



Funding of Agricultural Public Extension Service in a Deregulated Economy: A Study of Ebonyi State, Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. Author VAC designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors KNNE and ENO managed the analyses of the study. Author OOO managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Funding of Ebonyi State Nigeria Agricultural Public Extension Service in a deregulated economy was studied. The specific objectives were to describe the socio-economic characteristics of the respondents; identify the major recommended packages/technologies and services extended to the farmers and examine the trend in the funding of agricultural extension services from 2001 to 2010. A total of 240 contact farmers were selected using a multistage random sampling technique. Data collected were analyzed using descriptive statistics. The study found that majority (65.42%) of the respondents were males; had a mean age of 49 years, married; had a relatively large household

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size of 8 persons; and relatively low educational status. Average farm holding was 0.90 ha and personal savings were the major sources of farm finance. Government funding of the agricultural public extension dwindled throughout the period with budget estimate at the peak of N220.4 m recorded in 2013 and the lowest of about N69.3 m in 2001, whereas the highest actual expenditure was about N99.5 m in 2010 and the lowest amount of about N37.1 m was also recorded in 2009. A big difference between the budget estimate and actual expenditure was observed in 2009 with a budget deficit of about 46.5%. The amount farmers were willing to pay for extension services was not also stable with the highest amount of about N9.2 m in 2005 and least amount of N800,000.00 in 2003. The amount expended by government was higher than the amount farmers are willing to pay with 98.2% difference in 2004. The study indicated that the proportion of farmers willing to pay for extension services is low. This could lead to reduced adoption and utilization of improved technologies and decline in farmers' and farm productivity in a deregulated economy. Recommendations such as educating farmers on cost of extension services and the need for their contribution, backing up extension services with interest free loans, deregulating extension services in a gradual process and in phases, and improving the country's educational system were made among others.

Keywords: Funding; extension services; deregulated economy.

1. INTRODUCTION

Agricultural Extension refers to an informal education system that provides farmers with technical advice required to increase farm output and income including advice on credit, other inputs and marketing [1]. It also provides research institutes and credit institutions information about farmers' conditions. Various attempts have been made in Nigeria since the colonial period to produce practical approach to inputs delivery systems to the farmers for enhanced productivity. Effective extension delivery system helps to narrow the communication gap between researchers who develop new technologies and the farmers who are the end users of the discoveries [2].

Adoption and utilization of improved technologies by the farmers is fundamental for the realization of increased production levels, and subsequent transformation of agricultural sector of the national economy of most developing nations. Similarly, the improved technologies being developed in the Research Institutes and Universities must not only be transmitted to the farming population in their rural communities, but also be delivered in the language that the farmers would understand. The importance of agricultural extension which is an integral part of educational process is designed to assist the farmers to help themselves in achieving their set objectives.

Agricultural extension has a major role to play in the transformation of agricultural sector of the

national economy. The extension agents help the farmers through teaching and demonstration to take full advantage of the research findings and technological advantages, quickly to adjust to the seasonal and economic conditions, and effectively use support services to increase their production and income level. Therefore, without extension guidance, farmers are unable to exploit fully the opportunities available to them [3]. Extension services cannot make a significant impact on agricultural production if funds required for the advise are not available. Funding is a crucial factor in extension service delivery. Fund is required to enable the extension services reach the farmers. It can also facilitate extension advise through teaching the farmers who do not even know how to use available fund and input judiciously, efficiently and profitably. Liot [4] Observed that technology cannot by itself develop agriculture if the conveyer is absent. He added that the conveyer is money or fund, and that technology cannot reach the entrepreneur unless funds are available for him to acquire it. Extension funding is one of the most critical of all the constraints facing extension services, especially in developing countries.

According to Rivera and Cary [5], the traditional manner of financing extension services involves a top-down flow of funds from the government or donor to the service providers. With few exceptions, the chain of accountability for performance is upwards to the financier while service users are excluded from the chain. Reversing the financial flow can change the entire incentive and accountability structure for a sustained extension service.

Ebonyi State Agriculture Development Programme (EBADEP) which is one of the agencies that renders extension service to the farmers in the state aims at implementing a well-organized, disciplined and supported performance oriented extension service capable of assisting small-holder farmers to adopt relevant technologies to increase their food production and income level. The State A.D.P. witnessed poor and irregular funding for some time now, and the budget estimate were far from being realized [6]. Unavailability and/or inadequate funding often impede the effectiveness of extension service. This is one of the most serious problems that can disrupt adoption and practices of new agricultural innovations pushed to the farmers by extension agents in the state. Therefore, there is need for this research work to assess the Funding of Public Agricultural Extension Service in Ebonyi State in a Deregulated Economy.

In the past, the performance of public extension has been generally disappointing [7]. The clientele were not satisfied with the existing public extension service provision. The concern for huge financial investment on public extension service, insufficient impact of services and limited accountability of the extension personal makes the extension specialists and policy makers to propose privatization and or commercialization of extension services in most developing countries [8]. Several authors [9,10] noted that until recently, extension is solely organized and funded by the governments with several obstacles to its effective delivery. Public sector extension has been facing criticism for its cost and lack of efficiency. Hence, privatization of extension services [10]. Furthermore, [11] opined that the debate to privatize extension services in Nigeria is being muted due to wide spread corruption and inefficiencies in public corporations.

The Nigerian Agricultural Extension Service has been experiencing dwindling funding from the governments [12,13,14]. This is very apparent in the sliding performances of the state wide ADPs. Consequently, researchers have advocated for various alternative funding systems for agricultural extension service in Nigeria and other developing Nations. Ogunlade et al. [15] stated that funding for agricultural extension services in many developing countries, including Nigeria is not only a reality, but also a necessity due to several factors. Thus, there is increasing dissatisfaction with the conventional approaches to financing extension services.

1.1 Objectives of the Study

The aim of this study is to assess the funding of Ebonyi State agricultural public extension service in a deregulate economy. Specifically, the objectives were to:

- (i) Describe the socio-economic characteristics of the respondents;
- (ii) Identify the major recommended packages/technologies and service extended to the farmers by the extension agents;
- (iii) Describe the trend in the funding of agricultural extension services in Ebonyi State from 2001 to 2010; and
- (iv) Estimate the difference between the amount budgeted and actual amount spent in extension services.

2. METHODOLOGY

This study was conducted in Ebonyi State of Nigeria, which lies appropriately on latitude $7^{\circ}3'N$ and longitude $5^{\circ}4'E$ and $6^{\circ}4'E$ in the South East geopolitical zone of Nigeria. A multi-stage random sampling technique was used to select six (6) out of the thirteen (13) extension blocks in the state (that is, two (2) extension blocks from each agricultural zone). Secondly, four extension circles were randomly sampled, giving a total of 24 extension circles. Next, a list of contact farmers in each of the 24 extension circles as compiled by Ebonyi State Agricultural Development Programme (EBADEP) served as the sample frame. Thirdly, a simple random sampling technique was used to select ten (10) contact farmers from each of the 24 extension circles to give a total of two hundred and forty (240) respondents for the study. Cross-sectional and time series data were obtained from primary and secondary sources. The primary data were collected by the use of a well-structured questionnaire administered to the respondents. This was augmented by interview schedule in cases where the respondents are illiterate persons. Secondary data were collected from existing relevant EBADEP records and Ebonyi State ministry of finance. Frequency distribution tables, percentages, mean scores and graphical representations were used to achieve the research objectives.

3. RESULTS AND DISCUSSION

The result of data analysis was presented here using appropriate statistical techniques.

3.1 Socio-Economic Characteristics of the Respondents

The socio-economic characteristics of the respondents (farmers) were examined and the results obtained are presented in Table 1.

Table 1 presents the socio-economic characteristics of the farmers. 65.42% of the

respondents were males. The findings agree with the observations of [10,11] that males are mostly the household heads who take major decisions. Also, 48% of the respondents were in the age brackets of 51-60 years. Hence, the respondents were still within the vibrant age class and still possess the strength for farming and according to Bawa et al. [10] could be more disposed to extension contact.

Table 1. Distribution of respondents based on their socio-economic characteristics (N = 240)

Socio-economic variables	Frequency	Percentage
Sex		
Male	157	65.42
Female	83	34.58
Total	240	100
Age (Years)		
21-30	14	5.83
31-40	30	12.50
41-50	72	30.00
51-60	114	47.50
61-70	10	4.17
Total Marital Status	240	100
Single	13	5.42
Married	171	71.25
Widow/widower	35	14.58
Divorced	21	8.75
Total Household size	240	100
1-3	20	8.33
4-6	36	15.00
7-9	70	29.17
10-12	114	47.50
Total	240	100
Educational level		
No formal education	85	35.42
Primary education	77	32.08
Secondary education	43	17.92
Tertiary education	35	14.58
Total	240	100
Annual Farm Income(₦)		
1-100,000	30	12.50
101-150, 000	61	25.40
151- 200,000	80	33.33
201-250, 000	45	18.75
251-300,000	15	6.25
301-350,000	9	3.75
Total	240	100
Source of Funds		
Personal savings	169	70.42
Informal loan	37	15.41
Bank	19	7.92
Grant	10	4.17
Gift	5	2.08
Total	240	100
Farm Size (Ha)		
0.1-0.5	105	43.75

Socio-economic variables	Frequency	Percentage
0.6-1.0	71	29.58
1.1-1.5	13	5.42
1.6-2.0	24	10.00
2.1-2.5	17	7.08
2.6-3.0	10	4.17
Total Farming Experience	240	100
1.0 – 1.0	18	7.50
11-20	22	9.17
21-30	50	20.83
31-40	120	50.00
41-50	20	8.33
51-60	10	4.17
Total	240	100
Frequency of Extension contacts		
Once in 2 weeks	23	9.58
Once in 4 weeks	177	73.75
Once in 8 weeks	40	16.69
Total	240	100
Land Tenure		
Owned	166	69.17
Rented	74	30.83
Total	240	100

Source: Field Survey, 2015

71% of the respondents were married while about 5% were single. The results also showed that 47.50% of the respondents had a large household size of between 10 and 12 persons with mean household size of (eight) 8 persons. This showed that the respondents maintained a relatively large mean household size. Daniela et al. [16] noted that the household size of farmers in Southeast Nigeria is relatively large.

Again, the level of education of the respondents was relatively high as up to 65% of the respondents had one form of formal education or the other. The highest percentage (32.08%) of those educated was observed at the primary education level. However, about 33% of them attained either secondary or tertiary education level while 35.42% had no formal education. This trend was also observed by [17]. The highest percentage of the farmers earned between ₦151,000 and ₦200,000 per annum. The respondents' major source of funding for their farming activities was their personal savings as shown by 70% of them. This was followed by informal loan with 15.41% while 8% indicated that the formal sources (Banks) were their major source of fund for their farm activities.

The average farm holding was 0.90ha. 43.75% of the respondents had a farm size of between 0.1 and 0.5 ha while about 4% and 30% had between 2.6-3.0 ha and 0.6-1.0 ha of farmland, respectively. This conforms to the work of [18].

Result on farming experience of the farmers indicated that 50% of them had been in the business of farming for between 31-40 years, and about 21% of them for between 21-30 years. Only about 4% and 8% had been in farming for 51-60 years and 1-10 years, respectively. The mean farming experience was however 31 years. Findings further showed that about 74% of the respondents were visited once per month (4 weeks) by an extension agent, and about 17% were visited once in 2 months (8 weeks). Only about 10% were visited once in two (2) weeks. Based in tenurial system, 69.17% of the respondents owned the land they cultivate and about 31% rented the land they used.

3.2 Major Recommended Packages/ Technologies and Services Extended to Farmers by Extension Agents

The major recommended technologies extended to farmers by the Ebonyi State Agricultural Development Programme (ADP) were identified and the result is presented in Table 2.

The results in Table 2 indicated that the major technologies extended to the farmers in the area were those associated with swamp rice production, and cassava/maize/sweet potatoes mixed cropping as identified by 71.25% and 62.92% of the respondents, respectively. The least identified was processing cassava/sweet

potatoes into flour with about 20%. Other packages/technologies identified by respondents as being extended to them include those of yam/maize/vegetable mixed cropping (42.08%), upland rice production (50%) and utilization of cassava/sweet potato flour (29.17%), among others. However, the multiple responses recorded indicated that the respondent identified more than one package/technology.

3.3 Extension Services Rendered to the Farmers by Extension Agents

The extension services rendered to farmers by the State ADP Extension Agents were identified and the result is presented in Table 3.

The multiple responses recorded indicated that more than one service was extended to the farmers by the extension agents. On the average, each respondent received about ten (10) services from the extension agents in the area. 89.58% of the respondents received such services as home and farm visits, 87.50% advice on their agricultural problems, 83.33% learning new ideas on agriculture and 82.50% information on recommended practices. Other

services enjoyed by the farmers from the extension agents were the arrangement for input supply (75.42%), keeping record of farm activity (70.83%), establishment of SPAT (54.58%), feeding back the farmers problems to research (50.42%), preparing schedule for activities (41.67%), organizing group meetings (40.83%) and identifying rural problems (40.83%), among others. However, the least service received from the extension agents was in the area of processing of loan with 17.08%.

3.4 Trend in Funding of Agricultural Extension Services in Ebonyi State between 2001 and 2010

The trend in funding public agricultural extension services in Ebonyi State was reviewed, and the annual approved estimate of agricultural extension service and expenditure, and the difference between budget estimate and the expenditure were obtained from Ebonyi State Government (Ministry of Finance and Economic Development) and Ebonyi State Agricultural Development Programme (EBADEP). The results were presented in Tables 4, 5 and 6 and Figs. 1, 2 and 3 respectively.

Table 2. Distribution of respondents based on major packages/technologies extended to the farmers

S/No	Package/Technology extended	Frequency	Percentage
1.	Dry season vegetable production (Exotic vegetable production, mulching, using organic manure and correct spacing)	65	27.08
2.	Yam/Maize/Vegetable (rapid seed yam multiplication, improved maize varieties, spacing and fertilizer application)	101	42.08
3.	Cassava/maize/sweet potatoes (use of improved varieties of cassava, maize and sweet potato, and soil enrichment with potato)	151	62.92
4.	Cassava/maize/melon (row planting, spacing, improved varieties and fertilizer application)	60	25.00
5.	Late maize/cowpea/soybean (improved varieties, soil enrichment with soyabean or cowpea and use of pesticides)	51	21.25
6.	Swamp rice production (improved varieties, early planting, line planting, pest and diseases control in rice field with emphasis on African Rice Gall midge (AFRGM))	171	71.25
7.	Upland rice production, use and time of fertilizer application	120	50.00
8.	Processing cassava/sweet potato into flour (peeling, washing, grading, drying, milling, and sieving that is adding value and increasing shelf life)	47	19.58
9.	Utilization of cassava/sweet potato flour (measuring ingredients, mixing, kneading, baking or frying and packaging)	70	29.17
10.	Production of fruit juices, processing and utilization of soybean (selection, washing, blending, sieving, cooling and storage)	61	25.43
Total		897*	

Source: Field Survey, 2010.

*Multiple responses recorded

Table 3. Distribution of respondents based on extension services rendered to them by extension agent

Extension Services Rendered	Frequency	Percentage
Establishment of SPAT (Small Plot Adoption Technique)	131	54.58
Forming women groups	50	20.83
Providing information to women farmers	61	25.42
Identifying rural problems	98	40.83
Involvement in non-farming activities	81	33.75
Supervising women activities	75	31.25
Arrange input supply	181	75.42
Preparing schedule of activities	100	41.67
Processing loan	41	17.08
Initiating and promoting leadership	71	29.58
Securing market for shows and farm produce	66	27.50
Organizing shows	90	37.50
Organizing group meetings	98	40.83
Communication of recommended practices	198	82.50
Feeding back farmers' problems to research	121	50.42
Teaching new ideas in agriculture	200	83.33
Teaching how to keep record of activity	170	70.83
Giving advice on agricultural problems	210	87.50
Home and farm visits	215	89.58
Total	2339*	

Source: Field Survey, 2010

*Multiple responses recorded

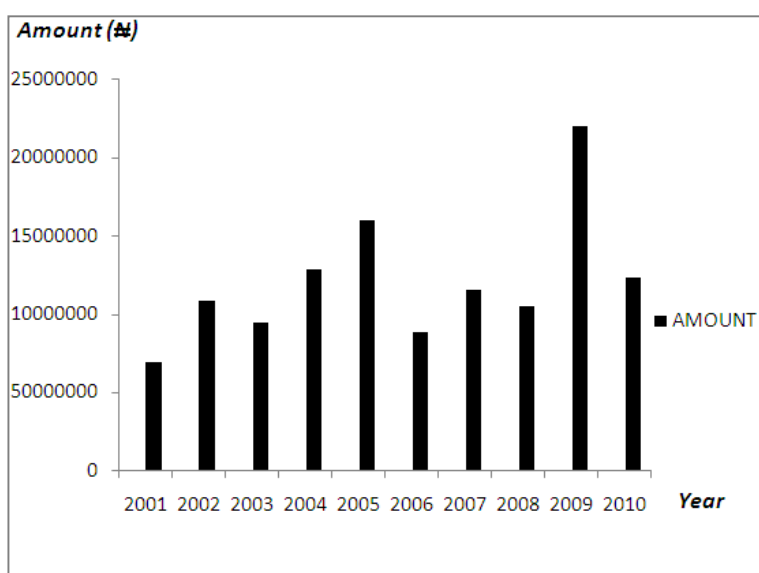


Fig. 1. Annual approved estimates on agricultural public extension service in Ebonyi State (2001-2010)

The result in Table 4, Figs. 1 and 2 indicated that there was no steady increase in the total amount approved by Ebonyi State Government within the years of study for extension service delivery. The amount approved increased and decreased from year to year. However, the highest estimate was approved in 2009 with ₦220,400,000, while the

lowest estimate was approved in 2001 with ₦69,301,000. Further, there was a great decline from ₦220,400,000 in 2009 to ₦124,100,000 in 2010. This could be attributed to policy inconsistency of the government which has affected agricultural sector negatively.

Table 4. Annual approved estimates on agricultural extension service In Ebonyi State (2001-2010)

Year	Amount (₦)
2001	69, 301, 000
2002	109, 048, 110
2003	94, 500, 000
2004	129, 000,000
2005	160, 629, 796
2006	88, 250,000
2007	115, 600, 000
2008	105, 000, 000
2009	220, 400,000
2010	124, 100,000

Source: EBSG (Ministry of Finance), 2010

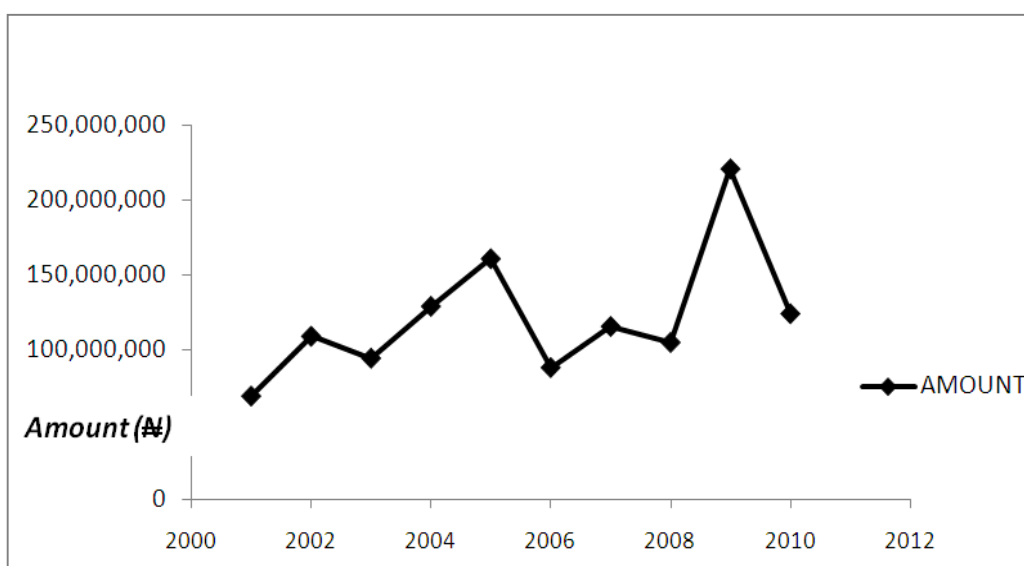


Fig. 2. Annual approved estimates on agricultural public extension service in Ebonyi State (2001-2010)

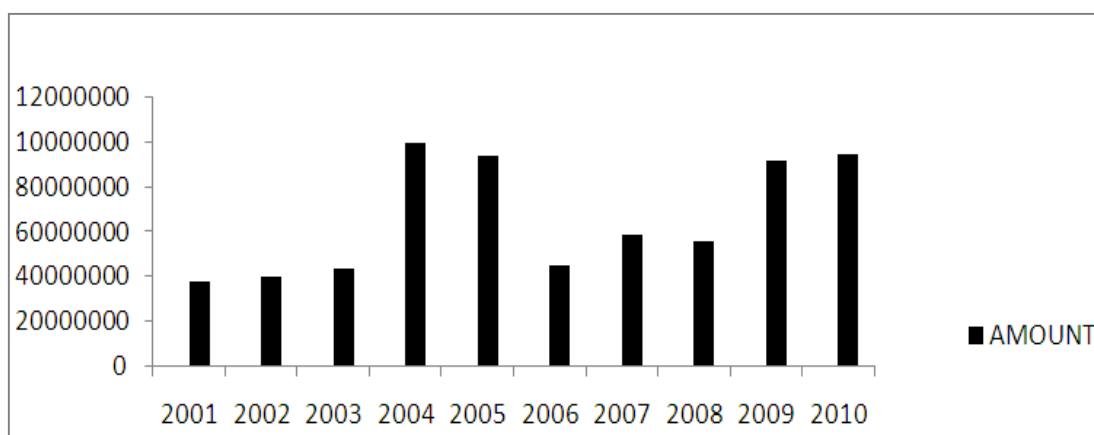


Fig. 3. Annual expenditure on agricultural extension service in Ebonyi State (2001-2010)

Source: Data Analysis, 2010

The results in Table 5, Figs. 3 and 4 indicated inconsistency and unstable funding of agricultural extension service in Ebonyi State.

The amount spent every year within the period of study did not continuously increase or decrease. Year 2001 was the year of least funding with ₦37, 127, 792; while the highest amount of fund was expended on agricultural extension services in the year 2004, with ₦99, 459, 694. A decrease in funding was observed in 2003 and with a very sharp decrease in 2006. However, a gradual increase occurred between 2007 and 2008, with another sharp increase recorded in 2009 and 2010.

3.5 Estimate the Difference between the Amount Budgeted and Actual Amount Spent in Extension Services

The results obtained in Table 6 and Figs. 5 and 6 revealed that there is a great difference between the budget estimate and the expenditure on agricultural extension service delivery in Ebonyi State. The greatest difference was witnessed in 2002 with a percentage difference of 46.5%, closely followed by 2009 with 41.6% and in 2003 with 37.6%. However, the lowest difference was obtained in 2002 with 9%.

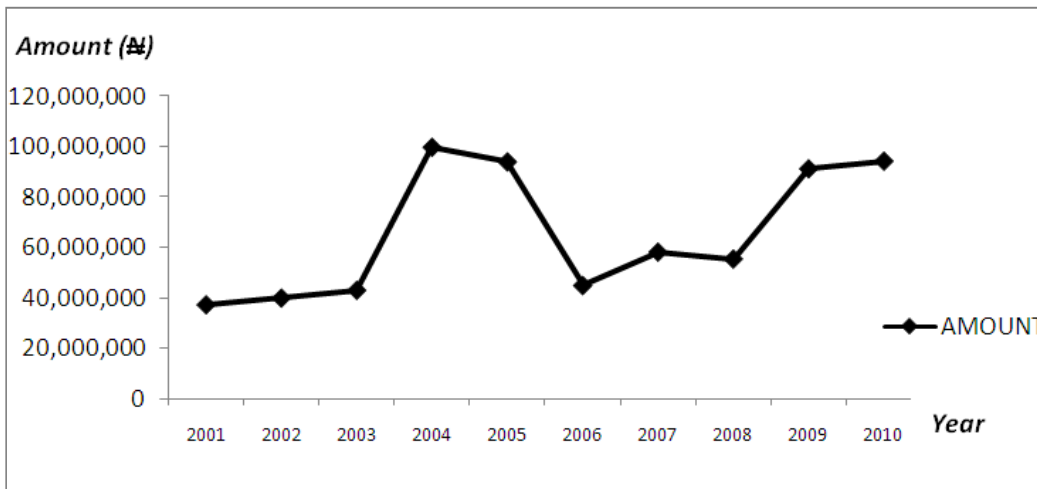


Fig. 4. Annual expenditure on agricultural extension service in Ebonyi State (2001-2010)
Source: Data Analysis, 2010

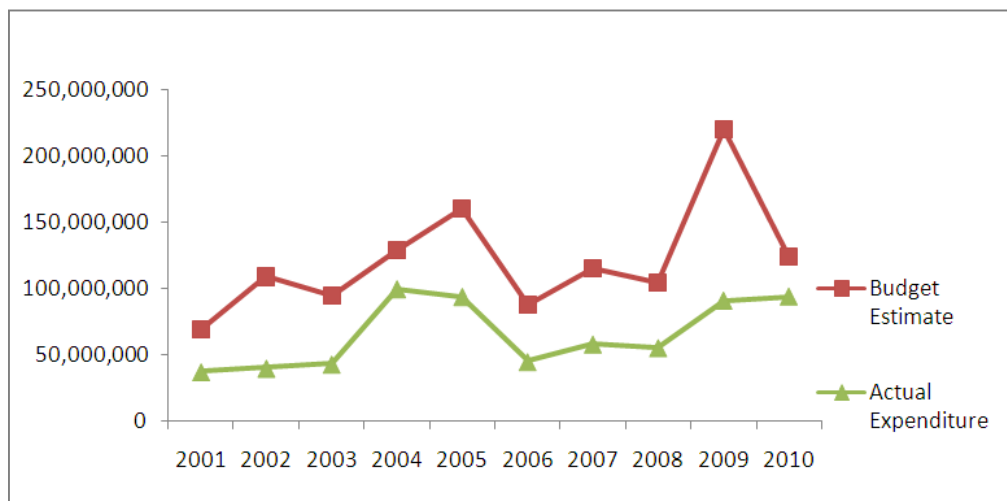


Fig. 5. Difference between budgets estimate and expenditure on agricultural extension service in Ebonyi State
Source: Data Analysis, 2010

Table 5. Annual expenditure on agricultural extension service in Ebonyi State (2001-2010)

Year	Amount (₦)
2001	37,127,792
2002	39,774,630
2003	42,840,089
2004	99,459,694
2005	93,666,054
2006	44,747,723
2007	57,957,757
2008	55,241,172
2009	90,962,428
2010	93,975,943

Source: EBADEP, 2010

Table 6. Difference between budgets estimate and expenditure on agricultural extension service in Ebonyi State

Year	Budget estimate (₦)	Expenditure (₦)	Difference (₦)	Percentage difference (%)
2001	69,301,000	37,127,792	32,173,208	30.2
2002	109,048,110	39,774,630	69,273,480	46.5
2003	94,500,000	42,840,089	51,659,911	37.6
2004	129,000,000	99,459,694	29,540,206	12.9
2005	160,629,796	93,666,054	66,963,742	26.3
2006	88,250,000	44,747,723	43,502,277	32.7
2007	115,600,000	57,957,757	57,642,243	33.2
2008	105,000,000	55,241,172	49,758,828	31.0
2009	220,400,000	90,962,428	129,437,572	41.6
2010	124,100,000	93,975,943	30,124,057	13.8

Source: Field Survey, 2010

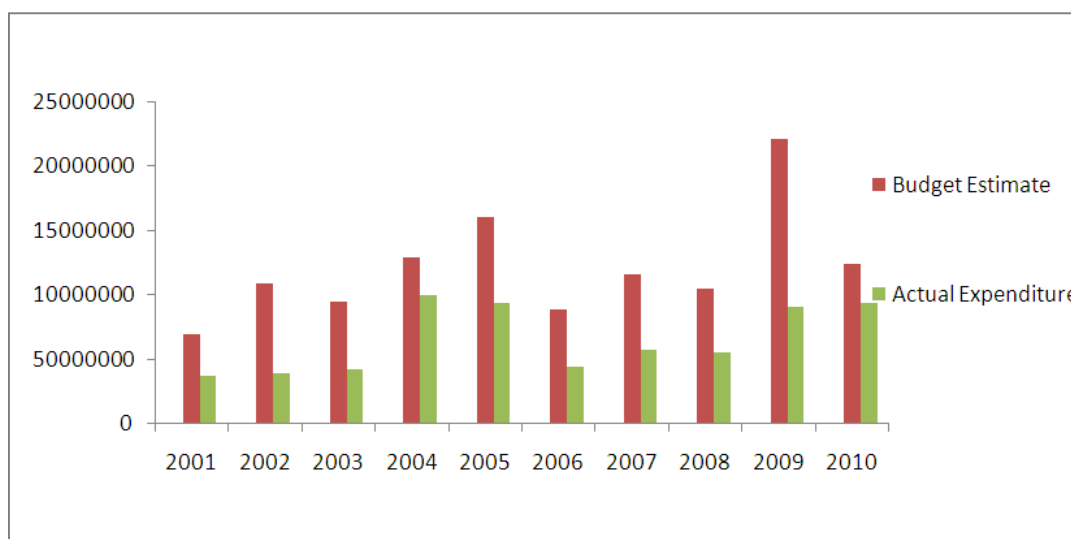


Fig. 6. Difference between budgets estimate and actual expenditure

4. CONCLUSION AND RECOMMENDATIONS

This study examined funding of Ebonyi State Agricultural public extension services in a

deregulated economy. The respondents' major source of funding for their farming activities was their personal savings. Frequency of extension contacts is once in a month for most of the respondents. The major technologies extended to

the farmers in the area were those associated with swamp rice production, and cassava/maize/sweet potatoes mixed cropping. There is a great difference between the budget estimate and the expenditure on agricultural extension service delivery in Ebonyi State. Hence, there is a dwindling funding of agricultural extension services by the government of the state.

Based on the research findings, the following recommendations were made:

- a. The extension-agency of the state should educate farmers on cost of its operations and the need for their contribution. Farmers with large farms and at least post-secondary education could be the initial target for supports, while the farmer associations should be an avenue for effective education.
- b. Extension services should be backed up with interest free loans and supply of inputs to farmers at subsidized rate. The production of farmers can be monitored for between five (5) and ten (10) years and when the farmers are sufficiently and economically empowered, deregulation of extension services can be introduced.
- c. The deregulation of agricultural extension services should be a gradual process and in phases. Government should commercialize extension services but retain partial privatization and monitoring of the services bearing in mind the food production inadequacies in Nigeria. It is therefore important that a workable fashion for the implementation of the policy is designed for the expected impact of improving extension services and farmers' productivity.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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