# ANALYSIS OF INSTITUTIONAL FACTORS INFLUENCING SUSTAINABILITY OF AGRICULTURAL DEVELOPMENT PROGRAMME IN ADAMAWA STATE, NIGERIA

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## ABSTRACT

This study analyzed the institutional factors influencing sustainability of agricultural development programme in Adamawa State, Nigeria. A multistage sampling technique was used to select 140 farmers and 40 extension agents. Primary data were collected through the use of structured questionnaire and personal interviews. The data collected were analyzed using descriptive (frequencies, percentages, mean and standard deviation) and inferential (logit regression analysis) statistics. The results revealed that farming in the study area was mainly dominated by male (79%), and the mean ages of the farmers and extension agents were 42 and 44 years, respectively. The mean of farming experience and working experience for both farmers and extension agents was 22.29 and 17.72 years. Result of logit regression analysis of extension agents revealed that working experience ($p > 0.1$, 0.081), promotion ($p > 0.1$, 0.066), possession of mobility ($p > 0.1$, 0.029) and contact with farmers ($p > 0.1$, 0.020) were significant and positively influenced sustainability of the programme. Sustainability of the programme was hindered mainly by inadequate extension visit (93.6%), inadequate capital (77.1%), inadequate improved seeds (71.4%) and lack of feeder roads (67.9%) as reported by farmers. It was concluded that sustaining ADP after World Bank funding requires delivery of appropriate extension services and continuous dissemination of technologies. It was therefore recommended that more extension agents should be recruited especially women extension agents to fill the gap in the extension farmer ratio, government and non-governmental organizations should improve the funding of ADPs.

**Keywords**: Institutional; factors; sustainability; ADPs

## INTRODUCTION

Agricultural extension services in Nigeria are delivered and funded by the government. Federal, State and the Local government play varying roles in the delivery and funding extension services. The Federal government provides coordination, policy direction

through the Federal Ministry of Agriculture and Natural Resources, which is carried out by Federal Agricultural Coordinating Unit (FACU). The Agricultural Development Programme (ADP) is the State institutions with the mandate to carry out extension services to promote agricultural production and improve rural living conditions. The ADPs are the extension arm of the State Ministry of Agriculture and Rural Development (World Bank, 2004).

Although they were developed to perform a temporary role, in providing investments and services in lieu of relatively ineffective line agencies, the ADPs have nonetheless assumed a permanent status which supports the contention that this type of agency was needed to implement the development envisaged under the project. But the structural organization of the ADPs has not been corrected to reflect its new role as a permanent development agency, except in few states. Part of the problem of its temporary status is that majority of the staff, with the exception of those seconded from the Ministry of Agriculture, were on temporary appointment. This weakens morale of the extension agents, especially after the World Bank withdrawal (Hamisu *et al.,* 2017).

According to the World Bank (2004), after the closure of the World Bank loans in the early 1990s, the tempo of the ADPs activities slowed down drastically resulting in shrinkage of their roles. In some states the ADPs staff were only paid salaries, which were the statutory responsibility based on funding arrangements. Some of this shrinkage is expected because the ADPs have often performed activities such as input supply, which the private sector could do better. In this light, funding cuts have had positive effect of compelling the ADPs to review their roles.

United States Agency for International Development (2010) submits that extension agents help farmers in decision making which is an additional role to that of teaching and communication of new agricultural technologies from the research centres. It has been concluded by International Food Policy Research Institute (2010) that extension agents help farmers to make better and informed decisions. Farmers on their own also tend to keep close contact and seek wise counsel from the extension agents before making critical decisions regarding their farm operations.

However, Naswem *et al.,* (2008), pointed out that since World Bank withdrew from funding the Agricultural Development Programme, the ADPs lost their vitality and started operating as a government bureaucracy, where little or no results are achieved. This therefore greatly affected the ability of the agency to effectively and efficiently deliver extension services to farmers. There is need for a pluralistic approach to agricultural extension delivery that will ensure mass coverage while ensuring efficient utilization of limited resources; personnel, time and funding.

The Adamawa State Agricultural Development Programme (ADADP) is the main agency which implements the state's Agricultural Development Programmes. It is one of the World Bank Assisted projects that formed part of the phase II Multi-State Agricultural Development Programmes (MSADP II) whose loans terminated on 30th June, 1995. It started in the then Gongola State, as Gongola State Agricultural Development Programme (GADP).

The poor funding of ADP by state governments constrained recruitment of extension agents in most states of the country. For instance, in Adamawa State where parallel extension delivery agencies are established like Adamawa Agricultural Development Investment Limited (AADIL) and Farming Skills Acquisition Centre (FSAC), ADP staff were redeployed to serve as resource persons. Unless the challenges of poor funding and ageing staff are resolved, rapid agricultural transformation are mostly compromised (NAERLS, 2013).

There has been continuous reduction in the number of extension agents in the state and consequently, the number of farm visits by the extension agents as a result of funding problem in the state ADP. Farmers are facing challenges of lack of land, financial assistance, inconsistence markets for their produce, bad road network for easy transportation of farm produce, lack of fertilizer and chemicals for their crops (Umar & Abba, 2012). However, no previous study has investigated the institutional factors influencing sustainability of agricultural development programme in the study area. It is against this background that the study therefore had assess the attitudinal changes among farmers and extension agents through the programme over the years; determine institutional factors influencing sustainability of the programme; and describe the constraints militating against sustainability of the programme.

## MATERIALS AND METHODS

### The Study Area

Adamawa State is located in the North Eastern geo-political zone of Nigeria. The State lies between Latitudes $8^o$ and $11^oN$ of equator and between Longitudes $11.5^o$ and $13.75^oE$ of the Greenwich Meridian. It has a land area of 39,742.12 $km^2$ which is about 4.4 percent of the land area in Nigeria (Kormowa, Ega and Olukosi, 2002). The State shares common boundary with Taraba State to the South and West, Gombe State to the North West and Borno State to the North and an international boundary with Cameroon Republic to the east (Adebayo and Tukur, 1999). There are 21 LGAs in the state with population of 3,178,950 (NPC, 2006). Adamawa State Agricultural Development Programme (ADADP) has four administrative zones. They are:

**Zone 1:** Mubi North, Mubi South, Maiha, Michika and Madagali Local Government Areas;
**Zone 2:** Gombi, Hong, Song and Girei Local Government Areas;
**Zone 3:** Mayo Belwa, Yola North, Yola South, Fufore, Ganye, Jada and Toungo Local Government Areas;
**Zone 4:** Guyuk, Numan, Demsa, Lamurde and Shelleng Local Government Areas.

### Sampling Technique and Data Collection

Multistage sampling technique was used in this research. The first stage involves the purposive selection of one (1) Local Government Area from each zone with high concentration of agricultural production and attraction of intervention projects.

Table 1: Summary of sampling

| Adp zones | LGA's | Communities | Number of farmers | 10% selected |
|-----------|-------|-------------|-------------------|--------------|
| ZONE I | Maiha | Pakka | 195 | 20 |
| | | Maiha Gari | 192 | 19 |
| ZONE II | Hong | Fadaman Rake | 204 | 20 |
| | | Makera | 191 | 19 |
| ZONE III | Jada | Mbulo | 165 | 17 |
| | | Nyibango | 182 | 18 |
| ZONE IV | Lamurde | Lafiya | 149 | 15 |
| | | Tinno | 124 | 12 |
| Total | | 8 | 1402 | 140 |

In the second stage, two communities were randomly selected from the four Local Government Areas which gives eight communities for the research. Ten percent of the farmers in each of the communities was proportionately selected among the registered members making 140 farmers. 40 extension agents which include Women in Agriculture (WIA), Block Extension Supervisors (BES) and Village Extension Agents (VEA) in the selected LGAs were interviewed.

Table 2: Summary of sampling (Extension Agents)

| LGA selected | Number of BES | WIA | Number of VES | Extension agents selected |
|---|---|---|---|---|
| Maiha | 3 | 1 | 8 | 12 |
| Hong | 2 | 1 | 8 | 11 |
| Toungo | 2 | 1 | 6 | 9 |
| Lamurde | 2 | 1 | 6 | 9 |
| Total | 9 | 4 | 27 | 40 |

## Data Analysis

### Likert Scale

A five-point likert-type scale was used to measure the attitude of farmers and extension agents. The response options ranged from "Strongly Agree"= 5; "Agree"= 4, "Undecided"= 3, "Disagree"= 2, "Strongly Disagree"= 1. The values was added to obtain 15, which was divided by 5 to get a mean score of 3.00. Any mean scores of 3.00 or above indicate change in attitude of both farmers and extension agents, while scores less than 3.00 were regarded otherwise.

### Logit Regression

Logit regression analysis was used to determine the institutional factors of extension agents that influence sustainability of ADP in the study area.
The model is specified as follows:

$$Y = X\beta + U$$

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_4 X_{4+} \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + U$$

$Y$ = dependent variable representing values of sustainability of ADP (Sustainability was measured using sustainability index);
$B_0$– $\beta_8$= Coefficients to be estimated
$U$ = Noise term
$X_1$ =Age (years),
$X_2$ =Educational Status (years),
$X_3$ = Working experience (years)
$X_4$ = Promotion (regular = 1, not regular = 2)
$X_5$ = Mobility (possessed = 1, not possessed = 2)

$X_6$ = Contact with farmers (Daily=1, weekly=2, fortnightly=3, monthly=4, quarterly=5 and annually=6)
$X_7$ = Type of training attended (Fortnightly training=1, monthly review training=2, seminar=3, workshop=4 and conference=5)
$X_8$ = Payment of Salaries/Allowances (adequate = 1, not adequate = 2)

## RESULTS AND DISCUSSION

**Attitudinal Change among Extension Agents and Farmers**

The results in Table 3 shows the responses of attitudinal change among farmers on extension agents and all the 9 items have mean of 3 and above. The result indicates that access to subsidized farm inputs and equipment (m=4.13), increase in productivity level (m=3.99), use of improved varieties (m=3.93), increase in income and revenue (m=3.85) were ranked 1st, 2nd, 3rd and 4th respectively. It implies that contact between farmers and extension agents often aimed at influencing their attitude, knowledge and skill which thereby also positively influence productivity. The result agrees with that of Ayoade (2012) who conducted a study on "Attitude of women farmers towards agricultural extension services in Ifelodun Local Government Area, Osun State" and found out that contact with extension agent change farmers' attitude towards agricultural production.

Table 3: Attitudinal change among farmers on extension services

| Variables | SA (5) | A (4) | U (3) | D (2) | SD (1) | Score | WMS | Rank |
|---|---|---|---|---|---|---|---|---|
| Use of improved varieties | 35(25.0) | 68(48.6 | 32(22.9) | 2(1.4) | 3(2.1) | 550 | 3.93 | 3 |
| Access to subsidized farm inputs and equipment | 58(41.4) | 42(30.0) | 40(28.6) | 0(0.0) | 0(0.0) | 578 | 4.13 | 1 |
| Increase in income and revenue | 40(28.6) | 39(27.9) | 61(43.6) | 0(0.0) | 0(0.0) | 539 | 3.85 | 4 |
| Increase in productivity level | 33(23.6) | 72(51.4) | 35(25.0) | 0(0.0) | 0(0.0) | 558 | 3.99 | 2 |
| Increase in access to finance | 24(17.1) | 51(36.4) | 35(25.0) | 27(19.3) | 3(2.1) | 486 | 3.47 | 8 |
| Cheap storage methods | 25(17.9) | 50(35.7) | 40(28.6) | 12(8.6) | 13(9.3) | 482 | 3.44 | 9 |
| Increased market access | 25(17.9) | 75(53.6) | 0(0.0) | 25(17.9) | 15(10.7) | 490 | 3.50 | 7 |
| Increased technical know-how | 0(0.0) | 74(52.9) | 29(20.7) | 31(22.1) | 6(4.3) | 525 | 3.22 | 5 |
| Use of resistant varieties to pest and disease | 49(35) | 25(17.9) | 29(20.7) | 22(15.7) | 15(10.7) | 491 | 3.51 | 6 |

SA= Strongly Agree, A= Agree, U= Undecided, D= Disagree, SD= Strongly Disagree, WMS= Weighted mean score.
Note: Values in parentheses are the percentage

**Attitudinal Change among Extension Agents on ADADP**

The results in Table 4 indicated that increase farmers' productivity (m=4.18), supply information about agricultural service (m=4.17), help farmers analyze present and future situations (m=4.15) help farmers to acquire needed knowledge (m=4.08) were ranked 1st, 2nd, 3rd and 4th respectively. This implies that extension agents provide useful information to farmers that will increase their well-being. The result is in line with the findings of Adeel *et al* (2016) who found out that accessing information, knowledge and then presenting it in a perspicuous way to farmers are the two main functions of an E-extension system.

Table 4: Attitudinal change among extension agents on ADADP

| Variables | SA (5) | A (4) | U (3) | D (2) | SD (1) | Score | WMS | Rank |
|---|---|---|---|---|---|---|---|---|
| Motivate farmers to adopt new technologies | 12(30.0) | 22(55.0) | 3(7.5) | 0(0.0) | 3(7.5) | 160 | 4.00 | 5 |
| Help farmers to acquire needed knowledge | 13(32.5) | 17(42.5) | 10(25.0) | 0(0.0) | 0(0.0) | 163 | 4.08 | 4 |
| Supply information about agricultural service | 16(40.0) | 15(37.5) | 9(22.5) | 0(0.0) | 0(0.0) | 167 | 4.17 | 2 |
| Help increase farmers productivity | 15(37.5) | 17(42.5) | 8(20.0) | 0(0.0) | 0(0.0) | 167 | 4.18 | 1 |
| Serve as a link between government and farmers | 5(12.5) | 20(50.0) | 9(22.5) | 6(15.0) | 0(0.0) | 144 | 3.60 | 9 |
| Demonstrate improved technologies to farmers | 15(37.5) | 12(30.0) | 7(17.5) | 3(7.5) | 3(7.5) | 153 | 3.82 | 7 |
| Help farmers in their decision making | 19(47.5) | 10(25.0) | 0(0.0) | 9(22.5) | 2(5.0) | 155 | 3.88 | 6 |
| Help farmers analyze their present and future situations | 18(45.0) | 14(35.0) | 4(10.0) | 4(10.0) | 0(0.0) | 166 | 4.15 | 3 |
| Providing and improving social amenities | 13(32.5) | 16(40.0) | 3(7.5) | 4(10.0) | 4(10.0) | 150 | 3.75 | 8 |

SA= Strongly Agree, A= Agree, U= Undecided, D= Disagree, SD= Strongly Disagree, WMS= Weighted mean score. Note: Values in parentheses are the percentage

**Factors Influencing Sustainability of the ADADP**

The results in table 5 which gives information on contribution of each of the independent variable suggested that working experience, promotion, possession of official mobility and frequent contact with farmers were significant at 10% level of significance. Therefore, the result shows that these variables influenced sustainability of ADP in the study area. Working experience was found to be significant at 10% and positively influences sustainability of ADP in Adamawa State. This implies that the longer someone stays in an organization the better he understands the vision and mission of such organization and the more he contributes to its development. The finding is in line with that of Agumagu and

Nwaogwugwu (2006) when they noted that extension agents with more working experience tend to perform better than new entrants into the job.

The results also revealed that promotion rate was significant at 10% and positively influences sustainability of ADP. It implies that regular promotion of extension workers will increase their level of confidence with the organization and increase sustainability. Possession of mobility is also positive and significant at 10% level of significance. Mobility will help the extension agent to move from one location to another in visiting farmers to increase their knowledge on new farming methods. The finding agrees with that of Bessette (2004) who believed that organizations must create those conditions necessary for employees to be motivated to achieve the task required to satisfy organizational goals. Contact with farmers was found to be positive and significant at 10% level of significance which implies that increase in number of extension contact would increase number of technologies used by farmers and leads to sustainability of ADP in the study area. This is expected because the level of interaction and rappour between the extension agents and the farmers will be high and more frequent thereby creating a favourable environment for information dissemination between both parties.

Training attended and payments of salaries/allowances were found to be positively influencing sustainability of ADP. A positive sign indicates that with a unit increase in training attended and payments of salaries/allowances, there will be an increase in the perceived level of sustainability of ADP in the study area. The finding agrees with that of Adeyemo & Kayode (2012) in their study "Factors Influencing Sustainability of Community-Driven Development Approach of World Bank Assisted Projects in South Western Nigeria". These findings also agreed with Koyenikan's (2008) arguments that there should be provision for staff training and development, and for continuous capacity building to maintain and upgrade competence of staff to perform tasks related to their jobs. In his view, the purpose of such development is to aid the organization to reach its goals within its stated objectives.

Table 5: Factors influencing sustainability of the ADADP

| Independent Variables | B | S.E. | Wald | Sig. | Exp(B) |
|---|---|---|---|---|---|
| Age (Years) | -0.266 | 0.232 | 1.318 | 0.251 | 0.766 |
| Educational status (Years) | -0.593 | 1.519 | 0.152 | 0.696 | 0.553 |
| Working Experience (Years) | 0.452 | 0.259 | 3.039 | 0.081* | 1.572 |
| Training attended (Number) | 0.588 | 0.454 | 1.677 | 0.195 | 0.556 |
| Promotion (Binary) | 2.751 | 1.496 | 3.380 | 0.066* | 0.064 |
| Salaries/Allowances (Binary) | 2.257 | 1.553 | 2.112 | 0.146 | 0.105 |
| Mobility (Binary) | 3.922 | 1.800 | 4.747 | 0.029* | 0.020 |
| Contact with Farmers (Number) | 1.493 | 0.644 | 5.383 | 0.020* | 4.452 |
| Constant | 18.054 | 10.108 | 3.190 | 0.074* | 6.9337 |

*Significant at 10%, ** Significant at 5%, *** Significant at 1%,

**Constraints to Sustainability of the ADADP**

The results of the study in Table 6 reveals that farmers identified inadequate extension visit (93.6%) as the major constraint affecting sustainability of ADP and was ranked 1st, this followed by inadequate capital, poor transportation facilities, inadequate improved seeds,

lack of feeder roads, poor processing facilities, poor communication channels, high cost of improved seeds, inadequate market information, and poor storage facilities. This implies that solving these problems will boost agricultural production in the area. It has been noted by Adesina (2012) that farmers do not get their input requirements as at when due and in the right quantities. This if allowed to persist could hamper the goal of achieving sustainable local food and raw material production in Nigeria.

Table 6: Farmers responses on constraints to sustainability of the ADADP

| Constraints | Frequency | Percentage | Ranking |
| --- | --- | --- | --- |
| Inadequate extension visits | 131 | 93.6 | 1st |
| Inadequate capital | 108 | 77.1 | 2nd |
| Poor transportation facilities | 103 | 73.6 | 3rd |
| Inadequate improved seeds | 100 | 71.4 | 4th |
| Lack of feeder roads | 95 | 67.9 | 5th |
| Poor processing facilities | 86 | 61.4 | 6th |
| Poor communication channels | 81 | 57.9 | 7th |
| High cost of improved seeds | 79 | 56.4 | 8th |
| Inadequate market information | 69 | 49.3 | 9th |
| Poor storage facilities | 65 | 46.4 | 10th |

*Multiple responses exist

## CONCLUSION

Sustaining ADADP after World Bank funding requires delivery of appropriate extension services and continuous dissemination of technologies. Majority of the farmers were at their active and productive age. It was also concluded that both farmers and extension agents indicated a change in attitude and knowledge. Working experience, promotion rate, possession of mobility, contact with farmers were significant and positively influenced sustainability of ADP in the study area.

More extension agents should be recruited especially women extension agents in order to fill the gap in the extension farmer ratio. Extension agents should pay more emphasis on organizing regular training to farmers which help in increasing their knowledge of new innovations and increase income. Motivation of extension agents by payment of salaries/allowances, promotion, provision of mobility and exposure to trainings should be done regularly by relevant agencies. The funding of extension services should be strengthened by both government and non-governmental organizations.

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