

ASSESSMENT OF THE PERFORMANCE OF COMMERCIAL AGRICULTURE DEVELOPMENT PROJECT (CADP) IN MAIZE VALUE CHAIN IN NIGERIA

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ABSTRACT

This study assessed the Commercial Agriculture Development Project (CADP) for maize value chain in Nigeria. The specific objectives of the study were to: describe the socioeconomic characteristics of the commodity interest groups (CIGs) in the targeted value chain, assess the performance of CADP relative to baseline in terms of CIGs' technology adequacy and demographic variable; and assess the performance of maize value chain relative to baseline production, processing and sales. Data were collected from 319 maize farmers. Data were analyzed using descriptive statistics, and performance index. A large proportion of the respondents were within the age range of 35-44years and were still physically active. The result shows that there was improvement in the technology adequacy in the study area: the pooled data showed that the technology adequacy in the base year was 47.7% and 58.3% in the current year. The pooled result showed that education at the baseline survey was 97.6% and 92.8% at the current year. This result implied there was a marginal drop in terms of number of participants that have formal education. The pooled result also showed that performance in processing and marketing/sales outran the baseline by 104.88% and 120.82% respectively. This result indicates that Commercial Agriculture Development Project had a positive impact on the performance of maize farmers in the study area. Continual investment in similar projects by the Federal and State government in collaboration with the World Bank is recommended to impact farmers' productivity and income positively.

Keywords: Performance, Commercial Agriculture Development Project, Maize, Value Chain, Community Interest Group

INTRODUCTION

Commercial Agriculture Development Project (CADP) is a comprehensive five-year Project developed by the Federal Ministry of Agriculture and Water Resources (FMAWR) in collaboration with the World Bank and other stakeholders: International Development Agency (IDA), State Governments and the farmer-beneficiaries otherwise called the Commodity Interest Group (CIG) (CADP, 2009). To fulfill its institutional and implementation arrangements, the CADP emphasizes the importance of empowering farmers. This involves facilitating the formation of commodity interest groups (CIG) and commercial agriculture development associations (CADA) to support farmers' endeavors.

These associations act as catalysts for promoting the long-term growth and sustainability of commercial agriculture within the participating states (CADP, 2012). The Project was implemented in five States of the Federation, namely (Cross Rivers, Enugu, Kaduna, Kano and Lagos) along eight value chains. The Project supports three value chains per State. These are Cross Rivers (oil palm, cocoa and rice), Enugu (fruit trees, poultry and maize), Kaduna (Fruit trees, Dairy and maize), Kano (Rice, Dairy and maize) and Lagos (poultry, aquaculture and rice) (Kolade, 2015).

The objective of the Commercial Agriculture Development Project for Nigeria is to strengthen agricultural production systems and facilitate access to market for targeted value chains among small and medium scale commercial farmers in the five participating states (Lagos, Kano, Kaduna, Enugu, and Cross River). The project has two components, namely: (i). Agricultural Production and Commercialization; and (ii). Rural Infrastructure. Agricultural Production and Commercialization component provides resources to facilitate the adoption of appropriate and existing agriculture technologies. It will also support staple crop production systems to complement the country's food security initiatives and develop domestic and export markets (CADP Working Documents —Project Implementation Manual - PIM and Project Appraisal Document – PAD, 2009).

Maize output commercialization and increased productivity is considered as one of the major solutions to effectively addressing the current global food crisis and poverty. This is because maize is one of the major staples in Nigeria. A food consumption survey carried out by International Institute of Tropical Agriculture (2014), showed that maize was the most often consumed staple, with 20% of the population eating it at least once a week. Nigeria is the 10th largest producer of maize in the world, and the largest maize producer in Africa, followed by South Africa (USAID, 2010). According to Khumalo *et al.*, (2011), grain colour is an important selection criterion for users in Africa, where white is generally preferred over yellow and although 90% of globally produced maize is yellow, white maize predominates in Africa.

Reports frequently emphasize that smallholder farmers, typically defined as those who cultivate less than 2hectares of land, contribute significantly to the global food production, accounting for approximately 70% to 80% of the world's food (ETC, 2009; Maass Wolfenson, 2013; FAO, 2014). In the fourth quarter of 2017, the National Bureau of Statistics (NBS) reported that Nigeria's annual maize imports from foreign countries amounted to approximately ₦146.8billion (NBS, 2017). Being a primary food staple, maize is consumed across the country and among households of varying wealth. Maize is widely used in the preparation of traditional foods, such as *pap, tuwo, gwate, and donkunu*, with the cereal cooked, roasted, fried, ground, pounded, or crushed. The rest is sold commercially into both the food and animal sector processing sectors (FAO, 2013).

According to Adedeji *et al.*, (2011), low productivity in Agriculture has been observed to be a problem militating against increased and sustainable farm income. Due to poor performance of the agricultural sector, the Federal Government of Nigeria has identified investment in agriculture as a major priority so as to reform the sector to its enviable position in the Nigerian economy. However, it was observed that government efforts over the years have not yielded the desired results (Abiola and Olaopa, 2008; FAO, 2011).

A market-driven value chain for maize is important for Nigeria's overall economic development plans, but this cannot be achieved without a sustained and increased market demand for this targeted commodity. The achievement of this process in maize value chain is very inadequate in Nigeria.

The specific objective of the study was to describe the socio-economic characteristics of the commodity interest groups in maize value chain, to assess the performance of CADP relative to baseline in terms of CIGs' technology adequacy and demographic variables, and to assess the performance of maize value chain relative to baseline production, processing and sales.

METHODOLOGY

The study was conducted in Nigeria. Nigeria is located in West Africa on the Gulf of Guinea and has a total area of 923,768 km² (Ocean Data and Information Network for Africa, 2014). The country is bordered in the south by approximately 800km of the Atlantic Ocean, on the West by the Republic of Benin, on the North by the Republic of Niger and Republic of Cameroun on the East (NBS, 2007). Nigeria lies between Latitudes 4° and 14°N and Longitudes 2° and 15°E (World Fact Book, 2011). The major food staples produced are cassava, yam, cowpea, sorghum, rice and maize.

A multi-stage sampling technique was used in the selection of sample. The Programme was selected to run in both the Northern and Southern protectorates of Nigeria spreading across five (5) states which include Lagos, Cross River, Enugu, Kano and Kaduna states. However, the maize project was only accommodated in just three (3) out of the five (5) states and they are: Enugu, Kano and Kaduna. Again, the targeted value chain (maize) is only supported by CADP in these three states in the country. The first stage involved the purposive selection of 3 participating states namely, Enugu, Kaduna and Kano. This is because, the targeted maize value chain activities supported by CADP were predominant in these three states in the country and this will help the study to obtain a representative sample. The second stage involved a purposive selection of one (1) agricultural zone from each of the selected states participating in the CADP. This is because the agricultural zones have the majority of all the three major maize value chain actors participating in CADP activities. The third stage involved purposive selection of 2 participating LGAs from each of the selected zones. In the fourth stage, ten (10) communities that are participating in the project were purposively selected from each LGA giving a total of sixty (60) communities. The fifth stage involved purposive selection of one (1) village from each of the selected communities. (The enterprise is located in selected areas hence the reason for the use of purposive sampling technique). In the final stage, the lists of direct beneficiaries were collected from the Commodity Interest Groups (CIGs) and Commercial Agricultural Development Associations (CADAs) in each of the selected villages.

From these lists, proportionate sampling was used to select direct beneficiaries basically for maize value chain (producers, processors and marketers in the targeted value chain), to make a total of three hundred and sixty (360) respondents for the study. The primary data was collected using structured questionnaire, and administered to three hundred and sixty (360) respondents. The study found only 319 of the total responses valid and used for the data analyses. The variables include the socioeconomic characteristics of the CIGs members, current CADP performance relative to baseline, level of production, processing and sales relative to baseline.

Data collected for the study were analyzed using descriptive statistics such frequency distribution, percentages and mean. The performance of maize value chain was analyzed using the performance index. The index measures the percentage change and contribution of the current production, processing and sales to baseline values. The model is stated as:

$$\%P_i = \left[1 - \frac{\text{Current value} - \text{Baseline value}}{\text{Current value}} \right] \times 100$$

Where,

$\%P_i$ = performance index (percent)

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

The socio-economic characteristics of the respondents is presented in Table 1. From Table 1, 41.69% of the respondents were aged 31 – 40 years while 34.80% fell within the age range of 41-50 years and 14.42% were aged between 51 – 60 years. This indicates that a large proportion of the respondents are within the age range of 31 – 40 years. The mean age of the respondents was 40 years which indicates that a greater proportion of the respondents are still physically active. This result is similar to the findings of Issa *et al.* (2016) who found that the mean age for maize farmers was 40years and that maize farmers were young and expected to have more energy to practice maize farming.

Table 1: Distribution of Respondents According to Socio-economic Characteristics

Variables Mean	Frequency	Percentage	Mean
Age (Years)			
≤ 30	19	5.96	
31 – 40	133	41.69	
41 – 50	111	34.80	
51 – 60	46	14.42	40
> 60	10	3.13	
Education (years)			
0 (no formal education)	10	3.13	
Primary	46	14.42	
Secondary	136	42.63	
Tertiary	127	39.82	
Household Size			
1 – 5	105	32.92	
6 – 10	158	49.53	
11- 15	40	12.54	7
>15	16	5.01	
Marital Status			
Single	37	11.60	
Married	276	86.52	
Widowed	6	1.88	
Farming Experience (Years)			
1 – 10	84	26.33	
11 – 20	119	37.31	
21 – 30	79	24.76	
31 – 40	33	10.34	17
>40	4	1.26	
Sex			
Male	83	26.02	
Female	236	73.98	

Source: Field Survey Data, 2022

The result also shows that majority of the maize farmers (42.63%) are educated and generally knowledgeable. Education enable farmers take informed decision and understand the technicalities involved in new farm ideas and innovations.

Distribution of the respondents based on marital status showed that 86.52% of the maize farmers were married. The result implies that majority of the maize farmers in the study area are married and cater to the basic needs of their households such as food, shelter, clothing and healthcare from the proceeds of their farming activities. Akerele (2019) observed that marital status is expected to influence respondent's level of responsibilities which could have a positive or negative influence on their disposition to economic activities.

The respondents have 11-20years farming experience, implying that the farmers have a good knowledge of maize farming activities which is important in the acceptance and application of new agricultural technologies and innovations. This conforms to the findings of Awotide et al., (2010) that the number of years of experience in farming influences to a large degree the adoption of new technologies.

Performance of Maize Value Chain relative to Baseline in terms of CIG's Technology Adequacy and Demographic Variables

Table 2 shows the performance of maize value chain relative to baseline in terms of CIG's technology adequacy and demographic variables. The pooled data showed that the technology adequacy in the base year was 47.7% and 58.3% in the current year, this result implies that there was improvement in the technology adequacy in the study area and what the Programme envisaged is happening technology wise and this needs to be encouraged.

The baseline data showed that female membership/participation was 12% and 30% at the current year. This result shows that there is an improvement in the percentage of female membership. This is in line with the findings of Oladejo *et al.* (2011) that there is high rate of involvement of women in agricultural production.

The pooled data further showed that Education at the baseline survey was 97.6% and 92.8% at the current year. This result implies that there is a marginal drop in terms of number of participants that have formal education especially in the North (Kaduna & Kano), and this is surprising at this stage when farmers need more formal education to enable them improve on their skills and make better informed decisions. Oladejo *et al.* (2013), opined that there was a scope for increase in farmers' efficiency by improving their level of education.

Table 2: Performance of CADP relative to baseline in terms of CIGs' Technology adequacy and demographic variables

States	Variables	Base Year (B)	Current Year (C)	(C -B)/C	(1-(C-B)/C)100	Performance Index
Enugu	%Technology Adequacy	48	64.6	0.257	0.743	74.3
	% Female Membership	14	45	0.689	0.311	31.1
	% School Attended	97.9	91.5	-0.069	1.070	107
	Age	29	41	0.293	0.707	70.7
	Household size	6	8	0.25	0.75	75.0
Kaduna	%Technology Adequacy	50	56.4	0.113	0.887	88.7
	% Female Membership	3	20	0.85	0.15	15.0
	% School Attended	97.9	91	-0.076	1.076	107.6
	Age	25	41	0.390	0.610	61.0
	Household size	8	9	0.111	0.889	88.9
Kano	%Technology Adequacy	45	59.6	0.245	0.755	75.5
	% Female Membership	3	24	0.875	0.125	12.5
	% School Attended	97.1	96	-0.011	1.0115	101.1
	Age	21	44	0.523	0.477	47.8
	Household size	8	7	-0.143	1.143	114.3
Pooled	%Technology Adequacy	47.7	58.3	0.182	0.818	81.8
	% Female Membership	12	30	0.6	0.195	19.5
	% School Attended	97.6	92.8	-0.0512	1.052	105.2
	Age	26	42	0.3810	0.619	61.9
	Household size	7	8	0.125	0.875	87.5

Source: Field Survey Data 2022

At the baseline survey, more youths were recorded (26 years) while at the current/study year the recorded participants were older youths/young adults between the ages of 41-45years. This result implies that the youths are shying away or no longer interested in agriculture and this has affected the program as the program is gradually accommodating older adults.

Performance of Maize Value Chain relative to Baseline Production, Processing and Sales

Table 3 shows the performance of maize value chain relative to baseline production, processing and sales. The percentage speed of time/ average speed of performance shows that output in Enugu, Kaduna and Kano was 11.48%, 14.23% and 83.02% respectively. This is an indication that the performance output outran the baseline by 11.48%, 14.23% and 83.02% respectively in Enugu, Kaduna and Kano.

Table 3 Performance of Maize Value Chain relative to Baseline Production, Processing and Sales

States	Variables	Base Year (B)	Current Year (C)	(C -B)/C	(1-(C-B)/C)100	Performance Index
Enugu	Output (t)	1195.58	10410.3	0.89	0.114	11.48
	Area (Ha)	7.45	1.89	-2.94	3.94	-394.18
	Yield (t/Ha)	160.48	5508.10	0.97	0.03	2.91
	Processing (N/Ha)	33800	108853.3	0.69	0.31	31.05
	Marketing/Sales	35383	115700.2	0.69	0.31	30.58
Kaduna	Output (t)	1228.00	8627.39	0.86	0.14	14.23
	Area (Ha)	3.39	2.90	-0.17	1.17	-116.90
	Yield (t/Ha)	362.24	2974.96	0.88	0.12	12.18
	Processing (N/Ha)	27500	108442.1	0.75	0.25	25.36
	Marketing/Sales	37502	106826.6	0.65	0.35	35.11
Kano	Output (t)	4055.53	4885.07	0.17	0.83	83.02
	Area (Ha)	5.17	2.75	-0.88	1.88	-188
	Yield (t/Ha)	784.44	1776.39	0.56	0.44	44.16
	Processing (N/Ha)	404905	116948.6	-2.46	3.46	346.22
	Marketing/Sales	197000	95180.79	-1.07	2.07	206.97
Pooled	Output (t)	6479.11	14539.34	0.55	0.45	44.56
	Area (Ha)	16.00	7.54	-1.12	2.12	-212.20
	Yield (t/Ha)	404.94	5174.14	0.92	0.08	7.83
	Processing (N/Ha)	478205	455969.1	-0.05	1.05	104.88
	Marketing/Sales	588332	486939.2	-0.21	1.21	120.82

Source: Field Survey Data, 2022

The pooled result showed that the area of land declined over the years by 212.20%. This decline could be attributed to farmlands not being cultivated as a result of the increasing security challenges in the country, invasion of the farmlands by herdsmen and their cattle and other use of land asides maize production.

The pooled result further showed that performance in processing and marketing/sales outran the baseline by 104.88% and 120.82% respectively. This result indicates that Commercial Agriculture Development Project had a positive impact on the performance of maize farmers in the study area. This is consistent with the findings of Bako *et al.*, (2020) that a positive and significant relationship exists between the participation in CADP program and farmers' income.

Conclusion and Recommendations

The study concluded that the performance in processing and marketing/sales outran the baseline which indicated that Commercial Agriculture Development Project (CADP) had a positive impact on the performance of maize value chain actors in the study area.

The study also concluded that the marginal drop in the number of participants that have formal education will affect the decision making ability of the maize farmers as formal education enables farmers to improve on their skills and make better informed decisions.

The following recommendations were drawn from the study:

1. Continual investment in similar Programmes by the Federal and State government in collaboration with the World Bank is recommended to impact farmers' productivity and income positively.
2. Maize farmers should form cooperatives and pool their resources together for increased productivity and income.
3. Government should improve the standards of formal education and adult literacy programs. Awareness should also be created amongst the farmers on the importance of education for farming activities.

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