

Farmers Willingness To Pay for Privatized Agricultural Services: An Analysis with Plantation Growers

Chellattan Veetil, P.¹ and Venkataranga Naika, K.²

ABSTRACT

Agricultural extension system all over the world is under constant revision and change to adapt with the new challenges and need of the farmers. Krishi bhawan the system of extension in Kerala which was established in 1987 by the State Government has been analyzed in the present study to check the farmers perception on it's performance and analyze the scope of privatizing extension services. It is found that only 35 per cent of the farmers perceived that the Krishi Bhawan's performance was good. The willingness to pay for alternative extension service is estimated by using double bounded dichotomous choice model using contingent valuation method and it show a high amount of Rs. 113.07 per visit of the extension service provider. This revealed that there is a scope for private extension service in Kerala where extension is mainly through public extension system.

In developing countries, practically all the extension services are a part of the state administration. They are characterized by bureaucratic structures, lack of participation by target groups, rigid planning procedures and inadequate staffing and resources. The underlying fact of all these extension systems is that it is under constant revision and revolution as no extension system can meet all the needs of hungry information seeking farmers.

The extension service in Kerala, predominantly driven by public service through Krishi bhawan is no exception to this phenomenon. This paper analyses the farmer's perception on exiting extension services and their willingness to pay for an alternative system.

1.1 A brief sketch of Kerala Agriculture

Over much to the 20th century, Kerala's people organized to bring about near first- world levels of literacy, life expectancy, birth rates and infant mortality, an effective public food distribution system, a land reform that undercuted the exploitation of the privileged castes and an agricultural labourer's act that codified wages, working conditions and benefits

(Jeffrey 1993: Franke and Chasm 1994; UNDP, 1996). Over the years, the state has transformed itself from a producer state into a consumer state with respect to major essential agricultural commodities like food grains and vegetables. At the same time, the state continues to remain a major producer of commercial and cash crops like Pepper, Cardamom, Ginger, Turmeric, Coconut, Tea, coffee, Rubber and Cashew. It still holds near- monopoly in the export of several agricultural commodities in India 93 per cent in ginger 30 per cent in turmeric, 48 per cent in cashew kernels, 68 per cent in coffee, 43 per cent in tea, and 100 per cent in coir and coir products (Jinraj, 1999). Eventually, the cropping pattern of the State has undergone a major shift from food crops towards commercial crops since 1960. Another major feature of Kerala's agriculture is the homestead system of cultivation, which has taken a variety of forms : inter- cropping, mixed cropping of perennial and annual crops and mixed farming of different types such as crop- livestock and crop- livestock-fish. In consequence, the income per unit area of cultivation remains high .

¹Doctoral student, Department of Agricultural Economics, Ghent University, Belgium, ² Professor, Department of Agricultural Extension, GKVK, UAS, Bangalore, India.

1.2 Present Agricultural Extension - Krishi Bhavans: Genesis and Functions

The state Government introduced the Krishi Bhavan concept in 1987. The basic premise for the initiation of this concept was the realization of the authorities on the need to make planning and agricultural development more location-specific by taking the Panchayat as the basic unit for all development work. Under this principle, the Department of Agriculture was recognized with the Panchayat as the basic working unit. By establishing one agricultural unit for every Panchayat, it was hoped that making production inputs and integrated services available to farmers in time, production and productivity of crops would be enhanced. All agricultural activities covering extension and development were included under the jurisdiction of these base units. Through this arrangement, provision for a single window approach for agricultural development was launched in the state, by integrating and co-ordinating the existing agricultural development activities which were scattered under different project like KADP, MSCP, KAEP and CRS. Thus, the different individual projects for different crops were brought under one roof with the introduction of Krishi Bhavans.

In the re-organized set-up, each Krishi Bhavan was supposed to be under the control of an Agricultural Officer (AO) assisted by three Agricultural Demonstrators. This staff pattern as prescribed for 803 Panchayats in which the total number of families were 2,800 or above. In the case of the remaining 198 Panchayats, where the total numbers of families were less than 2,800, the staff pattern would be one Agricultural Officer assisted by two Agricultural Demonstrators. The Municipalities (44) and Corporations (5) were also supposed to have an agricultural unit with an Agricultural Assistant (AA) in charge and one Agricultural Demonstrator to assist him.

The Krishi Bhavans were expected to act as a link between the research organizations like Kerala Agriculture University and farmers through a number of farmers organization different crop-based samithis. The Agricultural Officers attend the Zonal workshops of the Kerala Agriculture University, thus keeping in touch with the latest findings in the research sector and taking back to the scientists the feedback from the farmers. The Karshika Vikasana Samithis

act as the major advisory body of the Krishi Bhavans. Direct contact with the farmers also exist through the distribution of subsidies, implements, etc. One important aspect to be noticed in this context is the absence of the local bodies/ Panchayats in the development process. In essence, this deficiency alienates people from the planning and implementation process, thus creating several hurdles in the agricultural growth process.

Agricultural extension underwent a metamorphosis in subsequent years and different governments had introduced different programmes keeping Krishi Bhavan as the basic unit for development. In 1996 the Kerala Model (People's Campaign for Decentralised Planning) an epitome of decentralization, launched in Kerala. Agriculture (the primary sector) was given foremost priority in that programme and Krishi Bhavan has been viewed as a vehicle for development. It started playing the facilitators role by helping farmers in formulating projects for the programme, in solving problems and making their livelihoods. There after, the involvement of farmers was essential in formulating, implementing and evaluating the developmental projects. The agricultural development hereafter, viewed on a multifaceted approach taking Krishi Bhavan as the basic unit of the development.

METHODOLOGY

The present study was conducted in two districts of Kerala, the southern peninsular state of India. Kerala lies between 8° and 12° 45' North latitudes and 74° 4' and 77° 50' East longitude. Predominantly an agricultural state with its overwhelming plethora of cash crops, the entire development fabric of Kerala is inextricably interwoven with its state department of agriculture and was hence chosen to be the extension system for present investigation. Krishi Bhavan is meant for all farmers residing in its jurisdiction (one village in majority of the cases), and hence the population of the beneficiaries includes all the farming community of Kerala. From the randomly selected Krishi Bhavan from each district 60 farmers were selected using simple random sampling procedure using random tables. Thus a total of 120 farmers were selected from two districts. A well structured and pre-tested, interview schedule was developed for eliciting data from the farmers incorporating all the items on which information was required by keeping in view of the objectives and variable of the study.

Variables and their measurement

The socio-economic profiles of farmers along with the important explanatory variables included in the study are presented in Table 1. More than 80 per cent of farmers had minimum 10 years of formal education which is on par with the high literacy rate of the state. They have higher social and extension participation such as participation in decentralised planning, crop based Samithis, farmers organizations etc. The location of Krishi bhavans are usually in proximity to the farms and also majority are usually in proximity to the farms and also majority received at least one type of benefits from Krishi bhavan.

The dependent variables in this study are given below:-

Farmers Perception on performance of Krishi bhavan:

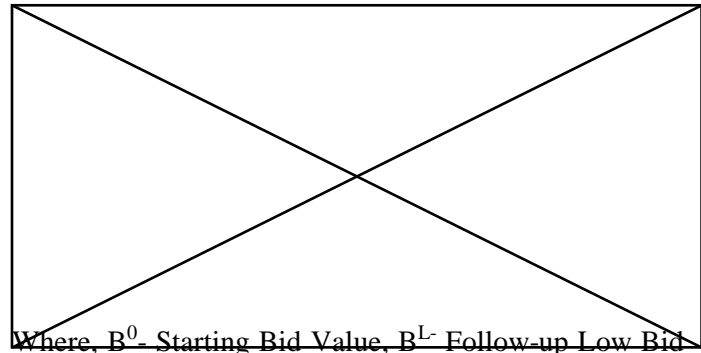
The perception of farmers on performance of extension system (Krishi Bhavan) was measured using a modified procedure of Jinraj (1999). Here ten statements were selected and respondents were asked to choose from a five point continuum, "very good", "good", "medium", "poor" and "very poor" and assigned with score of 5,4,3, 2, and 1 respectively. Hence the possible score ranges from 10 to 50.

Farmers 'Willingness to pay' (WJP) for alternative extension services : Farmers willingness to pay for alternative extension services i.e. paid extension services was ascertained using double bounded logit models. They were asked for their readiness to pay a certain amount (bid value) for the private service, which is of pay and get type. If they were agreed to that bid value we would go to next higher bid value or else go to the lower bid, there were four choices among the farmers i.e. Yes Yes , Yes No, No Yes , and No No.

Method of estimation of WTP:- A double bounded dichotomous choice mode (DBDC) was adopted in which instead of single time bidding, Two times bidding is practiced. Here the participant has to respond to the first bid and then face follow up question involving another bid amount depending on the response to the first question. The double bounded approach was first suggested by Hnaernann (1984). If the response to the first bid was 'yes' then a higher bid amount was presented and if the response was 'no', a lower bid amount was presented. It has been shown by F-lanernann et al. (1991) that the double bounded procedure is statistically efficient than single bounded procedure. The

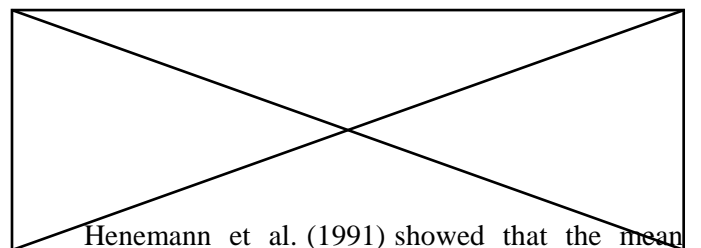
bid structure was designed by pretesting, using the payment card format.

A double bounded Logit was used to analyze the data. For double bounded model we observe two dichotomous variables, i.e. the answerers to the first question and its follow up. This method produces four possible outcomes i.e. 'YES YES' (YY), 'YES NO' (YN), 'NO YES' (NY), AND 'NO NO' (NN). Following Hanernann et al (1991), the response probabilities were obtainable for the Logit model, are:



Where, B^0 - Starting Bid Value, B^L - Follow-up Low Bid Value and B^H - Follow-up High Bid Value.

The double bounded log-likelihood function is



Henemann et al. (1991) showed that the mean willingness to pay was estimated using the formula $WTP = a/b$.

Referendum CVM programme (GAUSS) written by Cooper (1999) was used to estimate the double bounded Logit regression.

Where, l - indicated the response category of each respondent i .

RESULTS AND DISCUSSION

Performance of Krishi Bhavan

Farmers opinion about the performance of the extension system is very important in the analysis of the effectiveness of extension system. Farmers are grouped in to three levels of perceptions based on the score obtained by them: low, medium and high. The perception level (see Table 2) shows that only one third of the farmers opined that the extension system is performing well where as two third of

Table 1. Profile of farmers of Kerala

Characteristics	Category	Frequency	Percentage
Sex	Male	45	75.00
	Female	35	25.00
Education level	Up to high school	12	20.00
	High school to 12th Std.	37	61.67
	Collegiate and technical diploma	11	18.33
Per capita annual income (PCAI) Rs./year	< 12,000	16	26.67
	12,000-24,000	17	28.33
	24,000- 48,000	12	20.00
	48,000=72,000	5	8.33
	72,000=120,000	7	11.67
	>120,000	3	5.00
Meeting	Regular	24	40.00
		17	28.33
		19	31.67
	Group Farming	26	43.33
		6	10.00
		28	46.67
Extension participation	Training	19	31.67
		26	43.33
		15	25.00
	Seminar	18	30.00
		25	41.67
		17	28.33
	Exhibition	18	30.00
		26	43.33
		16	26.67
Social participation	Low : < 3.18	18	30.00
	Medium : 3.18-7.33	18	30.00
	High :> 7.33	24	40.00
Mass media participation	Low < 8.38	20	33.33
	Medium 8.:38-12.61	20	33.33
	High > 12.61	20	33.33
Distance from Krishi Bhavan	< 4.5 km	22	36.67
	4.5 – 8.3 km	21	35.00
	> 8,3 km	17	28.33
Benefits from Krishi Bhavan	Availed	53	88.33
	Not availed	7	11.637

Exchange rate at the time of investigation : 1 US \$ = 43.09 Rs.

them had good opinion about crop based samithis. The possible reason might be the involvement of the farmers in such groups and it's very focused activities.

Only 12 percent of respondents had not availed any benefits- directly or indirectly from Krishi Bhavan, while the rest had availed one or more types of benefits. The details of the benefits obtained from Krishi Bhavan and indirect include the benefits availed from samithis like service of tractor, tiller,

pump sets etc. The existence of strong padasekhara Samithis (paddy growers group) and the increased number of schemes after the people's planning may be accounted for this.

Farmer's willingness to pay (WTP) for alternative extension system

The willingness to pay of the progressive farmers owing more than one acres of land, for alternative extension system was assessed using double

Table 2. Farmers' Perception on performance of Extension System

Perception level	f	%
Krishi Bhavan		
Low : < 35.61	23	38.33
Medium : 35.61-42.95	6	26.67
High :> 42.95	21	35.00
Samithi		
Low : < 28.55	5	25
Medium : 28.55-41.75	6	10
High :> 41.75	39	65

bounded logit model. Here the double bounded dichotomous choice relaxes the requirement of large sample size preferred by dichotomous choice methods (Bann. 1997). The estimated functional form had a long likelihood value of -39.77. The negative and significant value of the bid amount indicates as the bid amount increases there is more chance of saying 'no'. This is an essential condition for dichotomous choice studies.

The willingness to pay (WTP) per visit of extension personnel to the field of the farmer was estimated to be Rs. 113.05 . Most of the people expressed that they will be sought after a few number of visits in a crop season (one to two) from the paid extension service. Also as far as possible they will collectively approach for such services. All this may be accounted for a high WTP estimate.

The consumer surplus were derived from the maximum likelihood estimates of intercept and bid coefficient, which are random variables. In order to get a confidence interval Krinsky and Robb Monte Carlo simulation technique as used by Park et al. (1992) was used. This involved simulating a bivariate

normal distribution of intercept (a) and bid coefficient (β) using the maximum likelihood estimates of the coefficients and the variance covariance matrix and calculating WTP for each explicate of intercept and bid coefficient and hence generating an empirical distribution function of WTP. A (1-a) confidence interval obtained by ranking the vector of calculated WTP values and dropping the a/2 values from each tail of ranked vector. The 95 per cent confidence interval was obtained from 95.851 to 131.904.

The coefficient of income was found highly significant even at 0.01 probability level in WTP estimate. This envisage the general economic theory that as income increases their willingness to pay also increases. Also the coefficient for social participation exhibited a same relationship. But the mass media participation was found to be negative and significantly related to willingness to pay. The more knowledge acquired through mass media like TV, newspaper, internet etc. are potential enough to solve the field problems. Hence a negative relation exists.

Table 3. Distribution of farmers based on the benefits availed from Krishi Bhavan

Items	Availed		Not availed	
	f	%	f	%
Pump sets and irrigation	20	33.33	40	66.67
Tiller/ Tractor	26	43.33	34	46.67
Soil conservation measures	11	18.33	49	81.67
Sprayer	41	68.33	19	31.67
Fertilizers and condiments	48	80.00	12	20.00
Planting	38	63.33	22	
Others	33	55.00		

CONCLUSION

Even though the farmers perceived a high performance of Samithis, majority of them belonged to low perception category in case of performance of Krishi Bhavan. Hence the Krishi Bhavan officials need to reach farmers to a greater extent keeping samithis as the stepping-stone. The farmers profile like mass media participation, extension contact, social participation. Education were conducive for widening the scope of extension activities so as to make the farmer self sufficient and self reliant. The willingness to pay for alternative extension system reflects there is scope for alternative extension systems in Kerala. Farmers are facing the major constraints in accessing the extension service from Krishi Bhavan such as lack of awareness about the projects, lack of peoples participation in plan formulation, timely and needful crop services and advices. Since majority farmers cultivate cash crops their prime focus is on profit maximization and the present system of extension did not come upto the level of their expectation. Hence, there is a scope for privatized extension services.

REFERENCES

- Bann, C. (1997). An economic analysis of alternative mangrove management strategies in Koh Kong Province, Cambodia, Economy and Environment Program for South East Asia, Singapore.
- Cooper, J.C. (1999). Referendum CVM programmes. Economic Research Service, USDA, Washington, DC.
- Franke, R.W. and Chasm, B.H. (1994). Kerala. Redical reform as Development in an Indian state. Oakland, CA: Food First Second Edition.
- Hanemann, W.M., Loomis, J. and Kannien (1991). Statistical efficiency of double bounded dichotomous choice contingent valuation. American Journal of Agricultural Economics, 73 (4) : 1255-1263.
- Hanemann, W.M., 1984, Welfare evaluations in contingent valuation experiments with discrete purpose. American Journal of Agricultural Economics, 57(3):332-341.
- Jefrey, R. (1993). Women, Politics and Well-being: How Kerala became a model. Oxford University Press : Delhi.
- Jinraj, P.V., 1999 Performance Evaluation of Krishi Bhavan Set up in Kerala, Discussion Paper No. 8 Kerala Research Programme on Local Level Development Studies, Thiruvananthapuram, Kerala.
- Kalaichelvan. K (1984). Farm technology transfer through Training and Visit system, M.Sc. (Ag.) thesis, Tamil Nadu Agricultural University, Coimbatore.
- Park, T., Loomis, J.B. and Creel, M. (1991) Confidence intervals for evaluating benefit estimates from dichotomous choice contingent valuation studies. Land Economics, 67(1):64-73
- Somasundaram. S. (1983). Role perception of the Agricultural officers in the past and present agricultural extension system M.Sc.(Ag) thesis, Tamil Nadu Agricultural University, Coimbatore.
- UNDP (United Nations Development Programme) (1996). Human Development Report, Oxford University Press: New York.