Assessment of Agricultural Extension Services delivery to Cotton Farmers in Oyo State, Nigeria

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Abstracts

 This study assessed Agricultural Extension Services delivery to cotton farmer in Oyo State, Nigeria. Questionnaire was used to elicit information from one hundred and thirty-two (132) respondents randomly selected for the study. Both descriptive and inferential statistics were employed for the study. Results revealed that majority of the cotton farmers were male (53.8%), married (78.8%), had farming as primary occupation (76.5%), had farming experience of 1-5years (71.2%) and were in the productive age of 52yrs. The respondents were aware of the service delivery rendered by ADP. The major sources of information used by the cotton farmers were radio (97.0%) and extension agents (96.2%). The capacity building received by the cotton farmers include 'Training on harvesting and how to remove cotton lint' (x= 3.88). The result of Pearson-product moment correlation shows that farming experience (r =0.000, p = -0.031), and contact with extension agent (r = 0.000, p = 0.813) had positive significance with extension services received. Therefore, the study recommends that agricultural information on cotton production should be channeled through radio and followed up by extension agents due to the frequency of usage among farmers.

Keywords: Agricultural extension, services, cotton production, farmers.

Introduction

Cotton is a seed-hair fibre of several species of plants of the genus hibiscus, or mallow, family (*Malvaceae*). Traditionally, it is grown as a fibre crop. It is however, harvested as seed cotton and later ginned to separate the seed and the lint. Apart from fibre, delinted cotton seeds can be processed to produce oil, meals and hulls (Gene Technology Regulator., 2002). The oil is used in a variety of products including vegetable oils, margarine, soaps and plastics. The seed or meal, flour or hulls are used in food products and animal feed. Research has shown that the perennial shoot is uprooted, dried and used as fire wood in the localities where the crop is cultivated as a major crop (Lekwa and Nto, 1986). The green leaves also have some medicinal value for they are boiled in water and taken as infusion for the treatments of yellow eyes or jaundice (Fatima, 2000).The agricultural extension services in recent years have however played a significant role in improving cotton production in Nigeria through advisory agents and adequate access to information on improved techniques of production. Agricultural extension plays a vital role in ensuring the awareness and subsequent adoption of the contemporary methods of cotton farm management. For decades cotton production (lint and seed) has been a driving force for economic development. However, this commodity has witnessed continuous decline in production with its contribution to GDP dropping from 25percent to four percent. When farmers are farming and their crops are facing decline in production, there are other cash crops they can grow, so most of them migrated from cotton production to other crops that were paying them better considering the level of scientific procedure involved in producing cotton. Although, agricultural extension services have been put in place to inform and teach farmers on innovation relating to their production but if farmers are not well-informed and apply such technology, their production level will still remain low and the quality of their produce will be poor.

The specific objectives of the study are to:

   i.   Describe the socio-economic characteristics of cotton farmers in the study area.

   ii.   Examine the level of awareness of cotton farmers of agricultural extension services in the study area.

   iii. Identify the farmers' sources of information on cotton production in the study area.

   iv. Identify the capacity building training received by the cotton farmers in the study area.

   v.   Determine the respondents' perception of agricultural extension services in cotton production in the study area.

   vi. Examine the challenges faced by cotton farmers in accessing agricultural extension services in the study area.

Hypothesis of the Study

Ho$_1$: There is no significant relationship between some selected socio-economic characteristics of cotton farmers and agricultural extension service delivered in the study area.

Methodology

The study area is Saki-East Local Government Area in Oyo State. Ago-Amodu is the headquarters while Sepeteri is the largest community of this local government. It has an area of 1,569km2 and a population of 110,223 at the 2006 census. Postal code of the area is 203 with latitude 8.6870ºN, longitude 3.6218ºE and 457 meters above sea level (NIPOST, 2012). The Yorubas are the landlords in the council area but they have a lot of non-nationals who came there to settle as farmers, including Fulani/Bororo, who find the pasture in the area beneficial to their animals. People there are predominantly farmers and their soil accommodate virtually all plants and crops. Farmers in the area are second to none when it comes to production of food and cash crops like cotton, cassava, yam, maize, wheat, while cashew and mango are produced in large quantity. Saki-east has the potential to produce best cotton in the world because their soil is fertile for farming. The weather condition there is suitable for cotton and the type of cotton seed planted there is Samcott 11.

Sampling procedures and sample size

A three stage sampling technique was used. The first stage involved the purposive selection of Saki-East LGA because it is one of the eight (8) Local Government Areas that grow cotton in Oke-Ogun on large scale. Second stage was the random selection of two (2) communities out of five (5) communities that are in Saki-East Local Government Area, which are Ago-amodu and Sepeteri. The third stage was the stratified proportionate sampling technique used to select 50% of the farmers based on the sampling frame. In Ago-Amodu 50% of cotton farmers was selected out of 152 cotton farmers in the community giving 76 respondents and also 50% of cotton farmers in Sepeteri out of 112 cotton farmers in the community giving 56 respondents to give a sample size of 132 respondents.

Method of Data Collection

The questionnaire was used to elicit information from the respondents used for this study.

Data analysis

Both descriptive and inferential statistics were used. Descriptive statistics such as frequencies and percentage was used to describe the specific objectives of the study while inferential statistics such as Pearson Product-Moment Correlation (PPMC) was used to test the hypothesis.

Results and Discussion

The results in table 1 show that the average age of the cotton farmers was 52 years. This implies that the cotton farmers were gradually leaving their productive years. Majority of the farmers were male (53.8%) while 46.2% were female. This is in line with Gandonou, (2005) that cotton production was mostly a male business and its revenues were marginal. The result also shows that majority of the respondents were married (78.8%). This implies that the farmers will have family responsibility and be more committed to their work. The farmers had low level of education ranging from non-formal education (34.8%), primary (28.8%) and secondary education (20.5%). This implies that their ability to access other information relevant to their production will be low for example information from print material, internet, radio e.t.c. The results show that majority of the cotton farmers used hired labour (69.7%),   had a relatively big household size ranging between 6-10 (63.6%) and had farming experience of 1-5years (71.2%). This implies that hired labour was available in the study area. Most of the respondents (58.9%) had their personal savings to finance their farm production. This may be because of lack of collaterals to obtain loan from the bank. About half of the farmers operate on 1-3 hectares of farmland (57.5%). This shows that many of the farmers have small farm holdings. Moreover, half of the respondents (50.7%) inherited the farmland. All the respondents have contact with extension agent (100%). Moreover, a good number of the farmers (59.1%) have daily contact with extension agents. This may be because of the Advisory service center located in this study area. The average annual income was **#**86,803. This shows that the average income was meager. This may be because of the small farm holdings.

Table 2 shows that the cotton farmers were aware of the agricultural extension services available in the study area. Some of these services include 'information on best herbicides and pesticides to use' (97.7%), 'Training on cotton produce utilization' (97.7%),'farm input and information on weather condition' (97.0%). This implies that extension services are effective in the study area. This may be because of the fact that advisory service center was located in the study area which can make information readily accessible to the farmers within a close distance. Ministry of Foreign Affairs (2007) found out that extension services also provide credit and market- access assistance to the farmers to secure capital for their activities and to sell their surplus crops to generate income for their families

Table 1: Distribution of the Respondents by socio-economic Characteristics (n=132)

Variables	Frequency	Percentage (%)	Mean
Age (years)			
21-30	7	5.3	52 years
31-40	21	15.9	
41-50	38	28.8	
51-60	25	18.9	
Above 60	41	31.1	
Sex			
Male	71	53.8	
Female	61	46.2	
Marital status			
Single	5	3.8	
Married	104	78.8	
Widowed	19	14.4	
Divorced	4	3.0	
Religion			
Christianity	58	43.9	
Islam	71	53.5	
Traditional	3	2.6	
Education status			
Non formal education	46	34.8	
Primary education	38	28.8	
Secondary education	29	20.5	
Tertiary education	21	15.9	
Source of labour			
Self	18	13.6	
Family labour	22	16.7	
Hired labour	92	69.7	
Household size			
1-5	45	34.1	6 persons
6-10	84	63.6	
11-15	3	2.3	
Primary occupation			
Farming	101	76.5	
Trading	2	1.5	
Artisan	29	22.0	
Farming experience (years)			
1-5	94	71.2	5 years
6-10	27	20.4	
11-15	8	6.1	
16-20	3	2.3	
Source of finance			
Personal savings	79	58.9	
Loans from friends	18	13.6	
Loans from bank	25	18.9	
Cooperative society	10	7.6	
Farm size (ha)			

1-3	76	57.5	3 hectares
4-6	48	36.4	
7-9	7	5.3	
10 &above	1	0.8	
Contact with extension agent			
Yes	132	100	
Extension schedule			
Daily	78	59.1	
Weekly	35	26.5	
Fortnightly	17	12.9	
Monthly	2	1.5	
Farmland ownership			
Rent	37	28.0	
Inheritance	67	50.7	
Lease	7	5.3	
Purchase	20	15.2	
Membership of cotton association	1	0.8	
Annual income (#000)			
0-100	83	63.9	# 86,803
101-201	45	34.0	
201-300	3	2.3	
301-400	1	0.8	

Source: field survey, 2018

Table 2: Distribution of the Respondents by Level of Awareness to Agricultural Extension Services. (n=132)

Awareness of extension services	Frequency	Percentages
Information on best herbicides & pesticides to use	129	97.7
Training on cotton produce utilization	129	97.7
Farm inputs	128	97.0
Information on weather condition	128	97.0
Supervisory / advisory services	127	96.2
Storage methods	126	95.5
New farm technology	125	94.7
Workshops/ seminars	125	94.7
Processing & management technology	123	93.2
Training on record keeping	119	90.2
Marketing strategies	116	87.9
Loan & credit facilities	111	84.1
Technological advancement	110	88.3

Source: field survey, 2018   *Multiple responses

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The Perception of Respondents to Agricultural Extension Services on Cotton Production.

Table 3 shows an overwhelming positive attitude towards agricultural extension services rendered in the study area. These include; 'Advisory services by the extension services has increase the skill and knowledge of cotton farmers' (x= 4.71), 'Training received in the processing and management of cotton improves cotton production' (x= 4.68), 'the new storage method introduce to the cotton farmers has helped to increase the shelf life of cotton produce (x= 4.70) etc. This implies that the farmers have favorable attitude towards extension services in the study area. These results go in line with Labarthe (2009) that farmers' positive attitude is effective toward extension services as a social - cultural factor. Though, so many factors are responsible for poor dissemination of extension service to farmers, it is quite expedient to note that the attitude of farmers might as well be a contributing factor to ineffective delivery of extension service programme.

Table 3: Distribution of the Respondents according to their perception of Agricultural Extension Services (n=132)

Attitudes	Strongly agree(%)	Agree (%)	Indifferent (%)	Disagree (%)	Strongly disagree(%)	Mean score	Rank
Extension services have exposed farmers to farm input	80 (60.6)	50 (37.9)	-	2 (1.5)	-	4.58	7th
Extension service provides innovation on soil fertility and soil structure	79 (59.8)	47 (35.6)	5 (3.8)	1 (0.8)	-	4.55	10th
The information received from the extension agents blends with indigenous knowledge	78 (59.1)	51 (38.6)	2 (1.5)	1 (0.8)	-	4.56	8th
The training received in processing & management of cotton ensures environmental sustainability	84 (63.6)	41 (31.1)	4 (3.0)	3 (2.3)	-	4.56	8th
The training received in the processing & management of cotton improves cotton production	100(75.8)	18 (13.6)	9 (6.8)	5 (3.8)	-	4.68	3rd

(quality &quantity)

The advisory services by extension services has increase the skill & knowledge of farmer on cotton production	101(76.5)	25 (18.9)	5 (3.8)	1 (0.8)	-	4.71	1st
Extension services expose the farmers to different marketing strategies	85 (64.4)	32 (24.2)	1 (0.8)	12 (9.1)	-	4.41	11th
Workshop & seminars organized by extension agents has improved the welfare of the farmers	103(78.0)	19 (14.4)	4 (3.0)	4 (3.0)	2 (1.5)	4.64	5th
Extension services have taught the farmers on other uses of cotton plants	93 (70.5)	37 (28.0)	1 (0.8)	1 (0.8)	2 (1.5)	4.68	3rd
Extension services provides loan & credit facilities to farmers	80 (60.6)	33 (25.0)	5 (3.8)	9 (6.8)	5 (3.8)	4.36	13th
Extension services introduced harvesting technology to cotton farmers to easy the drudgery	88 (66.7)	29 (22.0)	4 (3.0)	8 (6.1)	3 (2.3)	4.44	12th
Extension services taught the farmers on new storage facilities method	95 (72.0)	31 (23.5)	-	5 (3.8)	1 (0.8)	4.62	6th
The new storage method introduced to the cotton farmers has helped to increase the shelf life of cotton produce.	101(76.5)	21 (15.9)	4 (3.0)	5 (3.8)	1 (0.8)	4.70	2nd

Source: field survey, 2018.   *Multiple responses.

Table 4: Distribution of the Respondents by the Capacity Building Training Received from Agricultural Extension Services (n=132)

Capacity building training	Well trained (%)	Fairly trained (%)	Moderately trained (%)	Not trained (%)	Mean score	Rank
Training on operation of cotton harvester	107(81.1)	19 (14.3)	3 (2.3)	3 (2.3)	3.74	6th
Training on type of seed varieties to be grown	116 (87.8)	14(10.6)	1 (0.8)	1 (0.8)	3.86	2nd
Training on correct spraying method of cotton farms	111 (84.1)	17 (12.9)	2 (1.5)	2(1.5)	3.80	4th
Training on the harvesting and how to remove cotton lint	118 (89.4)	13(9.8)	-	1 (0.8)	3.88	1st
Training on management of pests to produce better lint	119 (90.2)	10 (7.5)	2 (1.5)	1 (0.8)	3.86	2nd
Training on the best mode of transportation to avoid cotton lint	85(64.4)	32 (24.2)	13 (9.9)	2 (1.5)	3.52	8th
Training on keeping of financial and farm record keeping	106 (80.3)	14(10.6)	4 (3.0)	8 (6.1)	3.65	7th
Training on better storage condition for excess cotton production	117 (88.6)	5 (3.8)	4 (3.0)	6 (4.6)	3.77	5th

Source: field survey, 2018.   *Multiple responses.

Table 4 shows that the farmers understood the capacity building training received from the extension agent. The results show that all (100%) the trainings received by the farmers were well digested. Some of the capacity building trainings received include 'Training on harvesting and how to remove cotton lint' (x= 3.88), 'Training on management of pest to produce better lint' (x= 3.86) etc. Mercoiret and Mercoiret (2003) also reported similar findings that acquisition of knowledge through training could increase cotton production. Moreover, Sikanye (2005) reported that the role of agricultural extension involves building capacity of farmers and help them make informed decisions and that these training has helped farmers to increase their income and level of productivity.

The results in table 5 show that out of all the information sources available to the farmers, Radio (97.0%), Extension agent (96.2%), Neighbours (96.2%) and Friends (95.5%) were the major sources used by the cotton farmers. Radio had the highest response probably because it is

cheaper and readily available. Richardson, (1997); Ilboudo, (2001); Heeks, (1999) found that rural radio being local focus and participatory communication approach has the greatest potential to harness information from other sources and make it readily available to the grassroots to bridge the information gap to the rural populace. The extension agent, friends and neighbour having high responses may be because of the closeness of these sources to the farmers.

The findings in table 6 show that Neighbours (x= 3.74), Friends (x = 3.66) and Extension agents (x= 3.58) were the most frequently used sources of information. This may be because of the proximity of this source, to the cotton farmers. This result is in line with the study of Lwoga *et al.* (2011) that interpersonal sources such as friends, family members and neighbours have always been the main providers of the agricultural information due to their credibility, reliability and most of all, they are trusted by the rural community

Table 5: Distribution of the Respondents by Sources of Information on Cotton Production (n=132)

Source of information	Frequency	Percentages (%)
Radio	128	97.0
Extension agents	127	96.2
Television	38	28.8
Newspaper	11	8.3
Friends	126	95.5
Neighbours	128	96.2
Government agencies	86	65.2
Farmers Groups	111	84.1
Handset	106	80.3
Internet	19	14.4

Source: field survey, 2018.   *Multiple responses

Table 6: Distribution of Respondents by Frequency of Usage of sources of information (n=132)

Source of information	Regularly (%)		Fairly (%)		Rarely (%)		Not use (%)		Mean score	Rank
Neigbhours	106	(80.3)	22	(16.7)	-		4	(3.0)	3.74	1st
Friends	99	(75.0)	27	(20.5)	-		6	(4.5)	3.66	2nd
Extension agents	109	(85.6)	17	(12.9)	2	(1.5)	4	(3.0)	3.58	3rd
Radio	90	(82.6)	33	(25.0)	4	(3.0)	5	(3.8)	3.57	4th
Groups	85	(64.4)	23	(17.4)	2	(1.5)	22	(16.7)	3.30	5th
Handset	69	(52.3)	28	(21.1)	9	(6.8)	26	(19.7)	3.06	6th
Government agencies	21	(15.9)	61	(46.2)	4	(3.0)	46	(34.8)	2.43	7th
Television	8	(6.1)	20	(15.2)	10	(7.6)	94	(71.2)	1.56	8th
Internet	10	(7.6)	6	(4.5)	3	(2.3)	113	(55.6)	1.34	9th
Newspaper	5	(3.8)	5	(3.8)	1	(0.8)	121	(91.7)	1.20	10th

Source: field survey, 2018.

Challenges faced by cotton farmers in agricultural extension service delivery.

The results show that the major challenges faced by cotton farmers in agricultural extension service delivery were Extension to farmers' ratio (93.9%). This implies that numbers of farm families to an extension agent is larger. This will take longer time for the extension agent to go around within the limited time at his disposal and may not be thorough in his explanation when giving out information. On the other hand the extension agent may not cover the whole farm families on time. This is in line with what have been found by Aina (2006) that the ratio of agricultural extension workers to the population in Africa is wide. Road network (70.5%) was another challenge indicated by the respondents. This implies that bad road network commonly found in the rural areas may probably limit the access of farmers to extension services particularly when the information need is not within closer distant. Moreover, the bad road network may hinder the frequency of contact with the extension agent. Financial constraint to purchase input (66.7%) and lack of collaterals for granting loan (56.1%) were also major challenges identified. This implies that the farmers may not be able to use all the information received from the extension agent to enhance their production because of financial constraints to buy all necessary input. This result is in line with Tologbonse *et al*. (2008) that challenges facing farmers towards agricultural extension services were lack of awareness on existence of different information sources, lack of funds to acquire information and poor format of information carrier. Furthermore, the study by Daudu *et al* (2009) pointed out that some of the problems encountered by farmers in Nigeria in accessing agricultural extension services include financial problems, inadequacy of facilities and irrelevant information.

The result in table 8 shows the level of severity of the challenges facing the cotton farmers for agricultural service delivery in the study area. Extension to farmers' ratio is ranked first

(x=2.49), road network ranked second and (x=1.71) and financial constraints in purchase of input are ranked third (1.58). The result is in line with Speranza *et al* (2009) who reported that during the last 15 years, the staffing and facilitation of public sector extension had declined mainly as a result of public employment freeze and reduced funding for operations and maintenance. Moreover, the transport arrangements are not sufficient for agricultural and livestock extension services in Nigeria.

Table 7: Distribution of the Respondents by Challenges Faced on Agricultural Extension Service Delivery (n=132).

Challenges	Frequency	Percentages (%)
Proximity to ADP	17	12.9
Frequency of contact with extension agents	37	28.0
Lack on inputs for demonstration	30	22.7
Communication barrier	33	25
Insufficient skilled personnel	6	4.5
Clarity of presentation	12	9.1
Lack of functioning equipment	43	32.6
Road network	93	70.5
Financial constraints in purchase of input	88	66.7
Lack of collateral for granting loan	74	56.1
Administrative bottleneck	49	37.1
Rift between farmer and extension agents	6	4.5
Lackadaisical attitude on the part of extension agents	3	2.3
Lack of cooperation among the farmers	7	5.3
Extension to farmers ratio	124	93.9
Time limit	40	30.3

Source: field survey, 2018.   *Multiple responses

Table 8: Distribution of Respondents by Level of Severity to the Challenges (n=132)

Challenges	Very severe (%)	Severe (%)	Not severe (%)	Mean score	Rank
Proximity to ADP	5 (3.8)	12 (9.1)	-	0.30	11th
Frequency of contact with extension agent	4 (3.0)	21 (15.9)	12 (9.1)	0.41	9th
Lack on input for demonstration	6 (4.5)	11 (8.3)	13 (9.8)	0.40	10th
Communication barrier	6 (4.5)	19 (14.4)	8 (6.1)	0.49	8th
Insufficient skilled personnel	-	5 (3.8)	1 (0.8)	0.08	14th
Clarity of presentation	4 (3.0)	5 (3.8)	3 (2.3)	0.19	12th
Lack of functioning equipment	11 (8.3)	27 (20.5)	5 (3.8)	0.70	6th
Road network	42 (31.9)	48 (36.4)	3 (2.3)	1.71	2nd
Financial constraints in purchase of input	40 (30.3)	41 (31.1)	7 (5.3)	1.58	3rd
Lack of collateral for granting loan	33 (25.0)	37 (28.0)	4 (3.0)	1.34	4th
Administrative bottleneck	24 (18.2)	21 (15.9)	4 (3.0)	0.89	5th
Rift between farmer and extension agents	1 (0.8)	1 (0.8)	4 (3.0)	0.07	15th
Lackadaisical attitude on the part of extension agents	-	1 (0.8)	2 (1.5)	0.15	13th
Lack of cooperation among the farmers	-	3 (2.3)	4 (3.0)	0.08	14th
Extension to farmers ratio	94 (71.2)	16 (12.1)	14 (10.6)	2.49	1st
Time limit	8 (6.1)	18 (13.6)	14 (10.6)	0.56	7th

Source: field survey, 2018.   *Multiple responses

HYPOTHESIS TESTING

Table 9: Pearson-product moment correlation between the socio-economic characteristics of the cotton farmers and the agricultural extension services received in the study area.

Variable	Co-efficient	Std error	Significant status
Age (x_1)	0.008	0.229	Not significant
Gender (x_2)	0.654	0.039	Not significant
Marital status (x_3)	0.430	0.069	Not significant
Education (x_4)	0.228	0.106	Not significant
Household size(x_5)	0.490	0.064	Not significant
Farming experience (x_6)	0.000	-0.031	Significant
Contact with extension agent(x_7)	0.000	0.813	Significant
Farm size (x_8)	0.761	0.027	Not significant
Annual income(x_9)	0.052	-0.170	Not significant

*-Significant at p0.05   Source: Field survey 2018.

Testing for hypothesis

The result in table 9 shows the correlation coefficients of the relationship between selected socio-economic characteristics of cotton farmers and extension services received in the study area. Out of all the selected socio-economic characteristics used in this study, only farming experience and contact with extension agent were significant. Farming experience (r =0.000, p = -0.031), and contact with extension agent (r = 0.000, p = 0.813) have positive significance with extension services received. This implies that increase in farming experience of cotton production and contact with extension agents will facilitate the effectiveness of service received by the cotton farmers in the study area.

Conclusion

This study concludes that agricultural extension services delivery have brought agricultural development to the cotton farmers in the study area in terms of increase in information on best pesticides and herbicide use, farm input, improved marketing strategy and processing and management technology etc. Moreover, the cotton farmers had capacity building on pest management practice to produce better lint and on best harvesting practices. Based on the conclusion, the study makes the following recommendations.

Recommendations

Government should employ more field extension agent so as to reduce the problem of extension to farmers' ratio. Government should also finance and provide a reliable road network to the cotton farmers for easy transportation. Extension agents should increase the use of practical demonstration method while disseminating information. Fund should be provided for the cotton farmers at minimal interest and modern facilities should be supplied to them for better output.

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