



CROP FARMERS' WILLINGNESS TO PAY FOR AGRICULTURAL EXTENSION SERVICES IN KWARA STATE, NIGERIA



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ABSTRACT

This study emanated from the need for improved agricultural extension system in Nigeria. The study investigated the willingness of crop farmers in Kwara State, Nigeria to pay for agricultural extension services. Specifically, the study examined the farmers' history of payment for extension, estimated their willingness to pay and identified the determinants of same. A sample of 261 farmers was drawn across the state using a two-stage random sampling procedure. Data for the study were collected with the use of structured questionnaire and were analyzed with descriptive statistics and the probit regression Analysis. Findings revealed that about 75% of the respondents had never contributed towards any extension effort and only about 38% were willing to do so. The farmers preferred that payment be made per extension visit and through farmer-groups. The mean amount that the farmers were willing to pay per annum was ₦20,551.11. It was further discovered that the significant factors that influenced the farmers' willingness to pay were age, income, education, farm size, extension contact, membership of farmer group and access to credit and training. The study therefore recommends a multidimensional approach involving the government at all tiers, farmer groups, and the public sector to enhance farmers' access to credit. Farmers' awareness and literacy level should also be improved through adult education programs and continuous training.

Keywords: Information flow, willingness to pay, crop farmers, determinants

INTRODUCTION

Agricultural extension in Nigeria is financed almost solely by the Government. Following the withdrawal of the World Bank intervention through the Agricultural Development Projects (ADPs), the government has continued to support extension from its budget, while the ADPs have remained under the management of the Ministries of Agriculture in the states. The agricultural extension system in the country has been severely criticized as being supply-driven, top-bottom oriented, and ineffective thereby failing to address the felt needs of the farmers. Poor funding as a result of increasing dwindling budgetary provisions and poor governance which are notable among the challenges associated with the system resulted in poor quality of extension staff as well as abysmally low extension personnel to farmer ratio (Budak *et al.*, 2010; Falola *et al.*, 2012). Furthermore, paucity of essential needs of extension work such as mobility, accessibility to information and communication technology is evidence of the funding level of extension in the country. The effect of this situation is manifested in the huge gap between available research findings and the farmers' knowledge and skill with poor yield for most crops. The inevitable need for additional sources of funds for extension is a major justification for the introduction of fee paying extension. Experts in the field opined that payment for extension will enhance the participation and the commitment of farmers to the extension process while fostering accountability of extension to farmers. Shekara (2004) remarked that payment for extension services by farmers will increase the efficiency and effectiveness of extension. This is because the right message is delivered to the right individual or group who will use such information, hence the system is demand driven (Umalu and Schwartz, 1994). To buttress this assertion, Napa and

Artyawardana, (2005) recognized the Australian state of Tasmania as having the longest history of fee for service extension. Other countries where this system has been successfully practiced include, the United Kingdom, Netherlands, New Zealand, Sweden, Germany, Chile, and Portugal (Rivera and Cary, 1997).

In preparing the stage for possible introduction of fee-paying for extension service, a documentation of farmers' history of previous payment for agricultural extension related activities is posited. The perception of the farmers as to their capability to pay for extension is also likely to affect their judgment. Information on farmers' preference such as mode and frequency of payment will be of assistance in the design of a fee paying extension system. Lastly, knowledge of the determinants of their willingness to pay will be important to the successful introduction of fees for extension services. The objectives of the study were therefore to:

1. describe farmers' history of payment for extension services in Kwara State,
2. examine farmers' perceived capability to pay for extension services,
3. investigate farmers' preferences in payment for extension services and;
4. investigate the determinants of farmers' willingness to pay for extension in Kwara State

METHODOLOGY

The study was carried out in Kwara State, Nigeria. The state is located within the North central area of Nigeria and lies between latitudes 7°45'N and 9°30'N and longitudes 2°30'E and 6°25'E. The state shares international boundaries with the Republic of Benin. Projected from the 2006 census figures, the state has a population of about 2.959 million and about 325,858 farm families.

$$Z_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots + \beta_p X_{ip} + \mu_i \dots \quad (1)$$

X₂ = Gender of the farmer (1 if male and 0 if otherwise);

X_4 = Total Income (Salary). This is an addition of farm income, non-farm income and available income from

N₆ = Highest level of formal education attained

 X_1 = Farm size (hectares)

X_9 = Access to extension services (number of extension contact in the past 12 months)

X_{13} = Access to farm credit (1 if yes, 0 otherwise)

β_i —are the coefficients to be estimated

Two methods have

They are: the Contingent Valuation Method (CVM) and the indirect or estimation of demand and supply of agricultural extension services method. The CVM has been several times used: Holden and Strømme (2002), Pomato *et al.* (2005), Ayoro (2005), Chaudhry (2005). Studies involving the use of estimation of demand and supply of extension services in India came (1996), Holmsten and Olsson (2001) and (1999).

It is the indirect method used for the estimation of factors determining demand of extension services, include the most frequently used in India (Gopal (1993), the Lorenz model (Lorenz and Lundstrom, 1980) and the Probit model (Hannan and Gopal (1993), Holmsten (1991)). The generalized and estimate the demand from estimated (Wilson 1986) but with limitations. The study adopted the contingent valuation method and "The World Bank and Analysis

Socio-economic Characteristics of the Respondents

characteristics of the respondents. Majority of the

Respondents' History of Payment for Agricultural Extension Services

the respondents' history of payment for agricultural

Perception and preference on Payment for Agricultural Extension

willingness to pay for agricultural exclusion is used as the

preferred mode of payment. As shown in the table, only about 35% of the respondents (19% of farmers, 42% of extension services) submitted only 5% of the respondent's preferred mode of payment as a mode of payment. Payment through farmer groups was accepted to make an individual payment to extension agencies/service providers among the respondent (71.39%). These findings corroborate those of 1990-1993 among farmers in other states. Farmers' demand of the respondents as a priority for payment for extension services is almost as high as that under farm-subsidized input package. A similar payment, Table 4 also reveals that of the 96 respondents who were willing to pay for extension services, 60% (57.7%) were not willing to pay above Rs. 500/000 per year for the extension services. The remaining 38% of the respondents (36.3%) were willing to pay more than Rs. 500/000 per year for extension services. The results are similar to the results of the extension providers' survey. 38% respondents in 1993 were willing to pay more than Rs. 500/000 per year for extension services. However,

Determinants of Farmers' Willingness to Pay (WTP) for Agricultural Extension Services

The results of the probit analysis to determine the factors influencing willingness to pay (WTP) for agricultural extensions by the farmers in the study area are presented in Table 5. As shown in Table 5, the model fitted for the study was good, based on the high Chi-square value which was significant at one percent. Eight of the twelve variables tested for relationship with willingness to pay for

agricultural extension services were significant in predicting the farmers' willingness. Three of the eight significant variables namely, age, access to extension services and membership of farmer-groups were inversely related to the farmers' willingness to pay. The remaining five variables: total income, level of education, farm size, access to credit and total income had direct relationships with the willingness of the farmers to pay for agricultural extension services.

Table 1: Selected Socio-economic Characteristics of Respondents

Socio-economic Characteristics	Minimum Values	Maximum Values	Modal Group (%)	Mean
Age (Years)	30	70	40-50 (33.00)	51.03 years
Gender			Male (87.40)	
Marital Status			Married (92.7)	
Educational Level			Formal Education (73.2)	
Farming Experience (Years)				
	3	55	11-20 (39.5)	21.37 years
Farm Size (ha)	0.5	4	1.10-2.00 (37.1)	2.05 hectares
Land Tenure			Rented (77.4)	
No of Extension Contact	0	36	1-10 times (41.4)	8
Membership of Farmer-groups			Non-member (65.5)	
Access to Credit			No access (52.1)	
Access to Training			Had access (56.0)	
Total Annual Income (N)	70,000.00	854,000.00	200,001-400,000 (53.6)	290,416.86

Note: Figures in parentheses are percentages

Source: Field Survey, 2013

Age of the farmers had a negative relationship with the farmers' willingness to pay (WTP) at $p < 0.01$. This indicates that the older the farmer is, the less his/her willingness to pay for agricultural extension services. Similar findings have been reported in other studies on farmers' WTP (Oladele, 2008; Mwaura *et al.*, 2010; Falola *et al.*, 2012; and Zakaria *et al.*, 2013). Payment for agricultural extension services being a relatively new development may not be readily adopted by the older farmers giving the scientifically reported inverse relationship between age and the adoption of innovation methods. Younger farmers have been reported to adapt more to changes and to adopt innovations at a higher and faster rate (Akudugu *et al.*, 2012; Baffoe-Asare *et al.*, 2013). The inverse relationship between farmers' access to extension services (measured as number of extension contacts) and WTP implies that the more access a farmer had to agricultural extension services, the less willing such a farmer was, to pay for the services. This may be due to the fact that the farmers will less likely desire to pay for services he already receives for free. It may however suggest also that the farmer does not consider the benefit he derives from extension contact worth paying for. This may therefore also be an indication of the level of a farmers' satisfaction with the agricultural extension services he presently enjoys. This finding is in agreement with those of Ulimwengu and Sanyal, (2011) who established a similar relationship between access to agricultural extension and farmers' WTP for agricultural extension services in Uganda. Membership of farmer-groups significantly but inversely influenced farmers' WTP at one percent level of significance. Therefore, WTP reduced with farmers' membership of farmer groups. This may also be related to the fact that their membership of groups exposes them to more agricultural information and hence their lack of enthusiasm to pay for agricultural extension services (Sseguya *et al.*, 2013). In contrast to a previous related

study (Foti *et al.*, 2007), this study shows a direct relationship between farm size and farmers' WTP for agricultural extension services at one percent level of significance. This implies that the larger the farm size, the more willing the farmer was to pay for agricultural extension. This may be attributed to the fact that farm management becomes complex as farm size increases. Thus, managing such large farms effectively may require some crucial information which may not be available easily to small farms. This may prompt farmers with large farm size to pay for agricultural extension services.

Gender was not significant in determining WTP. This finding contradicts that of Oladele, (2008) who reported that male farmers were more willing to pay for agricultural extension services than female farmers in Oyo State, Nigeria. Also, though being married has been linked to some degree of social and economic stability (Sanderson, 2004), the results of this study shows no significant relationship between marital status and WTP. A significant and positive relationship was also observed between total income and WTP at one percent level of significance. This means that the higher the total income, the higher the WTP for agricultural extension services. This finding is in accordance with the reports by Oladele (2008), Mwaura *et al.* (2010) and Falola *et al.* (2012). Higher income may connote availability of more funds from which to pay for agricultural extension services. Educational level directly influenced WTP at one percent level of significance. Therefore, the more educated a farmer is, the more his/her WTP. This trend has been reported by similar studies (Oladele, 2008; Mwaura *et al.*, 2010; Abu *et al.*, 2011; Falola *et al.*, 2012). *Ceteris paribus*, farmers with high level of education have positive attitude to innovations (Uematsu and Mishra, 2010). This may be as a result of improved ability to understand and communicate better with extension officers. It may also be as a result of the general skepticism and trust issues usually common among

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illiterate farmers. Table 5 shows that access to training positively and significantly influenced farmers' WTP for agricultural extension services at five percent level of significance. The direct nature of the relationship between the access to training and WTP indicates that the more access a farmer has to training, the more the farmer's WTP. Access to farm credit was also found to be a determinant of farmers' WTP. The more access a farmer had to credit, the higher the farmer's WTP. This may be a function of available financial resource which is enhanced by the access to farm credit.

Table 2: Respondents' History of Payment for Agricultural Extension Services

Investigations made and the responses	Frequency	Percentage
Ever paid for Agric. Ext services	66	25.29
Yes	195	74.71
No	261	100.00
Total		
Nature of service paid for		
Beneficiary contribution for:	9	11.8
Water project	9	11.8
Farm machinery	24	31.6
Input supply	13	17.1
Training	10	13.2
Farm implements	11	14.5
Farm road and culverts	76*	100.0
Total		
Amount paid in the last 12 months	19	28.8
<10,000	46	69.7
10,000-20,000	1	1.5
>20,000	500	
Minimum	60,000	
Maximum	21,524.01	
Mean	66	100.0
Total		

* Multiple Responses; Source: Field survey, 2013

Table 3: Distribution of Respondents by preference on payment for Agricultural Extension

	Frequency	Percentage
Are you willing to pay for agric. Ext. services?		
Yes	99	37.93
No	162	62.07
Are you capable of paying for agric. Ext. services?		
Yes	87	33.33
No	174	66.67
Preferred mode of payment		
Individual	59	22.61
Group	202	77.39
Preferred frequency of payment		
Per visit	177	67.82
Monthly	60	22.99
Annually	24	9.19

Source: Field survey, 2013

Table 4: Distribution of Respondents by Total Amounts they are Willing to Pay for Agricultural Extension Per Annum

Amount	Frequency	Percentage
0	162	62.07
1 - 20,000	71	27.20
20,001 - 40,000	17	6.51
40,001 - 60,000	4	1.53
60,001 - 80,000	2	0.77
80,001 - 100,000	2	0.77
>100,000	3	1.9
Total	261	1.16
Minimum	0	100
Maximum	69,000	
Mean(willing respondents)	20,551.11	

Source: Field survey, 2013.

Table 5: Parameter Estimates from Probit Regression Model to Investigate Determinants of Willingness to Pay among Respondents

Variable	Regression Coeff.	Standard Error	t-value
Constant	-2.09889	.51870	-4.04646
Age	-.11508***	.00803	-14.32722
Gender	.40836	.27929	1.4621
Marital Status	.14795	.33070	.44738
Total Income	.07230***	.01945	3.71814
Educational Level	.23555***	.03048	7.72724
Land Ownership	-.07323	.12386	-.59129
Farm Size	.20796***	.04456	4.66670
Farming Experience	-.01013	.00650	-1.55778
Access to extension services	-.01797***	.00370	-4.85084
Membership of other Farmers' Groups	-.34027***	.09977	-3.41043
Access to Credit	.43828***	.10465	4.18792
Access to Training	.23557**	.11186	2.10581
Pearson Goodness of fit (chi square value)	5.968E+11		
DF	247		
P	.000		

Note: ***, and ** denote significance at 1% and 5%, respectively

CONCLUSION AND RECOMMENDATIONS

One can infer from this study that just a limited number of farmers had ever made equity contributions towards extension related projects in the study area. Similarly, only about a third of the respondents were willing to pay for

agricultural extension services. The study further revealed that farmers preferred to pay per extension visits and through their farmer-groups. The factors that significantly influenced farmers' WTP were; age, income, education,

farm size, extension contact, membership of farmer-groups, access to credit and training

Based on these findings therefore, the following recommendations are put forward:

1. Farmers should be assisted and encouraged to increase their farm size through measures such as: subsidies, incentive payments, welfare payments, and provision of infrastructures
2. A multidimensional approach involving all stake holders such as the government, private sector, strengthened farmer-groups and other non-governmental organizations should be adopted to enhance agric-financing in the study area.
3. Policies that will enhance farmers' income, such as improved produce marketing, should also be put in place or given more attention.
4. Adult literacy programmes and continuous training should be made available to improve farmers' level of education and awareness.

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