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Farmers' Perception and Willingness to Pay for Technical Agricultural Information on Maize Production in Orire Local Government Area of Oyo State

Olaniyi, O* and Ismaila, O
*Department of Agricultural Extension and Rural Development,Ladoke Akintola University of Technology, P.M. B. 4000, Ogbomoso, Nigeria, *Corresponding Author oaolaniyi@*lautech.edu.ng

Abstract

Agricultural extension services have been playing a central role in transformation process of agricultural sector in Nigeria, but there are challenges which affect the quality of service delivery especially increasing cost of services and poor funding and therefore, promoting emergence of new extension strategies offered by private sector. The study investigated the perception of maize crop farmers and willingness to pay for technical agricultural information in Oyo State, Nigeria. Data were collected by administering interview schedule to 127 maize crop farmers selected using multi-stage sampling procedure. Data were analyzed using descriptive and inferential statistics. Mean age of the respondents was 46.7 years. The most frequent placed in the age category of 41-50 years. Majority (66.1%) of the sampled respondents were males, 81.9% were married with average household size of 6 members. Technical agricultural information the respondents were willing to pay for include improved high yielding maize varieties (MS=1.09), method of fertilizer application (MS=1.07) and selection rate of chemical application for weed control (MS=l.06). Majority (52.8%) of the respondents had unfavourable disposition to willingness to pay for technical agricultural information. Respondents' household size (r=0.365, P<0.05), farming experience (r=0.568, P<0.05) cultivatable farm size (r=0.228,P<0.05) were significantly related to willingness to pay for technical agricultural information on maize production. The study therefore recommends that technical agricultural information on maize production should be made available to farmers through a private extension service in order to meet the extension information need of farmers in the study area.

Keyword:
Agricultural Information, Development, Farmers, Maize, Sustainable, Nigeria

1. Introduction

Maize (*Zea mays*,) is a versatile cereal crop grown in various agro-ecological zones in Nigeria. as a single or mixed crop (IITA, 2001). In several countries, maize is a staple food for many people. The maize grain can be prepared for food in many different ways (fried, grilled, as salad or soup. Maize is also used in livestock feed (poultry, pigs, cattle) in the form of grains, milling or as fodder. In addition, it is used as a raw material in a range of industries such as agro-based, textile, pharmaceutical industries (Iken and Amusa, 2004.)

The inability of the farmers in developing countries especially in Nigeria, to produce food at the rate that can meet the needs of the teaming population has been linked to lack of access to crucial technical information on improved agricultural practices (Falola et al., 2012). Technical information generated from results of research has to be disseminated by the extension to farmers to address their varying needs and agricultural extension is known to play a key role in information and technology transfer to farmers (Mittal and Kumar, 2000). However, agricultural extension system in Nigeria is presently experiencing limited outreach to farmers. This is because of shortages of trained personnel, rising delivery cost, and the need for rapid response to changing climate and markets (Meera, 2002). The extension services in many developing countries are traditionally free. This makes the service to be unsustainable and ineffective as result of low or lack of funding (Budak et al., 2010). The

dynamics of the agricultural sector demands that the conventional extension system in Nigeria need to be restructured and reformed. Therefore, in many parts of the world today, in order to promote farmers' access to extension information and services, various forms of extension finance has been instituted like in United Kingdom, Netherlands, Germany, Sweden, Portugal, and Chile (Rivera and Carry, 1997). This new trend would reduce the economic burden on government and increase efficiency and effectiveness of extension delivery and at the same time enhances sustainable food production. Many Scholars around the world (Oladele, 2008; Ogunleye et al, 2008; Onoh et al, 2014; Uddin et al, 2014) had proposed the feasibility of privatization of extension services as a reform from public extension to private extension delivery to farmers whereby farmers has to pay for extension service in order to access technical agricultural information. The concept of Willingness to pay (WTP) has been defined as a sacrificial amount of income used to sustain or increase agricultural productivity (Holden and Shiferaw, 2002). This disposal income for information delivery has often been the only option for farmers in developing countries. The previous studies carried out on WTP, researchers had discovered that WTP depends on the content of the information and if the paid for service would be better than the preexisting information available for their particular needs and increase their farm income (Singh and Narain, 2008; Farinde and Atteh, 2009). The farmers' perception about this reform especially on willingness to pay for technical agricultural information on Maize production is highly important in order to boost food production. Therefore, this study aimed at determining farmers' perception and willingness to pay for technical agricultural information on Maize production in Oyo State, Nigeria. Specifically, the study described the personal characteristics of the respondents, ascertained the respondents' extension information need of technical agricultural information, determined the respondents' willingness to pay for technical agricultural information, and determined farmers' perception towards willingness to pay for technical agricultural information.

Hypothesis:

There is no significant relationship between the selected personal characteristics of the respondents and perception towards willingness to pay for technical agricultural information.

2. Materials and Methods

This study was carried out in Orire Local Government area of Oyo State, Nigeria. Its headquarters is located at Ikoyi – Ile, with land mass of is 2116km square and the population of 150,068 as at the 2006 census. The population of the study consists of both male and female maize farmers in Orire Local Government Area, Oyo State. Multi - stage sampling technique was used in the selection of 127 respondents for the study. The first stage involved purposive selection of 16 villages where there has been low extension activities. The second stage involved systematic sampling of every other households, and from this households, random selection of individuals who are maize farmers was made. In all a total of 127 respondents were selected and form the sample size for the study. Interview schedule was used to collect data from the selected respondents. Data collected were described using descriptive statistics such as frequency counts, percentages, charts, Mean and standard deviation while Pearson Product Moment Correlation (PPMC) was used to test the hypothesis.

Both the independent and dependent variables were measured in this study. The independent variables measured include: age, sex, marital status, education, household size, , farming experience cultivatable farm size, annual income and sources of credit.. Extent of willingness to pay was measured on a 3 points scale of Not willing, = 0 , partially willing = 1 and Always willing = 2. A cut off point was determined by addition of the scores of the rating scale and divided by 3 i.e (0+1+ 2) / 3 = 3/3= 1. The mean score of the item less than or equals to 1 was thus categorized as Less willing while the Mean score greater than 1 was categorized as More willing. The dependent variable was farmers' perception towards willingness to pay for technical agricultural information and it was operationalized using perception index. This was measured on a 5 point Likert-type scale of Strongly Agreed (SA) = 5; Agreed = 4; Undecided (U) = 3, Disagreed (DS) = 2 and Strongly Disagreed (SD) = 1 for positive statements and reverse order for negative statements. Twenty perceptional statements were presented to the respondents. The maximum score for a respondent was 100 points while the minimum score was 20. Based on the mean perception score, the respondents' perception were categorized into two favourable perception (> Mean) and unfavourable (< Mean).

3. Results and Discussion

3.1 Personal Characteristics of the Respondents

The result of analysis in Table 1 shows that about 24.0% of the respondents were between the ages of 41-50 years while 22.9% of the respondents were within the age range of 51-60 years, 22.9% had their ages between 31 and 40 years, 14.2% of the respondents falls within the age range of less than 30 years and 15.8% of the respondents were within the

age range of 61 and above. The mean age of the respondents was 46.7 years. This implies that majority of the respondents are still in their active and productive in agricultural sector. Most (66.1%) of the respondents were males and 33.9% of the respondents were females. This shows that maize production is male dominated in the study area. A high percentage (81.9%) of the respondents were married, 6.3% of the respondents were single, 16.3% of the respondents widower, 2.4% of the respondents were separated, while 1.6% of the (respondents were divorced and 1.6% of the respondents are widowed .This result implies that majority of the sampled respondents are married and are expected to be committed to economic activities. Majority (92.1%) of the respondents were literate with one form of formal education or the other while 7.9% had no formal education. The mean years of schooling was 6.7.

The result further shows that most (63.8%) of the farmers had family size of between 5 and 8 members with the average family size of 7. About 42% of the respondents had an annual income of less or equal to 50,000 Naira while 40.2% of them have between 50,001 and 100,000 Naira as their annual income and others (18.1%) have an annual income of between 100001 Naira and above. This implies that most farmers have relatively good income from their enterprises.

The modal years of farming experience of the respondents was between 11 and 20 years, with the mean of 18.1 years. This implies that the farmers had quite numbers of years of experience in maize production. Also, majority (70.1%) of the respondents had access to credit from cooperative societies for their farming activities. From the same table, majority (67.7%) of the respondents have a cultivatable farm size of 1-4ha of land while 24.4% had between 5-8ha and 7.9% of the respondents have between 9 and above hectares of land. The mean cultivatable farm size was 3.8ha

Table 2 shows the result of extension information need and farmers' willingness to pay technical agricultural information on maize production. The following technical agricultural information's on maize production are needed and farmers are willing to pay for in the study area. These are: information on selection and rate of chemical application for weed control (100% and 77.2%) respectively; treated maize seeds for planting (99.2% and 70.9%) respectively; Improved methods of preventing maize diseases and pests (97.6% and 71.1%) respectively; Improve and high yielding maize varieties (97.6% and 74.8%) respectively. Although, information on weather forecast and climate change were needed by farmers but they are not willing to pay for this information. On the other hand the least extension information need and willing to pay for technical agricultural information are: Mechanical methods of harvesting maize (35.4% and 33.1%) respectively; Soil management practices (29.9% and 33.9%) respectively and storage of harvested maize in cribs (29.9% and 46.5%) respectively. This finding implies that majority of the respondents' extension information need and are willing to pay for are those that can improve their production and income.

3.2 Extent of Willingness to pay for Technical Agricultural information on Maize Production

Result in Table 3 shows the extent of farmers' willingness to pay for technical agricultural information. It was revealed that the farmers are willing to pay for information on improved maize varieties (MS= 1.09) closely followed by method of fertilizer application (MS= 1.07) and selection and rate of chemical application for weed control (MS= 1.06). These ranked 1st, 2nd and 3rd respectively. Other technical agricultural information that farmers are willing to pay for include: Treated maize seeds for planting (MS=1.05); improved method of preventing and diseases of maize (MS= 1.03) and improved method of controlling pests and diseases (MS=1.02). All the above technical agricultural information fell into the category of more willing to pay for. Conversely, other technical agricultural information that are categorized as less willing to pay for are: improved planting distance for maize with mean score (MS= 0.79); mechanized method of shelling of maize (MS= 0.72); storage of maize in modern /silos (MS= 0.72); weather forecast and climate information on maize planting (MS= 0.54); mechanized method of harvesting maize (MS= 0.46); soil management (MS= 0.42) and soil fertility was ranked least with mean score of 0.30.

The reason for not willing to pay for some of the technical agricultural information by farmers may probably be due to the fact that farmers may have access to such information through other sources than extension contacts. On the other hand, those information that farmers are willing to pay for are those that can improve their production capacity.

Table 1. Distribution of Respondents according to Personal Characteristics

Variable	Frequency	Percentage
Age(Years)		
<30	18	14.2
31-40	29	22.9
41-50	31	24.4
51-60	29	22.9
61-70	18	14.2
>71	2	1.6
Gender		
Male	84	66.1
Female	43	33.1
Marital Status		
Single	8	6.3
Married	104	81.9
Divorce	2	1.6
Widow	2	1.6
Widower	8	6.3
Separated	3	2.4
Years Spent in School		
0	10	7.9
1-6	62	48.8
7-12	49	38.6
13 and Above	06	4.7
Household Size		
1-4	21	16.5
5-8	81	63.8
9 and Above	25	19.7
Average Annual Income		
≤ 50,000	53	41.7
50,001-100,000	51	40.2
100,001-150,000	11	8.7
150,001 and Above	12	9.4
Years of farming experience		
1-10	43	33.8
11-20	56	44.1
>21	28	22.0
Sources of Credit		
Loan from Agricultural banks	8	6.3
Cooperatives	89	70.1
From Friends	16	12.6
Personal Saving	14	11.0
Cultivatable Farm Size		
1-4	86	67.7
5-8	31	24.4
9 and Above	10	7.9

Table 2. Distribution of Respondents According to Extension Information Need and Farmers' Willingness to Pay for Technical Agricultural Information..

Technical Agricultural information on Maize Production	Extension Information Need	Willing to Pay For
Improved and high yielding maize varieties	124(97.6)*	95(74.8)*
Selection and rate of chemical application for weed control	127(100)	98(77.2)
Method of fertilizer application e.g ring, broadcasting and types of fertilizer	122(96.1)	95(74.8)
Treated maize seeds for planting	126(99.2)	90(70.9)
Improved method of preventing pests and diseases	124(97.6)	91(71.1)
Improved method of controlling pests and diseases of maize	119(93.7)	89(70.1)
Improved planting distance for maize	103(81.1)	76(59.9)
Mechanized method of shelling of harvesting of maize	98(77.2)	75(59.1)
Soil fertility test	68(53.5)	35(27.6)
Mechanized method of harvesting maize	45(35.4)	42(33.1)
Storage of maize in modern cribs/silos	38(29.9)	59(46.5)
Soil management practices	38(29.9)	43(33.9)
Weather forecast information on maize planting	105(82.7)	47(37.0)

* Parentheses indicated Percentages

Table 3. Distribution of Respondents According to Extent of Farmers' Willingness to Pay for Technical Agricultural Information

Technical information agricultural information	Always willing	Partially willing	Not willing	Mean Score (MS)	Rank	Remark
Improved and high yielding maize varieties	41(32.3)	53(41.7)	33(26.0)	1.09	1	More Willing
Selection and rate of chemical application for weed control	39(30.7)	57(44.9)	31(24.4)	1.06	3	More Willing
Method of fertilizer application e.g ring, broadcasting and types of fertilizer	42(33.1)	52(40.9)	33(26.0)	1.07	2	More Willing
Treated maize seeds for planting	43(33.9)	47(37.0)	37(29.1)	1.05	4	More Willing
Improved method of preventing pests and diseases of maize	40(31.5)	51(40.2)	36(28.3)	1.03	5	More Willing
Improved method of controlling pests and diseases of maize	44(34.6)	41(32.3)	44(34.6)	1.02	6	More Willing
Improved planting distance for maize	24(18.9)	52(40.9)	51(40.2)	0.79	7	Less Willing
Mechanized method of shelling of maize grain	26(20.5)	39(30.7)	62(48.8)	0.72	8	Less Willing
Storage of maize in modern cribs/silos	28(22.0)	35(27.6)	64(50.4)	0.72	8	Less Willing
Soil management practices	13(10.20	27(21.3)	87(68.5)	0.42	11	Less Willing
Mechanized method of harvesting maize	14(11.0)	30(23.6)	83(65.4)	0.46	10	Less Willing
Soil fertility test	7(5.5)	24(18.9)	96(75.6)	0.30	12	Less Willing
Weather forecast and climate information on maize planting	17(13.4)	34(26.8)	76(59.8)	0.54	9	Less Willing

Table 4. Distribution of respondents according to perception towards willingness to pay for Technical agricultural information

Perception Category	Score	Frequency	Percentage
Favourable	>70.0	99	78.0
Unfavourable	<70.0	28	22.0
Total		127	100

Mean = 69.5 Standard deviation = 5.32

Table 5. Summary of correlation analysis showing relationship between selected variables and Perception towards willingness to pay for technical agricultural information.

Variables	r value	P value	Remark
Years spent in school	-0.114	0.203	NS'
Household size	0.365**	0.000	S
Average annual income	0.150	0.093	NS
Farming experience	0.568**	0.000	S
Cultivatable size of land	0.228*	0.010	S

**Correlation significant at the 0.05 level (2-tailed) S- Significant NS-Not significant

3.3 Perception on willingness to pay for Technical Agricultural information

Perception index score with the mean of 69.5 was obtained and used to categorize the respondents into favourable perception (Mean and above) and unfavourable (below Mean). it was revealed that majority (78.0%) of the respondents were favourably disposed towards willingness to pay for technical agricultural information and 22.0% of the respondents had unfavourable disposition towards willingness to pay for technical agricultural information (Table 4). This trend of result may be due to individuals' information need and the inherent benefits of availability and access to needed information especially those that had favourable dispositions.

Test of hypothesis.

The result of correlation analysis shows that positive and significant relationship exist between household size (r= 0.365, P< 0.05) , cultivatable farm size(r= 0.228, P< 0.05) , farming experience(r= 0.568, P< 0.05) and farmers' perception towards willingness to pay for technical agricultural information on maize production. This implies that farmers with large household size, cultivatable farm size, and that are more experienced in maize production are more favourably willing to pay for technical agricultural information. This finding tallies with that of Ogunlade et al (2009) they had earlier reported a positive and significant relationship between farm size, scale of operation and willingness to pay for extension service. Conversely, years spent in school , average annual income had no significant relationship with farmers' perception towards willingness to pay for technical agricultural information (Table 5).

4. Conclusion and Recommendation

Based on the findings of the study, it could be inferred that farmers' willingness to pay for technical agricultural information on maize production was based on extension information need and the sampled respondents had favorable perception towards willingness to pay for technical agricultural information on Maize production especially those agricultural information that can improve their production capacity. In addition, household size, farming experience, cultivatable size significantly influenced the farmers' perception towards willingness to pay for technical agricultural information.

Sequel to these findings, the study recommended that technical agricultural information on maize production should be made available to farmers through a private extension service in order to meet the extension information need of farmers in the study area. Finally, for sustainable agricultural production farmers associations should be established in the study area for the purpose of pulling their resources together for private extension services patronage on technical agricultural information delivery that can improve their production capacity.

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