

FACTORS DETERMINING FARMERS' WILLINGNESS TO PAY FOR EXTENSION SERVICES IN OYO STATE, NIGERIA

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Abstract

This paper examined the factors determining farmers' willingness to pay for extension services in Oyo state, Nigeria. Specifically the services farmers are willing to pay for were identified and how much farmers are willing to pay for such services were determined. A multi-stage technique was used in selecting 200 farmers from which primary data were collected between December 2007 and February 2008 using interview schedule based on a structured questionnaire that was earlier subjected to face validity and reliability test using split-half technique with a coefficient of 0.85. The data were analyzed using frequency counts, percentages and Probit regression model. The results showed that 30 percent of the respondents are willing to pay for extension services and these services include providing information to women farmers (34 percent), identifying rural problems (38 percent), training VEA (33 percent), supervising women activities (43 percent), arrange input supply (36 percent), processing loans (32 percent), organizing group meetings (38 percent), giving advice on agric problems (33 percent), teaching home management children and nutrition (29 percent), cost of organizing farmers' seminars, group discussions (26 percent), and liaison with farm machinery (34 percent). The mean values of amount to be paid for each of the services shows a minimum of ₦1 800 for food and drinks for extension agents at every visit to ₦11, 400 for organizing group meetings. The Probit regression model showed that farmers age ($t = 2.75$), gender ($t = -2.36$), Educational level ($t = 2.79$), Farm size ($t = 2.02$), farming experience ($t = -2.51$), land tenure ($t = 1.82$), income ($t = 3.38$), and proportion of crops sold ($t = -2.13$) are significant determinants of farmers willingness to pay for extension services. The study recommends that these variables are given proper policy consideration in the design and the implementation of a workable fashion of privatizing extension services for the expected impact of improving extension services and farmers' productivity.

Key words: privatization, extension services, willingness to pay, farmers, probit model, Nigeria

INTRODUCTION

In many developing countries, agricultural development is hinged on extension services by helping farmers to identify, analyze and link with research on their production problems. They also give awareness on opportunities for improvement of farm yields leading to increased income and better standard of living (Van den ban and Hawkins, 1998). Through agricultural extension services, dissemination of information on agricultural technologies and improved practices to farm families, farmers' capacity building through the use of a variety of communication methods and training programmes are carried out. In addition, they assist farmers in making their own decisions by providing a range of options on a given innovation from which they can choose, thereby helping them to develop themselves and have insight into the consequences of each option. (Agbamu, 2002). The focus of all agricultural extension endeavors is to transfer information to farmers so as to increase their productive capacity. Srivastava and Jaffe (1992) noted that extension serves as the link between farmers to transfer best practices of one farmer to another, to introduce or even enforce agricultural policies and report farmers problems back to research. Economic impact studies on agricultural extension have shown positive effect of extension on technology adoption, farm productivity and farm profits.

Considering the challenge of providing an efficient agricultural extension system for farmers in developing countries, privatized extension has been widely debated (Farrington, 1994; Kidd et al., 2000; Rivera, 2001) such that a higher level of farmers involvement in the extension processes is advocated and the need to meet diverse range of options including information on markets, rural industry and other income opportunities (Farrington et al., 2002). Umali and Schwartz (1994) noted that the central objective in privatised extension system is in getting the right message to the right user(s) at the right time through a demand-driven service system that is cost effective and efficient.

In theory, private extension is simply the provision of a service or advice by a private firm in exchange for a fee; the terms and conditions of the transaction are negotiated in an open market. The degree to which this can be done in practice depends on the extent to which extension services can be converted into a private good. Agricultural information is commonly seen as a public good because of its low excludability and low subtractability (Umali and Schwartz, 1994). Alex et al. (2002) illustrated the distinction between public and private goods as presented in Table 1. Agricultural information can spread through farmer-to-farmer communication and retains its value despite wide access, and thus considered a public good. Agricultural

information with private good characteristics is specialized often associated with particular input, field or individual farmer. Agricultural information provided

as a private good does not necessarily require the existence of a highly commercial agricultural system.

Tab. 1: Public and private characteristics of agricultural information

| | | Excludability | |
|--|--|---------------|--|
| | | Low | High |
| Public Goods | | | Toll Goods |
| <ul style="list-style-type: none"> • Mass media information • Time-insensitive production | Marketing and Management Information of wide applicability | | <ul style="list-style-type: none"> • Time-sensitive production, marketing, or management information |
| Common Pool goods | | | Private Goods |
| <ul style="list-style-type: none"> • Information embodied in locally available resources or inputs • Information on organizational Development | | | <ul style="list-style-type: none"> • Information embodied in commercially available inputs • Client-specific information or advice |

Source: Alex et al., 2002

The debate to privatize extension services in Nigeria is being muted due to wide spread corruption and inefficiencies in public corporations. The privatization has yielded desired results in the telecommunication and banking sectors. Also the advent of non-governmental organizations in the provision of quality extension services to farmers when compared with public extension services is another major reason for the consideration of privatization of extension services. It is against this back ground that privatization may be extended to agricultural extension services. Mitei (2001) noted that the attendance at extension meetings and implementation rates of recommended technologies are greater than 70 percent in a fee paying extension system.

The questions that arise in the introduction of fee paying extension system in subsistence dominated agriculture as in Oyo state particularly and Nigeria in general is that whether it will lead to better efficiency, equity and effectiveness in serving both the subsistent and commercial farmers. In Nigeria, several studies have examined the effectiveness of public extension systems (Obinne, 1992), perceived effect of privatization of extension services (Oladele and Obuh, 2008), and beneficiary funding of extension services (Ogunlade et al. in press). The purpose of this paper is to identify factors determining farmers' willingness to pay for extension services in Oyo state, Nigeria. The objectives are:

1. To identify services farmers are willing to pay for
2. To determine how much farmers are willing to pay for such services

MATERIALS AND METHODS

The study was carried out in Oyo State. It covers 27 107.93 square kilometers and is bordered in the west by the Benin Republic, in the north and east by Kwara and Osun states respectively and in the south by Ogun state of Nigeria. The state covers an area ranging from

swamp forests to western uplands. In between are rain forests, and deciduous forest/savanna mosaic. The rainfall pattern is bimodal with the peaks in June early July and September, while November to February is characterized by harmattan brought about by the effect of the northeasterly trade winds from Sahara region.

Agricultural sector forms the base of the overall development thrusts of the state, with farming as the main occupation of the people in the area. Crops usually grown include maize, yam, cassava, cocoyam, melon, cowpea, and vegetables under mixed cropping practices. Oyo state has a distribution of agricultural research institutions namely: Institute of Agricultural Research Training, Ibadan (IAR & T), National Institute for Horticultural Research, Ibadan (NIHORT), Cocoa Research Institute of Nigeria, Ibadan (CRIN), Forestry Research Institute of Nigeria, Ibadan (FRIN). Agricultural Development Programme (ADP) which gives farmers ample opportunities and access to agricultural information.

The target population of this study consists of farmers. The multi-stage sampling technique was used in selecting respondents for interview. This was done by using the Agricultural Development Programs (ADP's) division into zones, blocks and cells. There are four agricultural zone, 15 blocks and 71 cells in Oyo State. Sixteen cells were selected across the state, and 200 farmers selected randomly for the study. Interview schedule based on a structured questionnaire, that was earlier subjected to face validity and reliability test using split-half technique with a coefficient of 0.85 was use to collect data from farmers on their willingness to pay for extension services, services they are wiling to pay for and how much they are willing to pay for such services between December 2007 and February 2008. Willingness to pay was measures at nominal level as a dichotomous variable of Yes (1 point) and 0 (no point). Also from a list of 38 extension services, farmers were asked to indicate services they are willing to pay for and

how much they are willing to pay for such services in Naira.

Descriptive statistics was used to analyze the socio-economic features of farmers while the probit model was used to capture the factors determining farmers' willingness to pay for extension services. The choice of explanatory variables was based on literature on past studies and the characteristics found among the respondents. The relationship between the probability of the

willingness to pay P_i and its determinants q is given as

$$P_i = \beta q_i + \mu_i$$

where: $P_i = 1$ for $X_i \leq Z$; $i = 1, 2, \dots, n$; q_i is a vector of explanatory variables and β is the vector of parameters. The probit model computes the maximum likelihood estimator of β given the non-linear probability distribution of the random error μ_i . The dependent variable P_i is

Tab. 2: Demographic characteristics of farmers

| Variables | Frequency | Percentages |
|----------------------------------|-----------|-------------|
| Gender | | |
| Male | 162 | 81.2 |
| Female | 38 | 18.8 |
| Age | | |
| 31–40 | 33 | 16.6 |
| 41–50 | 119 | 59.4 |
| 51–60 | 46 | 22.9 |
| Marital status | | |
| Married | 157 | 78.6 |
| Divorced | 41 | 20.7 |
| Educational level | | |
| Not educated | 56 | 27.9 |
| Non-formal | 75 | 37.5 |
| OND | 69 | 34.6 |
| Farming experience | | |
| Less than 10 years | 27 | 13.7 |
| 11–20 years | 80 | 39.9 |
| 21–30 years | 61 | 30.6 |
| 31–40 years | 32 | 15.8 |
| Household size | | |
| 1–3 persons | 49 | 24.5 |
| 4–6 persons | 113 | 56.5 |
| Above 6 persons | 38 | 19 |
| Farm size | | |
| 1–5 ha | 114 | 57 |
| 6–10 ha | 66 | 33 |
| Above 10 ha | 20 | 10 |
| Land tenure | | |
| Owned | 114 | 57 |
| Rented | 86 | 43 |
| Extension contact | | |
| Once in 2 weeks | 29 | 14.5 |
| Once in 4 weeks | 100 | 50 |
| Once in 8 weeks | 71 | 35.5 |
| Income | | |
| Less than ₦50 000* | 113 | 56.5 |
| ₦50 000–₦100 000 | 49 | 24.5 |
| Above ₦100 000 | 38 | 19 |
| Proportion of crops sold | | |
| Less than 20 percent | 90 | 45 |
| 20–50 percent | 80 | 40 |
| Above 50 percent | 30 | 15 |
| Willingness to pay for extension | | |
| Yes | 60 | 30 |
| No | 120 | 70 |

*₦118 = US\$ 1 at the time of study

a dichotomous variable which is 1 when a farmer is willing to pay and 0 if otherwise. The explanatory variables are: X_1 = age in years, X_2 = dummy variable for gender (Male = 1, female = 0), X_3 = dummy variable for educational level (educated = 1, not educated = 0); X_4 = dummy variable for marital status (married = 1, others = 0); X_5 = farm size in ha, X_6 = farming experience in years, X_7 = dummy variable for land tenure system (land owner = 1, others = 0), X_8 = household size in number of persons, X_9 = number of extension contact per month, X_{10} = income in Naira, X_{11} = proportion of crop sold in percentages.

RESULTS AND DISCUSSION

Table 2 presents the demographic characteristics of farmers. Majority are male (81 percent), between 41 to

50 years of age and a mean age of 46 years, married (78 percent), educated (72 percent), and have been farming for at least 10 years (87 percent). These characteristics may affect the farmers in their willingness to pay for extension services. About 57 percent of the farmers have household sizes between 4 to 6 persons, as most farmers depend on family labour and cultivate between 1 and 5 ha as farm sizes, which is an indication of subsistence oriented farming. In terms of tenurial rights, 57 percent of the farmers owned the land they cultivate, while 50 percent meet with extension agents once in 4 weeks and 56 percent have less than ₦50 000 as income. Only 15 percent of the farmers indicated that the proportion of crops sold is above 50 percent and 70 percent are not willing to pay for extension services.

Table 3 presents the results of the proportion of farmers indicating extension services to be paid for and the

Tab. 3: Percentage distribution of farmers willing to pay for extension services and amount

| Extension services | Percentage | Mean Amount* (₦) |
|---|------------|------------------|
| Establishment of SPAT | 23 | 6 900 |
| Forming women groups | 25 | 7 500 |
| Providing information to women farm | 34 | 10 200 |
| Identifying rural problems | 38 | 11 400 |
| Involvement in non-farming activities | 25 | 7 500 |
| Training VEA | 33 | 9 900 |
| Organizing FNT | 21 | 6 300 |
| Supervising women activities | 43 | 12 900 |
| Liaison with institute | 18 | 5 400 |
| Arrange input supply | 36 | 10 800 |
| Preparing schedule of activities | 20 | 6 000 |
| Processing loans | 32 | 9 600 |
| Recovering loans | 24 | 7 200 |
| Initiating and promoting leadership | 13 | 3 900 |
| Securing market for shows | 18 | 5 400 |
| Organizing shows | 10 | 3 000 |
| Organizing group meeting | 38 | 11 400 |
| Organizing Adult literacy classes | 18 | 5 400 |
| Communication of recommended practices | 18 | 5 400 |
| Feeding back farmers problem to research | 13 | 2 400 |
| Learning new ideas in Agric. | 8 | 3 900 |
| Keeping record of extension activity | 28 | 8 400 |
| Giving advice on agric problems | 33 | 9 900 |
| Home and farm visits | 28 | 8 400 |
| Teaching home management children and nutrition | 29 | 8 700 |
| Food and drinks for EA at every visit | 6 | 1 800 |
| Village accommodation for EA | 8 | 2 400 |
| Motorbikes for EA | 23 | 6 900 |
| Contribute to the cost of farm demonstrations | 13 | 3 900 |
| Contribute to the cost of result and method demonstrations | 12 | 3 600 |
| Honorarium for Subject Matter Specialist | 17 | 5 100 |
| Cost of Handbills, posters, leaflets for extension services | 15 | 4 500 |
| Cost of organizing farmers' seminars, group discussions | 26 | 7 800 |
| Providing specialized information for production | 16 | 4 800 |
| Liaison with marketing opportunity | 25 | 8 400 |
| Liaison with farm machinery | 34 | 9 900 |

₦118 = 1\$

Tab. 4: Parameter estimates from Probit regression model

| Variables | Regression Coeff. | Standard Error | Coeff./S.E. |
|------------------------------------|-------------------|----------------|-------------|
| Intercept | -2.53420 | 0.15497 | -16.35263 |
| Age | 2.00198 | 0.00262 | 2.75536 |
| Gender | -2.01225 | 0.03395 | -2.36091 |
| Education | 2.01452 | 0.01824 | 2.79609 |
| Marital status | 0.00286 | 0.00223 | 1.28510 |
| Farm size | 2.00028 | 0.01378 | 2.02012 |
| Farming experience | -2.04330 | 0.08351 | -2.51850 |
| Land tenure | 1.02840 | 0.03485 | 1.81503 |
| Household size | 0.00203 | 0.00864 | 0.23510 |
| Extension contact | 0.01233 | 0.01659 | 0.74370 |
| Income | 0.44803 | 0.13235 | 3.38529 |
| Proportion of crops sold | -0.04775 | 0.02233 | -2.13832 |
| Pearson Goodness-of-Fit Chi Square | 126.335 | | |
| DF | 193 | | |
| P | 0.000 | | |

mean score of the amount to be paid. Prominent services indicated to be paid for are providing information to women farmers (34 percent), identifying rural problems (38 percent), training VEA (33 percent), supervising women activities (43 percent), arrange input supply(36 percent), processing loans (32 percent), organizing group meetings (38 percent), giving advice on agric problems (33 percent), teaching home management children and nutrition (29 percent), cost of organizing farmers’ seminars, group discussions (26 percent),and Liaison with farm machinery (34 percent). The mean values of amount to be paid for each of the services shows a minimum of ₦1 800 for food and drinks for extension agents at every visit to ₦11 400 for organizing group meetings.

From the results of the probit model presented in Table 4, the Chi-square value was used to determine the goodness of fit of the model. The value is statistically significant at one percent level. The result also shows that 8 variables are statistically significant at 5%. These are age ($t = 2.75$), gender ($t = -2.36$), Educational level ($t = 2.79$), Farm size ($t = 2.02$), farming experience ($t = -2.51$), land tenure ($t = 1.82$), income ($t = 3.38$), and proportion of crops sold ($t = -2.13$). It can be deduced that the younger the farmers the more the willingness to pay for extension services and also the higher the level of education among farmers the more willingness to pay for extension services. Of these eight significant variables, three are inversely related to willingness to pay for extension services. These are gender ($t = -2.36$), farming experience ($t = -2.51$) and proportion of crops sold ($t = -2.13$). This indicates that an increase in any of these variables will lead to a decrease in the probability of willingness to pay for extension services. The more male farmers, with longer farming experience and high proportion of crops sold the higher the probability of the willingness to pay for extension services. As the farm size increases, the probability of the willingness to pay

for extension services also increases as farmers would tend to be commercial oriented due to large farm sizes. Similarly, land tenurial right is positively related to the willingness to pay for extension services. The rent on land would have constituted additional cost of production that discourages willingness to pay for extension services. These findings agree with Foti et al. (2007) who reported that the degree of commercialization of farm enterprises; farmer income, farmer location, farm size and attitude of the farmer significantly affect the demand for private fee-for-service extension in Zimbabwe.

CONCLUSIONS

The study has clearly shown that the proportion of farmers willing to pay for extension services is low especially due to the low proportion of crops sold by the farmers. The study has revealed some extension services could be privatized. The issue of gender having an inverse relationship with willingness to pay for extension services should be properly considered such that women farmers who play prominent roles in agriculture will not be marginalized. To ensure that the willingness to pay for extension services is sustained, there is need to improve the number of extension contact with farmers. Also the amount expected to be paid were stated and the mean values were stated in the paper. By targeting male farmers, with high level of education, high incomes, large farm sizes and land owners, the privatization of extension services would take the advantages of these features and hence their greater abilities to pay for extension services. It is therefore important that a workable fashion for the implementation of the policy is designed for the expected impact of improving extension services and farmers’ productivity.

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