, the views of respondents indicates that the effects of productive assets acquisition on *FADAMA* III beneficiaries is high as the cumulative mean

response of 3.4664 is above the 3.000 decision mean. Among the seven (7) items in this regard, the respondents felt the impact of the project through increase in average real income

which attracted the highest mean response of 4.3796. This was followed by increase in daily expenditure (household consumption) with mean response of 3.7633 while 17 rated it as very high, another 169 as high as against 48 as average while another 6 as low and the remaining 5 rated it very low. In summary, the acquisition of productive assets has significant and positive effects on *FADAMA* III beneficiaries through: i) increased income, ii) increase in daily expenditure (household consumption), iii) investment in farm inputs and equipment/ increased stocks, iv) changes in liquid assets, and v) expansion of farm size/breeds.

Table 5 *t*-test Difference in the level of Acquisition of Productive Assets in Kaduna and Sokoto States, Nigeria

Variable	States	N	Mean	Std.dev	Std.err	Df	T	P
Difference in the level of acquisition of Productive Assets among <i>FADAMA</i> III beneficiaries	Kaduna	128	25.7109	2.65660	.23481			
						243	1872	0.081
	Sokoto	117	24.4444	3.36935	.31150			

The output generated using independent sample *t*-test above shows that there is no significant difference in the level of acquisition of productive assets in Kaduna and Sokoto States, Nigeria. This is because the computed means in the levels of productive assets acquisition are not obviously different 25.7109 and 24.4444 and for Kaduna and Sokoto States, respectively. Reason being that, all productive assets is grouped-owned optimally used for productive purposes by the project beneficiaries.

Table 6. Effects of Productive Assets Acquisition on *FADAMA* III Beneficiaries

Variable	N	Mean	Std.dev	Correlation index	Df	P
				0.701**	243	0.000
Acquisition of Productive Assets	245	24.62	3.21			

*. Correlation is significant at the 0.05 level

Results of the PPMC statistics in the above Table showed that, the level of acquisition of productive assets has significant and positive effects on the Beneficiaries. The result indicates $r=0.701$, $p=0.000$. Therefore, the hypothesis which states that the level of productive assets acquisition has no significant and positive effects on *FADAMA* III beneficiaries in Kaduna and Sokoto States, Nigeria, is not accepted.

VI. DISCUSSIONS

This study examines the effect of *FADAMA* III programme on productive assets acquisition using selected beneficiaries in Kaduna and Sokoto States, Nigeria. The results of PPMC statistics indicated a *p*-value of 0.000 at correlation index *r*

level (0.701) showed that productive assets acquisition has significant and positive effects on the beneficiaries. Furthermore, interactions with the respondents cum their responses from questionnaire showed that, there is also evidence of increased expenditures for beneficiaries as a result of productive assets acquired (questionnaire responses of 17, and 169 respondents rated this as very high and high, Table 4). Similarly an increase in the crop area cultivated is an indication of an increase in asset positions of the beneficiaries which is also a function of increased income. 151 of the respondents rated this as average (Table 4). Increase in farm income is seen as a direct opportunity for the project beneficiaries to intensify production by investing more in farm inputs, employ more labour, expand farm sizes, and realizes profit-enhancing economies of scale.

There are many interconnected reasons and empirical evidences supporting the above results. For example, Meinen-Dick, Kameri-Mbote, and Markelota (2007) find that land ownership increases the propensity in the investment of education of children which tremendously helped in improved living conditions. Davis, Winters, Carletto, Covarrubias, Quinones, *et al.* (2007) using a cross-country comparison find out that, lacking a minimum productive asset can trap households into long-term poverty. Cambell and Hyman (2000) also find out that, changes in farm size alone led to an increase between 130% to over 200%. An increase in cultivated area had a significant and positive impact on farm income which can also lead to an increase or changes in liquid assets such as purchase of plot of land, motorcycle, bicycle, trucks, wheelbarrows, *etc* (151 respondents rated the acquisition of these items, average, Table 4). Usually, it is only when savings culture is developed for the enhancement of productive base that investments in household improvement get prioritized (158 of the respondents rated this as averages). According to Minja (2003), it is only after realizing increased income that most farmers wished to build a modern house for their families, using burnt bricks and corrugated iron roofing. In both Kaduna and Sokoto States, the project beneficiaries confirmed that *FADAMA* III yielded them some dividends such as purchase of new bicycles, new motorcycles, marrying of new and additional wives as well as building of new houses or maintaining existing ones. Other changes experienced by the direct beneficiaries were improved diet and nutrition, and ability to afford better clothing.

The findings of Akpoko (2011) have shown that in Kaduna State alone, 17.50% of the participating communities have at least one productive rural infrastructure, and 11.31% savings for replacement of productive assets. This is a positive indicator of capital accumulation, which would also generate higher returns in the long run. Investment in education is an investment in human capital creation which in itself is an indication of improved living condition. An educated farmer is more likely to adopt modern farming and take the advantage of improved technology. An interaction with the respondents showed that many of the beneficiaries engaged in

petty trading and transport as off-farm economic generating activities.

To provide evidence on the above areas of achievements, the researcher visited most of the areas. We saw quite a number of renovated houses Six (6) in Kaduna State, Jaji-Alheri, Igabi, LGA and Two (2) in Likarbu, Kubau LGA. None of the beneficiaries in Gazara, Makarfi LGA was able to renovate or develop a plot of land. The kind of house renovations were: plastering, flooring and painting. Other aspects of the renovation were: building new pits latrines, and in nearly all cases, construction of new or maintaining existing water wells. It was also obvious, from our visits that some few of the respondents in Kaduna State had added more wives. Consequently, our observation from Sokoto was quite similar though slightly different. A large number of the respondents especially those in Karaye-shiyar Jariri, Sokoto-south had additional wives, with many of them adding second and third wives. We equally observed in Arkilla, Wamakko that out of the 4 who claimed that they had new buildings; only one (1) was able to complete. None of the beneficiaries acquired or develop land in Ruggar Iya, Yabo, we visited. Instead, Three (3) of the respondents succeeded in crafting houbours for sheep and goats. In spite of these levels of impacts, the respondents also indicated that the levels of provision of rural infrastructure and productive assets were quite inadequate. This suggests that higher level of impact would have been felt by the beneficiaries should the levels of provisions of these sector-specific resources were adequately provided. The overall outcome of *FADAMA III* manifested on improved living conditions of the beneficiaries.

VII. CONCLUSIONS AND POLICY IMPLICATIONS

From the results obtained in the study, there is evidence that *FADAMA III* programme has significant and positive effects on agriculture and on the living conditions of the beneficiaries. The study sees the obvious need for sustaining the impetus created by *FADAMA III* in Nigeria and therefore call on the World Bank, the African Development Bank and the governments of Nigeria to invest more on productive assets acquisition. The study submits that, Nigeria needs to establish Farmers' Skills Acquisition Centers (FSACs) all over the country with much concentration in rural areas so that 70% of the Nigeria's population engaged into farming could acquire relevant skills on modern and commercial agriculture as a departure of subsistence farming that dominated the Nigeria's food production chain, over the years. These FSACs should focus mainly on building the capacity of FUGs in the acquisition and management of productive assets. By and large, the results of this study indicate that *FADAMA III* programme had significant and positive effects on the beneficiaries. Governments and donor agencies should initiate multi-pronged livelihood enhancing strategies that could stimulate productive assets acquisition by Smallholder farmers who produce the bulk of food stuffs in agrarian societies like Nigeria.

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