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Utilization of Agricultural Extension Services Among Farmers in South Eastern, Nigeria

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ABSTRACT

The study examined the utilization of agricultural extension services among farmers in South Eastern, Nigeria. The study ascertained the extension services utilized by farmers, identified the training needs of farmers, described farmers' perception of extension service and identified the constraints in utilizing extension services. Data was collected with structured questionnaire through a multi-stage sampling procedure and analysed using percentages, means and regression. Extension services utilized by farmers were management of pests and diseases outbreak (86%), training on improved varieties production technology (82%), agricultural show (75%) among others. Dry season vegetable production (78%), good spacing (76%), effective ways of fertilizer application (71%) were among the training needs of the farmers. Farmers constraints in the utilization of extension services include their inability to access credit facilities (91%) as well as delayed response from extension (89%). Level of education(p=0.002), farm size (p=0.005) and annual income (p=0.004) were among the significant variables that positively influenced farmers' utilization of extension services. Farmers in the study area utilize various extension service packages. Farmers should be provided with more access to credit facilities to increase their utilization of extension services. Extension officers should be provided with enabling environment that will facilitate prompt response to farmers needs.

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INTRODUCTION

Agriculture employs over 52.2% of Nigerians while contributing about 21.91% to the total Gross Domestic Product (GDP) (National Bureau for Statistics (NBS), 2024)

indicating low level of production in the sector. This has led to food inflation, with increasing incidence of malnutrition and starvation among households in the country. Challenges arising from climate change, loss of biodiversity and population growth are parts of critically distressing issues to contemporary agricultural production (Zerssa et al., 2021). Reducing food production shocks does not only involve increasing productivity as it requires sustainable optimization of farmers potentials to attend to their personal consumption before responding to local demands through their knowledge, attitude and skill (Nigus et al., 2022). The factors responsible for low productivity by the Nigerian agricultural sector has been researched and published by different authors. Most authors are of the opinion that increasing utilization of agricultural production services such as agricultural extension, credit and markets by farmers will boost food production; hence this deserves special attention.

It falls within the purview of agricultural extension to connect innovation incubation centres and research information to farmers through the dissemination of appropriate improved innovations from these centres to the farmers with the aim of increasing production. Agricultural extension provides a platform for positive behavioural changes among farmers by availing them with information on important issues in the aspects of food preservation, farm management practices and marketing. It is important that agricultural extension be identified in terms of food production performance through the adoption of innovative practices and profitability among farmers. Utilization of agricultural extension and advisory services facilitates the acquisition of essential knowledge, attitude and skill for optimal production and improved livelihoods for farmers. The focus of agricultural extension makes it important for all farmers to have access and utilize extension services.

It is not difficult to recognise the obvious difficulties to the optimal performance of extension delivery in Nigeria. These challenges among others include insufficient funding, absence of logistic support for field staff leading to low level of skill development among extension workers, inadequate access to production facilities, policy inconsistency among other factors (Nkosi et al., 2022; Nigus et al., 2022). In the developing countries like Nigeria, there has been declining rate in the number of extension workers to meet the needs of the farmers. In view of this, few extension workers respond to farmer's needs in Nigeria. The Food and Agricultural Organization (FAO) recommended an extension farmer ratio of 1:500 (Nkosi et al., 2022) but the ratio in Nigeria is one extension worker: 3000 farmers (Sennuga et al., 2020).

A reflection of the poor funding of the agricultural extension services in Nigeria is evident in the fact that notwithstanding the consensus among African Union on the New Partnership for African's Development (NEPAD) that at least 10% of the annual budgetary allocation should target agricultural productions, Nigeria's budgetary allocation to agriculture was about 1.3% of the national budget in 2024 (NBS, 2024). It

is therefore not surprising that extension contact with famers has been very low as this is evident in the activities of the Agricultural Development Programmes (ADPs).

The question however is if these challenges are actually affecting the utilization of agricultural extension services by farmers in south east region of Nigeria. Given that recent literatures do not exist on the determinants of farmers utilization of extension services in the south east region of Nigeria, the study seeks to:

i. ascertain the availability of extension workers
ii. identify the extension services available to the respondents
iii. ascertain the training needs of farmers
iv. ascertain farmers' perception of extension services
v. determine the constraints faced by farmers in accessing extension services

The hypothesis for the study tested the influence of socio-economic characteristics of farmers on the utilization of agricultural extension services.

MATERIAL and METHOD

The study was conducted in South-Eastern, Nigeria. South-East is one of the six geo-political zones in Nigeria. The zone consists of Abia State, Anambra State, Ebonyi State, Enugu State and Imo State. South-East Nigeria is located within latitudes 5^{o}N to 6^{o} N of the equator and longitudes 6^{o} E and 8^{o} E of the Greenwich (prime) meridian (Ume et al., 2021). The region has a favorable climatic condition for farming although food production has not attained to a satisfactory level as a result of low level of adoption of innovations (Ikehi et al., 2022).

The study population comprised all farmers in the region. Multi-stage sampling procedure was employed in selecting the respondents for the study during the 2023 farming season. In the first stage, purposive sampling technique was used to select three states in the region due to the intensity of agricultural production in the area. In the second stage fifty percent of agricultural extension zone were selected from each of the three states. The third stage was the selection of sixty percent of ADP blocks zones from each of the zones. The final stage was the selection of seventy-five percent of farmers from each of the blocks to secure a total of 480 respondents for the study. Data collection was done against the questionnaire at their convenient locations and in their native language.

Data were tabulated and analyzed using statistical package for social sciences (SPSS).

Quantitative data were presented using means, percentages and regression analysis. Measurement of variables include availability of extension workers (Yes; 1 No, 0), availability of extension services (Yes, 1; No,0), farmers training needs (Yes, 1; No, 0) and constraints in utilizing extension services (Yes, 1; No, 0). Farmers utilization of extension services (Yes, 1; No, 0). Farmers perception of extension services was

measured using a 5-point Likert-liked scale of strongly agree, agree, strongly disagree, disagree, undecided.

The model for the analysis of the hypothesis was specified below

Y= BO +B1X1+B2X2+B3X3 +B4X4 +U……..……. (1)

Where:

Y = 1 or 0

1= Utilization to extension service 0 = No utilization of extension service

B1-B4 = Coefficient of the factors

The variables in the model were measured as: gender (male = 1; female = 0) (X_1), age (years) (X_2), level of education (no formal education., primary. education., secondary education. and post-secondary education.) (X_3), household size (number of people living and feeding together) (X_4), farm size (measured in hectares) (X_5), farming experience (years) (X_6), time spent in farm (Hours per day) (X_7) and farm income (measured in naira, ₦)

RESULTS AND DISCUSSION

Availability of Extension Workers

Results in Table 1 show that majority (89.0%) of the farmers indicated that extension officers were available in the study area. On their frequency of visit by extension personnel, 54 % of the respondents were visited once in the year, 8% twice, 8% thrice while 34% were not visited by an extension personnel.

Table 1. Availability of extension workers

Items	Percentage (n=480)
Extension service availability	
Yes	89.0
No	11.0
Extension agent visit	
Yes	24.0
No	76.0
How often does an extension agent visit you in a month?	
Once in a year	54.0
Twice in a year	8.0
Thrice in a year	8.0
None	34.0
Participation in Extension training program	
Yes	48.0
No	62.0

Also, 62 % of the respondent never participated in any extension program in a year. The study therefore confirms the low number of farmers who have received extension services in the area. The result is in consonance with the findings of Ikoyo-Eweto et al. (2022) who reported the presence of extension workers in Delta state, Nigeria while lamenting on the non-accessibility of agricultural extension services.

Extension Services Utilized by Farmers

Table 2 reveals that management of pests and diseases outbreak (86.0%), training on improved varieties production technology (82.0%), agricultural show (75.0%), linkage to credit/loan source (86.0), record keeping (74.0%), introduction of improved seed (54.0%) were the major extension services utilized by farmers.

The work of Thomas and Diarra (2020), revealed that linkage to market, method demonstration, and provision of input ranked prominent among the extension services always accessed by farmers. Sani and Abubakar (2023), reported that extension agents linked farmers in Bichi Local Government Area of Kano directly to market and input dealers. The study conducted by Owolabi and Yekinni (2022), opined that there is an increasing use of Information and Communication Technologies (ICTs) tools by extension officers to link farmers to market. Utilization of agricultural extension possesses advantages in increasing agricultural production

Table 2. Extension services utilized by farmers7

Extension Services	Percentage (n=480)
Management of pest and diseases outbreak	86.0
Training on improved varieties production technology	82.0
Agricultural show	75.0
Linkage to credit/loan source	86.0
Record keeping	74.0
Introduction of improved seed	54.0
Linkage to agric. mechanization services	51.0
Training on group development and management	53.0
Linkage to market	52.0
Leadership training	54.0
Linkage with inputs	42.0

Agricultural Training Needs of Farmers

Entries in Table 3 shows that dry season vegetable production (78.0%), good spacing (76.0%), effective ways of fertilizer application (71.0%), cassava/sweet potatoes/processing and utilization (67.0%), feed formulation (64.0%) and effective poultry management system (52.0%) were the major agricultural training needs of farmers in the study area. This result agrees with Sani and Abubakar (2023) who reported that farmers needed training in the production of off-season vegetables and methods of fertilizer application respectively. Also, Deka et al. (2020), indicated that

poultry farmers needed training on preparation of feed with locally available materials, feeding management, livestock and poultry management.

Table 3. Agricultural training needs

Training needs	Percentage (n=480)
Dry season vegetable production	78.0
Good spacing	76.0
Effective ways of fertilizer application	71.0
Cassava/sweet potatoes/processing and utilization	67.0
Feed formulation	64.0
Vaccines administrations	22.0
Effective poultry management system	52.0
Chemical application	51.0
Maize/cassava intercropping	47.0
Processing and utilization	36.0
Swamp rice production	14.0

Perception of Extension

On respondent's perception of agricultural extension services, entries in Table 4 reveals that of the 16 items listed, farmers had positive perception of only 4. They perceived that agricultural extension services has been effective in encouraging farmers to plan their farming ($\bar{x}$=3.0), enable adoption of more farm technology ($\bar{x}$=3.0), helping farmers to make intelligent decisions ($\bar{x}$=3.0) and providing access to input suppliers ($\bar{x}$=3.0).

Table 4. Farmers' perception of agricultural extension services

Perception	Mean	Std. Deviation
Encouraging farmers to plan their farming	3.0	0.0
Enable adoption of more farm technology	3.0	0.0
Extension workers help farmers to make intelligent	3.0	0.0
Extension have provided us access to input suppliers	3.0	0.0
Extension services have increased our farm income	2.6	0.0
Easy management of farm equipment	2.6	0.2
Extension services are good for improved family	2.0	0.3
Extension services are relevant to our farming	1.9	0.5
Enable the acquisition of cash money	1.9	0.2
The extension services increase area of cultivation	1.9	0.2
Extension services have increased access to market	1.9	0.4
Extension services do not Improve our level	1.9	0.3
Extension services are good tools for providing access	1.4	0.6
General Mean	2.4	

The result is in agreement with Thomas and Diarra (2020) who averred that 50.8% of farmers had low perception of agricultural extension services. Similar findings by

Uyamasi et al. (2023) reported that farmers had very low perception of extension services due to its inadequacy. However, this is contrary to the report of Oluwalana and Akinbosoye (2019) who affirmed that farmers in Oyo state perceived that extension services enhanced their agricultural productivity. Access to agricultural extension services enables farmers to make decisions that improve their farming and solve problems (Al-Zahrani et al., 2019). Farmers perception performs an essential role in their adoption behaviour.

Constraints Encountered by Farmers in Utilizing Agricultural Extension Services

Table 5 shows that 91% of the respondents agreed that they encountered constraint of inability to access credit facilities. Other constraints that were identified by respondents include inability of extension workers to provide instant solutions (89%), extension workers are overburdened by their responsibilities (85%), lack of training material (78%) high cost of accessing extension services (77%), and inadequate technological knowledge and training (72%)..

This finding is justified by Nigus et al. (2023) that access to credit services and subsidies are among the challenges in the utilization of agricultural extension.

Table 5. Constraints in utilizing extension services

Constraints	Percentage (n=480)
Inability to access credit facilities	91.0
Inability of extension workers to provide instant solutions	89.0
Extension workers are overburdened by their responsibilities	85.0
High cost of accessing extension services	77.0
Lack of training materials	78.0
Inadequate technological knowledge and training	72.0
Little or no extension training	65.0
Poor behavior of extension workers	64.0
Poor communication skill of extension worker	60.0
Inadequate information on extension training programs	58.0
Frequent contact with only resource-rich farmers	54.0
Inadequacy of extension support	50.0
Ignoring farmers' opinion	34.0
Inadequate research-extension linkage	16.0
Frequent changes in extension strategy at the national level	24.0
Lack of motivation of farmers based on previous experiences	54.0
Inadequacy of information on private sector participation	39.0
Time of visit	39.0

Determinants of Utilization of Extension Services

Estimate of Probit regression model on the determinants of utilization of extension services with an F-value of 2.64 (p=0.005) shows that the explanatory indices in the model encapsulated most of the variation in the utilization of extension services as shown in Table 6.

Farm income was positively related to the utilization of extension services. This implies that as farmer's income increases, their utilization of extension services improves. Izuogu et al. (2023) reported that extension contact has a significant positive relationship with farm income. In view of this, farmers will be enthusiastic to utilization of extension service as their income increases.

Farm size had a positive influence on the farmer's utilization of extension services. Essentially, the larger the farm size, the more the likelihood of their utilizing extension service.

From Table 6, farming experience and age had a significant negative influence on the utilization of extension services. This means that farming experience and age retards the farmer's utilization of agricultural extension services. This result is unclear as one would have expected that farming experience should increase farmers utilization of extension services. However, Izuogu et al. (2021) has blamed this on the increase in negative outcomes of innovations transferred by extension due the challenges of climate change. This has threatened the credibility rating of agricultural extension information among the aged and experienced farmers.

Table 6. Determinants of utilization of extension services

Variables	Coefficient	Value of p	Marginal Effect
Age	-0.152	0.000***	-0.210
Size of household	-0.123	0.211	0.020
Education level	0.473	0.002 ***	0.030
Gender	0.016	0.261	0.201
Farm income	0.014	0.004***	0.012
Farm size	0.500	0.005 ***	0.021
Farming experience	-0.073	0.014 **	-0.024
Constant	-1.644	0.173	
	F = 2.64	0.005	

Note: *, **, and *** significant at 10%,5% and 1% levels respectively

Level of education had a positive influence on the utilization of extension services as presented in Table 6. This implies that the more educated farmers utilized extension services. Midamba et al. (2022) and Izuogu et al. (2024) assert that an increase in the number of years a farmer spent in school would increase the probability of accessing agricultural extension services by 1.5%. This could be attributed to the skills, knowledge and awareness that farmers benefit from as they advance their studies. Educated farmers have comparative advantage over others in utilizing extension

services. Moreover, education improves the reasoning ability, which in turn increases farmers' eagerness to access the agricultural extension services. When we consider agricultural information seeking behavior, educated people have more opportunities to search for agricultural production related information as well as assimilate extension broadcast.

CONCLUSION AND RECOMMENDATION

Extension services are available in South Eastern Nigeria but farmer's perception was mostly low. This implies that they weren't effectively satisfied by extension services. Farmers utilized extension services despite experiencing several constraints. The major constraints experienced by farmers include their inability to access credits and delayed response from extension workers. The utilization of extension services was a function of age, level of education, farm income and farm size. Farmers should be provided with easy access to credit facilities to enable them utilize more extension services. Extension officers should be provided with enabling environment that will facilitate prompt response to farmer's needs. The negative relationship between respondents age and farming experience with utilization of extension services makes it important for government to set up more adult literacy programs while strengthening the existing ones in order to educate farmers.

Conflict of Interest

Authors have declared that there is no conflict of interest.

Author Contribution

Authors contributed equally toward the study.

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