# Farmers' satisfaction with agricultural extension services in Delta State, Nigeria

## Ovharhe, O. J.[1*], Emaziye, P.[1] and Okwuokenye, G. F.[2]

[1]Department of Agricultural Economics and Extension, Delta State University, Asaba Campus, Asaba, Delta State, Nigeria; [2]National Open University Nigeria, Zaria, Kaduna State, Nigeria.

**Abstract** The farmers' satisfaction with agricultural extension services in Delta State, Nigeria was investigated, the level of satisfaction of farmers with extension agents' activities, the agricultural extension channels of information, and some DARDA's activities on farmers' farm income. Results revealed that most participants were males (58.29%), of an average age of 42.25 years and the most of them were married (71.56%), with averaged household size, farm experience, community residence, and farm size of 6 persons which were 16.6 years, 14.32 years, and 3.52 ha. respectively. A larger proportion of 82.46% that rated their level of satisfaction on extension agents showed above average. The averaged income levels before and after being members of Delta State Agriculture and Rural Development Agency (DARDA) were ₦239,573.46 and ₦381,753.56 respectively. It concluded that age, educational status, household size, farm experience, and farm size that revealed significant to farmers' farm income contributing to farmers' satisfaction. Based on findings, it is recommended that inputs provision should increase as a part of sustaining satisfaction level.

**Keywords:** Communication, DARDA, Extension agents, Satisfaction

## Introduction

Agricultural extension is an agriculture-based informal education, training, capacity building, and knowledge sharing rendered to farmers or prospective farmers. These services are done to improve farming systems, techniques, and performances in livelihood standards and environmental sustainability (Ovharhe *et al.,* 2020). They stated that the critical target in agricultural extension including an increase in agricultural productivity through methodological and contemporary farming processes. Agricultural extension activities are carried out by extension agents, extension advisers, community, or local facilitators based on the organization's terminology. The Delta State Ministry of agriculture uses the nomenclature extension agents or extension advisers; while the State Employment and Expenditure for Results (SEEFOR)

* **Corresponding Author:** Ovharhe, O. J.; **Email:** drovharhe.oghenero@gmail.com

and Fadama use community or local facilitators (SEEFOR, 2015). In Delta State, 'the name Agricultural Development Programme (ADP) has been changed to Delta State Agriculture and Rural Development Agency (DARDA)'. The essence was to incorporate rural development issues into agricultural development activities. There is a nexus between agricultural extension and rural development. Hence, Lawal-Adebowale (2016) reflected that the mainstream of agricultural extension service worldwide remains in the development of the rural sector and improvement of the living condition of farming households which contributes to increase in farming production and improved productivity The extension services (providing the rural farmers with relevant and applicable research-based technologies) are made easy when the rural areas are developed with communication gadgets accessibility (Ovharhe and Ovwigho, 2016).

Ofuoku and Agbamu (2016) reported that an important role-expectation of agricultural extension under a democratic and deregulated economy was making farm families benefit substantially from biotechnology and information technology. Faborode and Ajayi (2015) stressed that agricultural extension's main role was to provide linkages between NGOs, farmers, and researchers, integrating the current agricultural knowledge system, effective technology development, transfer, and utilization. Another major role as Khumairoh *et al.* (2019) pointed out that coordination and educating farmers through well-designed farmers' field school (FFS). The conduct of practical field agricultural extension activities nowadays includes an extensive range of communication efforts, demonstrations and knowledge-based activities structured for rural farmers by multi-disciplinary professionals in agriculture, agricultural economics and marketing, rural development, community health, and business strategy studies. Whether public or private, the extension personnel's task is to bring scientific knowledge to farm families in the farms and houses and this will help to improve the efficiency of agriculture and increase satisfaction levels (Farooq *et al.,* 2020). Ovharhe *et al.* (2020) established that farmers are satisfied when extension officers are committed to their field assignments. Ofuoku and Agbamu (2016) identified the extension system as one of the contact farmers' approach as a trickle-down communication strategy for reaching farmers in the state, which the DARDA is meant to serve.

From the foregoing, the extension service is an organ of DARDA and placed by the federal government to advance food and fiber production and to increase farmers' income through an integrated farm inputs supply and overall agricultural development (Ofuoku and Agbamu, 2006). The major concerns of the extension organ was saddled with increase in farmers' welfare since its inception. This calls for a study of the performance of the sub-program

(extension unit). Performance can be said to be a given task measured against preset known standards of accuracy, completeness, cost, and speed (Ovharhe, 2017). The author advanced that the performance appraisal process is aimed to determine the performance of the worker. It evaluated the behavior of the worker (employees/farm workers) in the work spot, normally including both qualitative and quantitative aspects of job performance (Bakotic, 2016). Thus, farmers like employees to meet the job satisfaction and performance.

In the fate of DARDA performance in agricultural productivity, sustenance of domestic food supplies, and the agricultural extension system were revitalized to reach out to all farmers and helped them to realize the dream of increased production and farm income. This study, therefore, aimed to know the agricultural extension officers (extension agents) had satisfactorily reached out to all the farmers or not. The study was also aimed to examine the socio-economic characteristics of the farmers, the agricultural extension channels used by DARDA in the study area, the level of satisfaction of the farmers with extension services and the effects of the DARDA extension agents on the farmers' farm income.

## Materials and methods

The study was carried out in Delta State. The state has three agricultural zones with 25 local government areas (LGAs). The state is endowed with agrarian and oil mineral deposits potentials. The Census of 2006 puts the population size of the state at 4,293,282 and that the major ethnic groups of the study area are Urhobo, Isoko Ijaw Delta Ibo and Itsekiri (NAEC, 2008).

The population of the study was DARDA registered farmers. A multistage sampling procedure was used. In sampling respondents, eight LGAs comprising of Isoko North, Sapele, Patani, Ika North, Udu, Ughelli North, Okpe, and Warri South were randomly selected from the 25 LGAs for the study. There were 27 farmers from each LGA that gave a total of 216 farmers to administer with the question instrument. Out of the number, 211 were used for the study.

The investigation used both questionnaires and oral interviews. The former and latter were used to source information from literate and illiterate respondents. The instrument was however administered and retrieved by the researcher together with the assistance of the extension agents and trained enumerators. The instrument was validated using the face content approach while the Crombach Alpha technique was used to ascertain the reliability of the instrument. It gave a value of 0.72 thus indicating that the instrument was reliable.

Descriptive and inferential statistics were used to analyze data. Descriptive statistics (percentage, frequency count, mean and standard deviation) were used to achieve the objectives. The Likert-type scale was used to measure the level of satisfaction and sources of information/communication of extension agents to farmers. The Likert-type scale ranged from strongly agree, agree, disagree, and strongly disagree. They were respectively coded as 4, 3, 2, and 1 in the analysis. A similar approach was used to determine the channels of information/ communication of the extension agents to farmers. A weighted mean of $\geq 2.5$ indicated that the source was regularly used by the extension agents and not regularly used if a value is less than 2.50. The income measurement, farmers were asked to state their annual average income from an agricultural investment.

Linear regression was used to analyze the relationship between socio-economic characteristics of DARDA farmers and their farm income (study's hypothesis). Multiple regression shows a relationship between a dependent (farm income) and independent variables (socio-economic characteristics). The explicit form of the equation is shown below.

The explicit form of the multiple regression is given as:

$Y = a + b_1X_1 + b_2X_2 + b_3X_3 - - - b_nX_n + e$

The variables in the equation are defined below as:

$Y$ = Farm income (₦)

$X_1$ = Gender (dummy: male = 1; female = 2)

$X_2$ = Age (years)

$X_3$ = Educational status (years)

$X_4$ = Marital status (Single = 1; Married = 2; Divorced = 3; Widow(er) = 4)

$X_5$ = Household size (number of people living and feeding together)

$X_6$ = Farm experience (years)

$X_7$ = Years of residence in the community

$X_8$ = Farm size (years)

$X_9$ = Farm status (full time = 1; part time = 0)

The linear equation was selected for leaving out the other equations (Semi – log, Exponential, and Cobb - Douglas). This was as a result of its coefficient of determination ($R^2$), some significant variables, and the apriori expectations (Okuma and Isiorhovoja, 2017).

## Results

The socio-economic characteristics of the respondents are shown in Table 1. The results revealed that male-dominated (58.29%) the farmers served by the extension agents of DARDA. The dominance of males may be attributed

to the nature of farm work and the tedious task involved. This is an indication that the farmers were young and active.

**Table 1.** Socio-economic characteristics of respondents (n = 211)

| Characteristics | Categories | Frequency | Percentage (%) | Mean |
|---|---|---|---|---|
| Gender | Male | 123 | 58.29 | |
| | Female | 88 | 41.71 | |
| Age | < 30 | 27 | 12.80 | |
| | 30 – 39 | 59 | 27.96 | |
| | 40 – 49 | 81 | 38.39 | |
| | 50 – 59 | 33 | 15.64 | |
| | ≥ 60 | 11 | 5.21 | 42.25 |
| Education | No Formal Educ. | 21 | 9.95 | |
| | Prl. Educ. | 41 | 19.43 | |
| | Sec. Educ. | 107 | 50.71 | |
| | Post-Sec. Educ. | 42 | 19.91 | 16.83 |
| Marital status | Single | 17 | 8.06 | |
| | Married | 151 | 71.56 | |
| | Divorced | 14 | 6.64 | |
| | Widow(er) | 29 | 13.74 | |
| Household size | < 3 | 48 | 22.75 | |
| | 3 – 5 | 53 | 25.12 | |
| | 6 – 8 | 69 | 32.70 | |
| | 9 – 11 | 33 | 15.64 | |
| | ≥ 12 | 8 | 3.79 | 5.58 |
| Farm experience (yrs) | < 5 | 5 | 2.37 | |
| | 5 – 9 | 22 | 10.43 | |
| | 10 – 14 | 39 | 18.48 | |
| | 15 – 19 | 66 | 31.28 | |
| | ≥ 20 | 79 | 37.44 | 16.6 |
| Years of residence in t community (yrs) | < 5 | 7 | 3.32 | |
| | 5 – 9 | 28 | 18.27 | |
| | 10 – 14 | 69 | 32.70 | |
| | 15 – 19 | 74 | 35.07 | |
| | ≥ 20 | 33 | 15.64 | 14.32 |
| Farm size | < 2.0 | 41 | 19.43 | |
| | 2.1 – 4.0 | 95 | 45.02 | |
| | 4.1 – 6.0 | 59 | 27.96 | |
| | ≥ 6.0 | 16 | 7.58 | 3.52 |

Source: Field survey responses

The results revealed that most of the respondents (71.56%) were married and met up with the economic demands of their families. The modal farm experience of respondents (37.44%) was 20 years and above. The mean

was 16.6 years and it implies that the farmers were experienced in their farming activities. Results on farm size revealed that most of the respondents (45.02%) farmed on an area of between 2.1 – 4.0 Ha. The mean farm size was 3.52 Ha and it implies that the farmers are considered as small scale farmers.

### *Level of satisfaction of the farmers with extension services*

The level of satisfaction of the farmers about the extension agents is shown in Table 2. The level was determined with the mean value of the statements desiring satisfaction. The respondents' highest level of satisfaction was expressed on the methods of handling the training of farmers (mean = 3.01) and followed by demonstration of the technology/innovation (mean = 2.91), and then the relevance of agricultural innovations to farmers (mean = 2.86). Other areas where the farmers showed satisfaction with the extension agents included the advisory role (mean = 2.83), level of practicability during training (mean = 2.73), a procedure used in delivering technology/innovation (mean = 2.69) and fluency of the extension agents speech (mean = 2.58). There was a low level of provision of inputs (2.01).

**Table 2.** Respondents' level of satisfaction with the extension services

| Statements | Mean | Standard Dev. | Ranking |
|---|---|---|---|
| **Methods of handling the training of farmers** | 3.01* | 0.51 | 1 |
| **Demonstration of technology/innovation** | | | |
| | 2.91* | 0.74 | 2 |
| **The relevance of agricultural innovations to farmers** | 2.86* | 0.76 | 3 |
| **Advisory role** | 2.83* | 0.82 | 4 |
| **Level of the practicability of during training** | 2.73* | 0.81 | 5 |
| **The procedure used in delivering technology/innovation** | 2.69* | 0.63 | 6 |
| **Fluency of speech (subject matter)** | 2.58* | 0.79 | 7 |
| **Provision of inputs** | 2.01 | 0.88 | 9 |

Satisfied (mean$\geq$ 2.50)
Source: Field survey responses

### *Categorization of the level of farmers' satisfaction by extension activities*

The level of satisfaction of the respondents (farmers) on extension activities is shown in Table 3. It was assessed by the categorization and rating of the farmers. The study found that the majority of the farmers (52.60%) were rated above "average" with most of them (40.28%) were rated as "just high".

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**Table 3.** Respondents' categorization of the level of farmers' satisfaction by extension activities

| Categorization | Freq. | percentage |
|---|---|---|
| Very high | 26 | 12.32 |
| Just high | 85 | 40.28 |
| Average | 63 | 29.86 |
| Low | 37 | 17.54 |
| Total | 211 | 100.00 |

Source: Field survey responses

### *Agricultural extension channel used to reach farmers*

The regular sources of information or communication channels used to reach farmers is shown in Table 4. The most regular source/channel of information used by the extension agents to the farmers was a telephone (GSM) (mean = 3.05), extension agent visited to the farmers (mean = 2.81), and personal letters (mean = 2.66). Other sources/channels were the use of computers and emails (mean = 2.58) and training sessions of the farmers (mean = 2.52).

**Table 4.** Agricultural extension channel of information to reach farmers

| Information sources | Mean | Standard Dev. |
|---|---|---|
| Telephone (GSM) | 3.05* | 0.72 |
| Extension agent visit | 2.81* | 0.76 |
| Personal letters | 2.66* | 0.77 |
| Computer information | 2.58* | 0.78 |
| Training | 2.52* | 0.81 |
| Radio | 1.97 | 0.84 |
| Television | 1.83 | 0.85 |
| Posters | 1.81 | 0.88 |
| Newspaper | 1.19 | 0.89 |

Regular (mean≥ 2.50)
Source: field survey responses

### *Effects of extension services on respondents' farm income (₦), n = 211*

The effects of extension services on farmers' farm income are shown in Table 5. The analysis was carried out by assessing the farmers' farm income before and after becoming DARDA's farmers. However, the results revealed that the average income before they became DARDA's farmers (contact farmers) was ₦239,573.46 with the majority (31.28%) having farm income of between ₦200,000 – ₦299,000. On the other hand, the most of the farmers' (29.86%) earned a farm income of between ₦300,000 to ₦399,000 after being members of DARDA. The mean farm income was ₦381,753.56. The mean difference before and after being DARDA farmers was ₦142,180.10 in favour of the farmers after being members of DARDA.

**Table 5.** Respondents' effects of extension agents' activities on farm income (₦)

| Categorization ₦' 000 | Before being ADP farmers | | | After being ADP farmers | | |
|---|---|---|---|---|---|---|
| | Freq. | % | Mean | Freq. | % | Mean |
| < 100 | 26 | 12.32 | | - | - | |
| 100 – 199 | 58 | 27.49 | | 21 | 9.95 | |
| 200 – 299 | 66 | 31.28 | | 32 | 15.17 | |
| 300 – 399 | 34 | 16.11 | | 63 | 29.86 | |
| 400 – 499 | 27 | 12.80 | | 49 | 23.22 | |
| ≥ 500 | - | - | ₦239,573.46 | 46 | 21.80 | ₦381,753.56 |

Source: Field survey responses

### *Relationship between socio-economic characteristics of DARDA's farmers and their farm income*

The hypothesis of the study stated that there was no significant relationship between socio-economic characteristics and agricultural development program farmers and their farm income. It was analyzed with multiple regression techniques. The estimated parameters of the independent variables of the model is shown in Table 6. The computed F-statistics was significant at the 5% level (critical t = 1.645), thus denoting the collective influence of the variables on respondents' farm income, hence the rejection of the null hypothesis and the acceptance of the alternative. The variables in the model jointly accounted for about 63% variation in farm income of the respondents ($R^2$ = 63.2%). Five independent variables (age, educational level, household size, farm experience, and farm size) out of the eight were significantly different at the 5% level.

**Table 6.** Relationship between socio-economic characteristics of DARDA's farmers and their farm income

| Independent variables | b | t |
|---|---|---|
| Constant | 98452.656 | 4.410 |
| Age (years) | 1567.412* | 3.589 |
| Gender | 10541.219 | 1.732 |
| Educational level (years) | -1288.566* | -4.300 |
| Marital status | 346.818 | 2.342 |
| Household size | 2563.217* | 3.509 |
| Farming experience (years) | 6399.671* | 4.127 |
| Farm size | 7769.236* | 3.144 |

F = 12.75 (p < 0.050), Adjusted $R^2$ = 0.632
*Significant at 5% (Critical t value = 1.645)

## Discussion

### *Socio-economic characteristics of the respondents*

The result showed in Table 1 was in line with Okwuokenye (2014) who reported farmers' age in a similar group to be between 40 – 49 years. The mean

years for education attainment was 16.83 years and most of the respondents (50.71%) belonged to this category. The implication was they attended up to secondary school. Education makes it possible for them to be innovative in their farm activities. Ovharhe (2017) agreed with this result as they noted that the most farmers participation in agricultural programs were literates. On marital status and household sizes, Ovharhe and Gbigbi (2016) found similar results in their study and concurred with this finding. The average household size of the respondents was about 6 persons with the most of them (32.70%) having between 6 – 8 persons in their households. The number simply implies that the farmers have people to cater and return use as a source of family labor. Results of Ebewore and Achoja (2016)) concurred with this finding. They reported similar household size for farmers participating in community-based groups. Reports of Osediamen *et al.* (2016) on farming experience agreed with research finding as they noted that the most farmers who participated in agricultural programs were mainly with good farming experience. The average period respondents had resided in their community of 14.32 years, with the most of them (35.07%) having resided in their community for between 15 to 19 years. This implies that the farmers have been staying in their community for a long period and this affords them to know the community very well and be able to carry out profitable farming activities. The studies of Ofuoku and Ekorhi-Robinson (2018) was in line with the result on farm sizes, as they advanced that most Nigerian farmers operated farm sizes in less than 4 Ha. and considered as small scale farmers.

### Level of satisfaction of the farmers with extension services

Similar results regarding extension agents function in an advisory role, and training of farmers on input the use and demonstration of the technology were obtained in a similar program by Okwuokenye (2014), thus supported these findings. The more technological advancement in researches and dissemination of information by extension agents would be get, the more the satisfaction levels derived by farmers.

### Categorization of the level of farmers' satisfaction by extension activities

The result implied that the extension agents were performed or done as expected in their job. The performance of the extension agents is judged from the assistance them to render to the farmers, and they did through an advisory role, demonstration on input use, and training of farmers on agricultural technologies or innovation dissemination to the farmer. This was supported by Alakpa *et al.* (2018) that a high level of satisfaction is achieved when extension workers are committed to job performance.

### Agricultural extension channel used to reach farmers

Through personal communication, the respondents noted that the telephone is a very cheap and easy means to get information from the extension agents, it was a constraint by the availability of network services. Extension workers' visiting and training were also identified as other good sources of information dissemination. The obtained results in this study were in line with the findings of Osediamen *et al.* (2016) that spelled out that regular sources of reaching the farmers included telephone, visitation, and training sessions.

### Effects of extension services on respondents' farm income, n = 211

The result implied that DARDA through its agricultural technologies and innovations, advice, and training helped to improve on the farmers' farm income. This result is supported by Gbigbi and. Ovharhe (2017) who confirmed the positive role in the form of increased productivity and income generation in farming.

### Relationship between socio-economic characteristics of DARDA's farmers and their farm income

The hypothesis results (Table 6) are further discussed. The age of the respondents (b = 1567.412) was positive and significantly related to farmers' farm income. The result implied that older farmers were likely to be more committed to the programs, technologies, innovations, and thereby earn higher farm income than their younger counterparts. Reports of Achoja and Ugege (2015) was line with these findings. They found the age of farmers to correlate with higher farm income. Educational level (b = -1288.56) was negatively correlated and significantly to respondents' farm income. By implication, the more educated farmers earned lower farm income and *vice versa*. Having high formal education had been proved to be detrimental to increased farming activities and consequently lower farm income in accordance with the findings of Okuma and Isiorhovoja (2017). Household size was positively correlated (b = 2563.21) and significantly to the farm income of respondents. This means that a larger household size would earn higher farm income. This results was corresponding with the findings of Okuma and Isiorhovoja (2017) who reported that larger households participated more in agricultural programs and earned higher farm income that enabled them to cushion off the effect of poverty. Farming experience (b = 6399.67) of the respondents was positively signed and significantly related to respondents' farm income. The positive relationship implied that respondents with more experience in farming would earn higher

farm income. This finding agrees with that of Achoja and Ugege (2015) who found the farming experience to positively correlated with higher farm income. Farm size (b = 7769.236) was also positively signed and significantly related to respondents' farm income. The result was in agreement with Achoja and Ugege (2015) who found that larger farm sizes earn more farm income.

The study concluded that farmers are satisfied with the extension services which rendered to them in the study area by DARDA in Delta State. This is attributed to agricultural technologies, innovations, advice, and training that benefited by them from the program. The study revealed that socio-economic characteristics like age, household size, farming experience, and farm size contributed significantly to aid the satisfaction derived from extension services. Based on findings, it is recommend that there was a low status in inputs provision among the services rendered. It is therefore recommended that the DARDA through the extension agents should try as much as possible to persuade, influence, and encourage input support scheme. It is hoped that if this is done there will be more increase in income and standard of living. Radio and television were not identified as regular channels/sources of information to farmers. Based on the wide coverage of these means of information dissemination, the government should try to educate the farmers and keep them abreast of the latest on agricultural technologies and innovations through these media.

## Acknowledgements

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