Dimensions of the Contributions of Agricultural Development Programme to Rural Development in Nigeria

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---ABSTRACT---
Among the several approaches by Nigerian Government to address rural development in recent years was the introduction of State wide Agricultural Development Programme (ADPs) in 1980s. The program was among other things designed to raise productivity, income and standard of living of rural farmers in Nigeria. This study investigated the dimensions of the contributions of ADP to rural development in Nigeria. The study sourced data on ADP inputs (Infrastructural Development and Input Supplies) to rural agriculture, and rural farmers outputs in terms of total crop output, total annual farm income, property ownership, farm size, access to credit facilities, use of farm technology, and farmers' training before and after the ADP inception. The instrument for data collection were two sets of questionnaires administered to ADP staff and management on one hand and a sample of farmers in all the four ADP agricultural zones of Adamawa State of Nigeria on the other hand. The dimensions of the contribution of ADP to rural development were determined using factor analysis. The results revealed that the ADP had positive and significant influence on rural farmers' welfare in dimensions of farm output, farm asset / technology, farmer resources/ capacity and access to credit facility. The implication is that the ADP structure, if judiciously managed and funded could accelerate rural development in Nigeria. The program should then concentrate her efforts in improving farm output, farm assets and technology, building farmer resources and capacity and improving access to credit facilities.

KEYWORDS: *Agricultural Development Program, Rural Farmers, Rural Development.*

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I. INTRODUCTION

Sustainable development emerged as a result of strong criticisms of existing neo-classical development models and theories due to the latter's failure to address issues such as poverty, human welfare, disparity in income, environmental health, security, popular participation, and equitable distribution of growth benefits. Many studies have portrayed development as a means of achieving basic human needs and individual well-being, and not just in terms of higher national income alone

The importance of rural development can be better appreciated by noting that 75 percent of the total population of developing countries live in the rural areas, and these rural majorities are small scale farmers who produce about 90 percent of the total food requirement of the nations (Olusegun 1991). In the same vein, Leohr and Powelson (1981) confirmed that 40 percent of the world's population is hungry, ill clad and poorly housed, and perhaps, another 20 percent is malnourished. No one cares enough about the poor in rural areas to keep statistics about them comparable to the number of barrels of crude oil produced daily. The rural poor live in one-room huts with earth as their floor, without running tap water and electricity. Many more live in slumps, in huts made from waste materials (cardboard and boxes) that are insecure against weather. The environments are often crowded with primitive unhygienic toilets. Most work in farms and some supplement their income with handicrafts or services. Many of them own no land at all, but sell their labor by working on other people's farms. Some are migrants with shifting cultivation or cattle herding. According to Eboh (1995), Nigerian population with access to safe drinking water between 1980-88 averaged 60 percent and below 30 percent for urban and rural areas respectively, while 75 and 30 percent had access to health services in urban and rural areas respectively. It is then clear that rural areas in Nigeria lag behind the urban areas in human development, access to education, health, safe drinking water, roads and other infrastructural development.

Therefore rural development policy makers and implementers in Nigeria face the challenge of reversing the cycle of rural poverty, environmental degradation, human insecurity and misery. Since over 75 percent of the rural populations are small-scale farmers, agricultural development will definitely influence greater portion of the population and is one of the ways of tackling rural poverty. Adamawa State is blessed with vast arable land, favorable climatic conditions and human resources that favor agricultural production. But agricultural productivity had been low, characterized by low rural income and standard of living of small scale rural farmers.

Hence, rural development for a country whose rural population is mainly farmers cannot be achieved without first sustained growth in rural income and standard of living primarily from agriculture. Having established that the majority of West Africans are ruralites and that they are mostly agrarian by occupation, no development panacea will be acceptable in such societies without focus on agriculture (llesanmi 2002). It was based on this belief that the agricultural development programme (ADP) was introduced with the general mandate to: raise the productivity, income and standard of living of small-scale farmers, establish effective linkage between farmers and credit institutions, construct, rehabilitate and maintain rural feeder roads and .provide portable water and small irrigation facilities for dry season farming. This study therefore investigated the dimensions of the contributions of Adamawa State ADP to rural development.

II. METHODS

The main source of primary data were through questionnaires administered to ADP staff and management on one hand. and farmers at zonal management level of Adamawa state ADP on the other. Interviews and personal field visits/observations as well as focus group discussion with farmers, community leaders and ADP management was also used for data collection which included infrastructure put on ground / input supplies by the ADP, total crop output of farmers, farm size. Property ownership, farmer education and training etc.

The data generated were subjected to factor analysis in other to determine the dimensions of ADP contribution to rural development. Rural development is determined by a number of variables which may be inter related or unrelated. These variables when considered together may define to a reasonable extent the pattern of rural development. Factor analysis tries to define groups of variables which may define a more general pattern. The basic premise in factor analysis is that correlations among variables may be due to the influence of some common factors or dimensions which are regarded as descriptive concepts summarizing the behavior or characteristics of a set of variables (Bashir 1997). Such descriptive concepts represent indices of the basic dimension of the total situation being studied. This technique therefore attempts to search for an order in an otherwise undiscernibly large set of data.

III. RESULTS

Dimensions of ADP Contribution to Rural Development.
From a correlation matrix of the variables, a factor analysis generated four factors whose Eigenvalues were greater or equal to 1.0. Factors with Eigenvalue below 1.0 were considered to have too few significant variables that make interpretation difficult. The four factors extracted (Table 2) accounted for as much as 87.2 percent of the total variance in the data matrix.

Factor I with Eigenvalue of 2.46 accounted for 35.1 percent of the variance. Factor II with Eigenvalue of 1.2769 accounted for 18.2 percent of the variance. Factor III with Eigenvalue of 1.2211 on the other hand accounted for 17.4 percent of the variance while factor IV with Eigenvalue of 1.1487 accounted for 16.4 percent of their variance. All the four factors accounted for 87.2 percent of the total variance which is high enough to accept the four - factor structure as sufficiently a parsimonious representative of the original data for our analysis. These four factors which constitute another set of new variables represent the various dimensions of rural development with respect to ADP contributions. (Tables 2 to 6)

Factor I Farm Output Dimension.
Four variables were found to have high loadings on this factor. These variables were crop yield, farm size, Technology and farmer education (Table 3). Due to the fact that the loadings on this factor are mainly positive, a high score indicates presence and strength of importance of a variable of that quality, except for rural farmers education where a high but negative score factor loading indicates a favorable but weak association condition

From the interpretation frame, the following variables which measure strong positive or negative loadings are found to be highly associated with factor I:

+ 0.893 = Total annual crop yield
+ 0.894 = Total farm size
+ 0.629 = Tractor use (Technology)
-        0.670 = Farmer Training (Education)

The variables relate more to rural farmers productivity, therefore this factor could be called the farm output dimension factor. In other words, increase in crop yield, farm size and technology use had influenced the rural farmers productivity and rural development. It also implies that the ADP in Adamawa State has positively influenced the productivity of rural farmers through crop output improvement, increased farm size and improved technology. This means that rural development can be accelerated if the ADP can focus on increase of their input in the dimension of improving crop yield, increase farm size and use of tractors for farmland preparation.

Factor II – Farm Asset and Technology Dimension.
Factor II has an Eigenvalue of 1.2769 and all the variables in this factor accounted for 18.2 percent of the total variance. Farm technology and property ownership have high loadings on this factor (Table 4) These two variables relate more to farm asset and technology, therefore this factor could be defined as farm asset and technology dimension factor.

Farm technology and farm property, were therefore important dimensions to farm asset. The implication of this dimension is that it positively effected the activities of the rural farmers in the areas of farm expansion, productivity and property ownership. Therefore, the ADP has improved rural farmers farm asset and technology through improvement in farm property and technology use. Farm property was a major asset on which the rural farmers could fall back to in times of distress arising from crop failure or some natural disasters. This was insurance for rural farmers and which greatly influenced and sustained rural development.

Factor III : Farmer Resources and Capacity Dimension..
Factor III has an eigenvalue of 1.2211 and all the variables in this factor accounted for about 17.4 percent of the total variance. Two variables – farm income and farmer education loaded high on this factor (Table 5) The high positive loadings indicate favorable association with respect to the variables concerned. This implies that farm income and rural farmers' education are strongly associated with rural farmers welfare and rural development in general. Therefore, this factor could be called the farmer resources and capacity dimension factor. This means that increase in farmer's income and education greatly influenced the rural farmers' resources and capacity. The ADP had therefore significantly influenced rural farmers' resources and capacity through improvement in farm income and farmer training.

Factor IV : Access To Credit Facility Dimension.
Factor IV has an Eigenvalue of 1.1487 accounting for 16.4 percent of the total variance in the analysis. The only variable which loaded high on this factor is access to credit facility (Table 6) This factor could be defined as access to credit facility dimension. The high loading of access to credit facility shows that the ADP has positively affected rural farmers income through increased access to credit facilities, which assisted in improved operation and crop output.

Conclusion and Recommendation
Even though the task of development and empowerment of rural small scale farmers in Nigeria is not an easy one, the efforts of some rural development institutions must continue to be studied and appreciated. The fact that the ADP system has been able to survive different governments with different political interests in Nigeria is an indicator of her relevance in rural development.

This study had also shown that the Adamawa State ADP had positively influenced rural farmers welfare in areas of farm productivity, farm asset/technology, farmer resources/ capacity and access to credit facility. It is therefore being recommended that the ADPs should concentrate their efforts along these dimensions which will go a long way in accelerating rural development in Nigeria.

Table 1 Crop output in selected State-wide ADPs (in thousands and tones).

Crop	KANO			BAUCHI			SOKOTO		
	Pre ADP	Post ADP	Change	Pre ADP	Post ADP	Change	Pre ADP	Post ADP	Change
Sorghum	801	1213	+412	523	269	-254	771	562	-211
Millet	884	1228	+334	398	484	+86	354	901	+596
Maize	46	282	+236	53	185	+123	21	65	+44
G/nut	372	246	-123	44	129	+85	65	160	+95
Cowpea	353	406	+53	130	320	+190	192	283	+91
Rice	98	538	+440	4	24	+20	56	62	+6

Source: -   Ayichi (1995)

Table 2 : Rotated Factor Loadings and Communalities , Varimax Rotation.

Variable	Factor I	Factor II	Factor III	Factor IV	Comm.
Y1	**0.893**	0.012	0.156	0.180	0.853
Y2	0.019	0.154	**0.918**	0.139	0.887
Y3	**0.894**	0.257	0.158	0.105	0.900
Y4	**0.629**	**0.545**	0.310	0.040	0.790
Y5	0.058	**0.890**	0.195	0.074	0.839
Y6	0.124	0.049	0.135	**0.968**	0.972
Y7	**0.670**	0.307	0.422	0.378	0.866
Variance	2.4604	1.2769	1.2211	1.1487	6.1070
%**Variance**	0.351	0.182	0.174	0.164	**0.872**

% Explained   (35.1%)   (18.2%)   (17.4%)   (16.4%)   (87.2%)

Source : Data Analysis 2005.   (Bold figures are significant at 0.5 confidence level)

Table 3 : Significant Variable Loading on Factor I

S/No	Factor Code	Variable Name	Unrotated Factor Loading	Rotated Factor Loading
1	TCY	Crop Yield	0.855	**0.893**
2	FIC	Farm Income	0.036	0.019
3	TFS	Farm Size	0.939	**0.894**
4	TEC	Technology	0.751	**0.629**
5	FPO	Farm Property	0.341	0.058
6	ACF	Access to Credit	0.231	0.124
7	EDT	Farmer Education	-0.508	**-0.670**

Source : Data Analysis 2005.

Table : 4 Significant Variable Loading on Factor II

S/No	Code	Variable |Name	Unrotated Factor Loading	Rotated Factor Loading
1	TCY	Crop Yield	0.123	0.012
2	FIC	Farm Income	0.709	0.154
3	TFS	Farm Size	0.094	0.257
4	TEC	Farm Technology	0.217	**0.545**
5	FPO	Farm Property	0.071	**0.890**
6	ACF	Access to Credits	0.744	0.049
7	EDT	Farmer Education	0.689	0.309

Source : Data Analysis.

Table 5. Significant Variable Loading on Factor III

S/N0	Code	Variable Name	Unrotated Factor Loading	Rotated Factor Loading
1	TCY	Crop Yield	0.322	0.156
2	FIC	Farm Income	0.470	**0.918**
3	TFS	Farm Size	0.019	0.152
4	TEC	Farm Tech	0.163	0.310
5	FPO	Farm Property	0.837	0.195
6	ACF	Access to Credits	0.050	0.135
7	EDT	Farmer Education	0.352	**0.422**

Source : Data Analysis.

Table 6 Significant Variable Loadings on Factor IV.

S/No	Code	Variable Name	Unrotated Factor Loading	Rotated Factor Loading
1	TCY	Crop Yield	0.053	0.180
2	FIC	Farm income	0.403	0.139
3	TFS	Farm Size	0.094	0.105
4	TEC	Farm Tech	0.390	0.040
5	FPO	Farm Property	0.127	0.074
6	ACF	Access to Credit	0.602	**0.968**
7	EDT	Farmer Education	0.097	0.378

Source : Data Analysis

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