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Willingness to Pay for a Fee-Based Extension Service by Tea Smallholders in Galle District

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ABSTRACT

The agricultural extension service in Sri Lanka is generally considered as supply driven, and limitedly focused on farmers' aspirations and needs. The state services are also said to be inefficient and operating at a high cost. From the farmers' point of view it is an incomplete service provider. This has increased attention towards the potential for privatization of agricultural extension services. Therefore, this study was conducted with the objectives of analyzing the tea smallholders' willingness to pay (WTP) for a fee-based extension service and the factors affecting their WTP. A sample of 100 tea smallholders was randomly selected from four sub office areas under the Tea Small Holdings Development Authority, Galle. Primary data were collected through a pre-tested questionnaire. Open ended elicitation method was used to obtain the WTP and a probit regression model was used to analyze the factors affecting their WTP.

Although 66% of the tea small holders have received extension services from the Tea Small Holdings Development Authority, only 42% of them have had services at the right time. A majority of the tea smallholders rely more on their own experience. Although 42% of the tea smallholders have indicated that they would like to have some other extension service, only 24% were willing to pay for such a service. The average WTP was Rs. 85.62 per month by a tea smallholder. According to the probit analysis, proportion of income had a significant positive influence and farming experience had a significant negative influence on the WTP. Based on the analysis it could be concluded that the tea small holders' in Galle district have a minimal interest towards a fee-based extension service and hence implementation of a private advisory service in the tea smallholding sector is not viable.

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Introduction

Producers must receive current information and technology for effective management of their production, marketing and financial decisions. Individual characteristics of producers impact on the demand for information services while confidence in the information services is a central determinant of the frequency at which a producer refers to the services. Such information services are used as an intermediate good in the production of an agricultural commodity and are referred to as extension services.

Extension is often defined as a combination of a communication dimension and educational dimension, meaning transmission of technical information to farmers and assisting them in development of skills to make use of technical information (Second Perennial Crop Development Project, 1999). Irrespective of interpersonal disparity, farmers who are the direct recipients of agricultural extension benefits, have their own expectations from an extension service. However, the agricultural extension service in Sri Lanka is generally considered as supply driven, limitedly focused on farmers' aspirations and needs and institutionalized crop wise (Second Perennial Crop Development Project, 1999).

Although Sri Lanka is renowned for its tea plantations, 60% of its total tea production comes from the smallholdings sector. The highest extent of tea smallholdings is located in the Kandy district and it amounts to around 25% of the total tea smallholdings. Next highest is located in Galle followed by Matara district. The number of tea smallholdings is on the increase. Therefore, in order to cater to the growing demand for information by tea smallholders, Tea Small Holdings Development Authority (TSHDA) was established under the Tea Small Holdings Development Law No. 35 of 1975. Tea smallholders are taxed indirectly for the extension services provided to them through TSHDA. Government charges a Cess from every kilogram of tea exported. This money is reinvested in the tea sector. All the institutions that are responsible for tea, namely, Tea Research Institute, Sri Lanka Tea Board, Tea Commissioner's Department and TSHDA are funded through this Cess fund.

TSHDA delivers extension services to approximately 230,000 tea smallholders in the country. There are nearly 200 field level extension workers and around 30 supervisory level extension officers. The extension

service of TSHDA is under the supervision of the Deputy General Manager (Extension). Extension services of TSHDA use several channels to communicate with the tea smallholders. These include individual visits, seminars, field days, farmer training classes, field demonstrations, radio programs, periodicals, leaflets and competitions (Wimaladharma, 2003).

Problem Justification

The tea smallholding sector plays a very vital role in the economy of Sri Lanka. Although its contribution to the total tea production shows an increasing trend, it operates under a number of problems. Some of these problems are financial constraints, insufficient number of Extension Officers, inadequate knowledge of the tea smallholders (TSHs), and greater time lag in transmitting research information to TSHs. Even the supportive organization, the TSHDA is faced with a number of problems which directly influence the performance of the smallholdings. The TSHDA is heavily dependent on the cess funds for disbursement of subsidies as well as to provide extension services. The cess funds are also used to meet its administration costs. This has not increased in proportion to the increasing extent of smallholder's contribution to the country's total tea exports. There is also a delay in receipts of the cess as it is not remitted directly by the Customs Department to the TSHDA. The amount received by the TSHDA has not been provided regularly and according to the entitlement as decided by the cess committee (Tea Small Holdings Development Authority, 2003).

TSHDA is over burdened with high administrative costs for salary payments. Of the cess funds received, every Rs. 1.40 of the Rs. 2.50 per kilo of tea exported is applied for administrative costs. In spite of this difficult financial situation, the TSHDA has had to increase its subsidies in view of the increasing cost of fertilizer and other inputs faced by smallholders. The portion of the cess money remaining for extension work declines due to the increased payments for replanting, new planting and infilling subsidies. This compounds the gravity of the financial situation. The extent of tea smallholdings has increased over the past decade (Table 1) but the number of Extension Officers is almost the same during this period.

Table 1: Extent of tea small holdings

Year	Extent (Ha)
1996	78 776
1997	79 998
1998	79 367
1999	83 070
2000	81 259
2001	86 481
2002	91 667

Source: Department of Census and Statistics, 2003

At the Tea Research Institute, only the Agronomy and Entomology divisions have direct contacts with TSHDA staff at field level. Therefore, it takes time for research level information to reach farmers. It is also revealed that in most instances researchers are not geared towards solving the problems of smallholders. Apart from the above institutional problems, the poor knowledge on agricultural practices and soil management of the TSHs aggravates the problems of the tea smallholdings sector. According to a survey carried out by Mahaliyanarachchi (1996), on the knowledge of the TSHs on fertilizer usage, 32.5% had full knowledge, 50.41% had partial knowledge, and 17.09% had no knowledge. Further, regarding the knowledge on pest and disease management, only 13.25% had full knowledge and others had partial or no knowledge. He also has found that the average yield of a tea smallholding is nearly 2286 kg/ha and is below the potential yield of 2400 kg/ha.

Given the above problems in the tea industry, a project was introduced in 2003 to restructure the tea related institutions in order to reduce the financial burden on the government. This was financially supported by the Asian Development Bank. They have published a document regarding proposed future strategies. This document clearly says that, to reduce the high dependency on the cess fund and also to meet increasing cost of inputs and services, the TSHDA needs to generate its own revenue in activities that can be commercialized and it is also necessary to revise fees and charges for certain services performed in its regulatory functions (Tea Small Holdings

Development Authority, 2003). The TSHDA also needs freedom in raising finances, in investing funds, in borrowing and in pursuit of potential commercial activities.

The suggested rationalization of TSHDA's organizational structure and the reduction of its regional branches from eight to five will lead to inadequate distribution of extension workers among tea growing districts. The current and proposed staff cadre, along with the associated costs of personnel emoluments is shown in Table 2.

Table 2: TSHDA's current and proposed staff cadre

Grade	**Approved cadre**	**Existing cadre**	**Proposed cadre**	**Cost of approved cadre (Rs. Mln)**	**Cost of proposed cadre (Rs. Mln)**
Management	19	16	12	6.6	4.2
Executive	100	113	72	20.6	14.6
Middle	430	399	220	67.8	28.8
Minor	155	133	24	17.7	2.7
Total	704	661	328	112.7	50.3

Source: Tea Small Holdings Development Authority, 2003

They have also proposed to introduce a Voluntary Early Separation Package (VESP) to reduce the staff and the functions of the extension division of the TSHDA, such as conducting training programs for trainers, tea small holders and special training for community development which have been excluded from the proposed functions.

All these above facts show the risk faced by the tea small holding sector in receiving extension services in the future. Therefore there is a need to have a fee-based extension service to root out these inefficiencies and limitations. Under this approach producers will become clients instead of beneficiaries. Similarly, a study done by the World Bank pointed out that there is a greater potential for privatization of agricultural extension services because the state services are said to be inefficient and expensive (Umali and Schwartz, 1994).

Objectives

Given the above background, this study was conducted with the objective of analyzing the tea smallhloders' willingness-to-pay for a fee-based extension service. The specific objectives of this study were to determine the tea smallholders' perceptions on the present information flow, to determine the tea smallholders' attitudes towards a fee-based extension service and to analyze the factors affecting the tea smallholders' willingness-to-pay for a fee-based extension service.

Literature Review

In most countries, the relative share of national resources earmarked for agriculture is decreasing. Therefore, extension has been and is under attack from a wider spectrum of politicians and economists over its costs and financing. As a result, extension systems have had to make changes by restating the systems mission, developing a new vision for the future and formulating plans for necessary transition to achieve desired change. One such change is privatisation of extension services.

Privatisation of extension services is typical in developing countries like Australia, New Zealand, France, United Kingdom and Netherlands. The Australian state of Tasmania has the longest experience with fee for service activity in the world by having introduced a fee-based advisory service in 1982. In 1990, New Zealand initiated its first step of privatisation by making the advisory services of the Ministry of Agriculture and Fisheries completely commercial. In France, nearly three quarters of the total resources for the operation of the system are collected at the farm level through direct payment, voluntary fees from farm organisations, compulsory fees levied in the form of taxes on a variety of products or land taxes collected by Chambers of Agriculture. The United Kingdom promotes direct payment by users without privatisation of extension services. The novelty of the British approach is that it is a system of charging for certain services on time on cost basis that were previously offered free and financed by tax revenues. These examples suggest that the privatisation of agricultural advisory services is widespread and the main reason behind the trend towards self financing relates to budgetary problems.

Although the extension services are not privatized in Sri Lanka, the Second Perennial Crop Development Project that was funded by the ADB used extension services as a spring board to examine the feasibility of private advisory services and to implement such a service. The most important radical change was to adopt a fee charging system for facilitation loans with farm advice as well as subsequent advisory visits. The continuous monitoring of the progress of the firms indicated that all firms had acceptable targeted achievements. An evaluation done after two years of implementation showed that many relevant indicators of progress are satisfactory and in time to come with experience and competition the service could improve.

Saravanan and Gowda (1999) have used three states in India, namely, Maharashtra, Rajastan and Kerala and have analysed the farmers WTP for agricultural information. They have used a linear discriminate function to identify the variables that discriminate farmers into willing to pay and not willing to pay. Primary source of information, age, education level, occupation, total land area, irrigated land area, income from agriculture, total household income, area under non-food grains, level of inputs used and the level of satisfaction with the primary source of information are the variables used in the discriminate function. Their results revealed that only 48% of the farmers are WTP Rs. 25 for agricultural information.

Malkanthi and Mahaliyanaarachchi (2001) have conducted a study in Nuwara Eliya district, Sri Lanka to examine the attitudes of the vegetable farmers towards privatisation of agricultural extension services. They have used 21 items to determine the attitudes towards privatisation of extension services. Nearly 41% of the farmers had least favourable attitudes toward private extension services. Only four out of sixteen variables, namely, type of labour used, monthly profit from vegetable cultivation, monthly total income and management ability of the farmers were positively associated with the farmer attitudes towards private extension services.

Methodology

Galle district was selected purposively and a sample of 100 TSHs were selected randomly from 4 sub office areas, namely, Akmeemana, Wanduramba, Elpitiya and Hingalgoda. Data were collected by using a pre-tested questionnaire.

Determination of Attitudes about the Fee Based Extension Service

Attitude measurement scale was developed based on Saravanan and Gowda (1999), where the final results were expressed in frequencies. Accordingly, attitudes of the interviewees of a survey were categorized into 3 categories after giving values to the attitude measuring statements they have answered.

- Least favorable response to the attitude tested
- Favorable response to the attitude tested
- Most favorable response to the attitude tested

In the survey questionnaire, the respondents were given 10 statements that concerns the privatization of extension services and were asked to choose from either disagree, undecided or agree. The final score for the respondent on the scale was the sum of their rating for all of the items and is also known as the summated scale. If there were items that were reversed in meaning from the overall direction of the scale, they were called reversal items. The response value has to be reversed for each of these items before summing for the total. After assigning values to the individual statement, the final score was obtained. The final score ranged from 1 into number of statements to 5 into number of statements.

Response Category	Values for Positive Statements	Values for Negative Statements
Strongly satisfied	5	1
Satisfied	4	2
Undecided	3	3
Unsatisfied	2	4
Strongly unsatisfied	1	5

Factors Affecting the Willingness-to-Pay (WTP)

Probit Regression Model

The probit model is one of the regression models, in which the dependent variable (*Y*) is dichotomous in nature, i.e. a binary variable. The

coefficients measure the difference that the unit change in the independent variable makes in terms of cumulative probability of the dependent variable. In the model, the dependent variable was specified as the willingness to pay (*WTP*) for private extension services. One was assigned to people who were willing to pay for a fee based extension service and zero was assigned to people who were not willing to pay for such a service. Socio economic characteristics of the TSHs were used as independent variables (Table 4). The model of the probit regression is as follows;

$$WTP = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \varepsilon$$

Table 4: Variables used in the probit regression

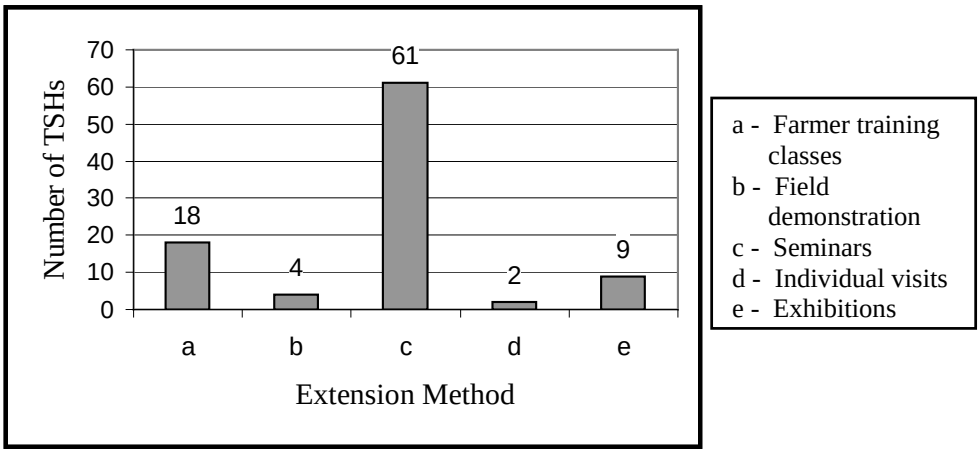
Variable	Unit	Expected Sign	Definition
X_1	Years	_	Age of the TSH
X_2	Number	+	Family size
X_3	Years	+	Education level of the TSH
X_4	Years	_	Farming experience
X_5	Acres	+	Land size
X_6	Percentage	+	Income from tea/Total household income x 100
X_7	Dummy	?	Gender of the person who was directly involved in cultivation (1 for male)

Results and Discussion

Present Information Flow

Only 66% of the respondents have received extension services from the TSHDA. Of those, only 42% have received extension services at the right time. TSHDA has used several methods in disseminating information. The TSHs who have received extension services from the TSHDA, ranked those extension methods as in Figure 1. Seminars have been the primary method by which respondents have received extension services. Of the 66 TSHs, 61 have received extension services through seminars organized by the TSHDA. Only 2 of them have indicated that they have received extension services through individual visits.

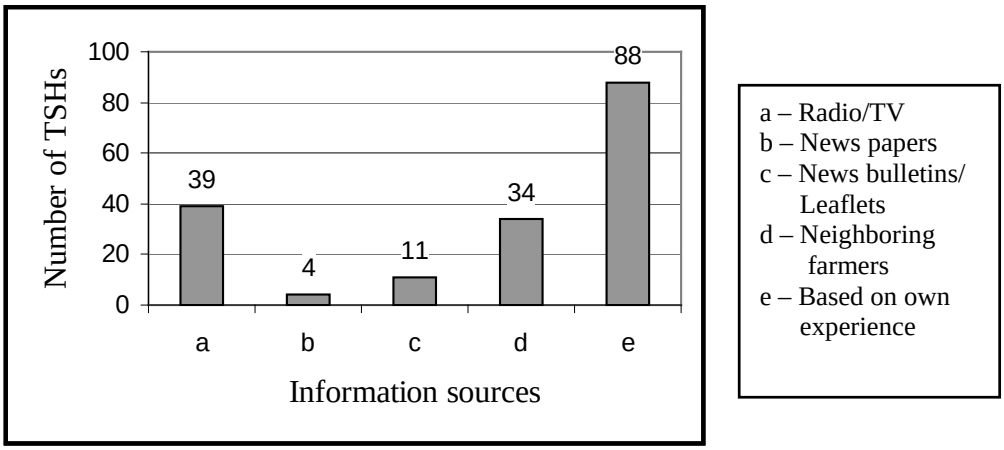
Figure 1: Extension methods used by the TSHDA



Information Sources

Majority of the TSHs rely on their own experience rather than seeking for other information sources to get the required knowledge on tea cultivation. They also have had greater reliance on the radio/television and neighboring farmers (Figure 2). A minimal number of TSHs have relied on new papers.

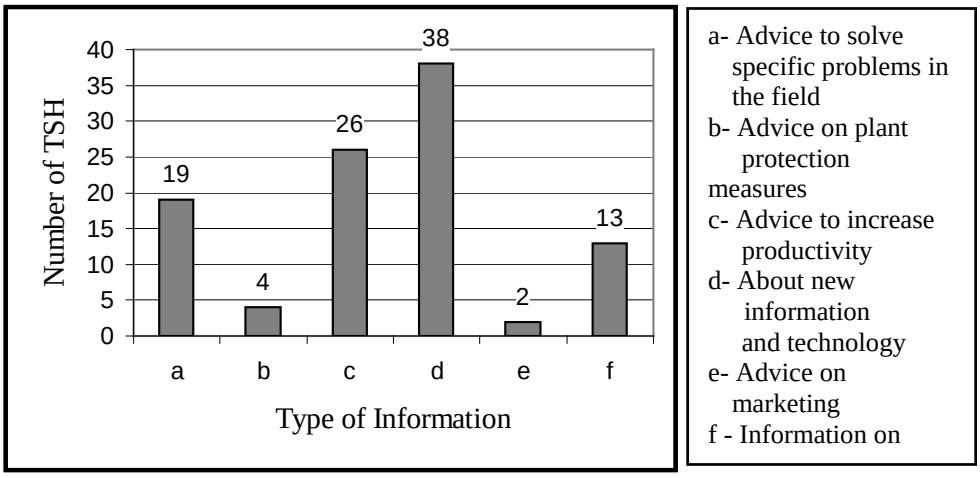
Figure 2: Usage of information sources other than TSHDA



Demand for Information

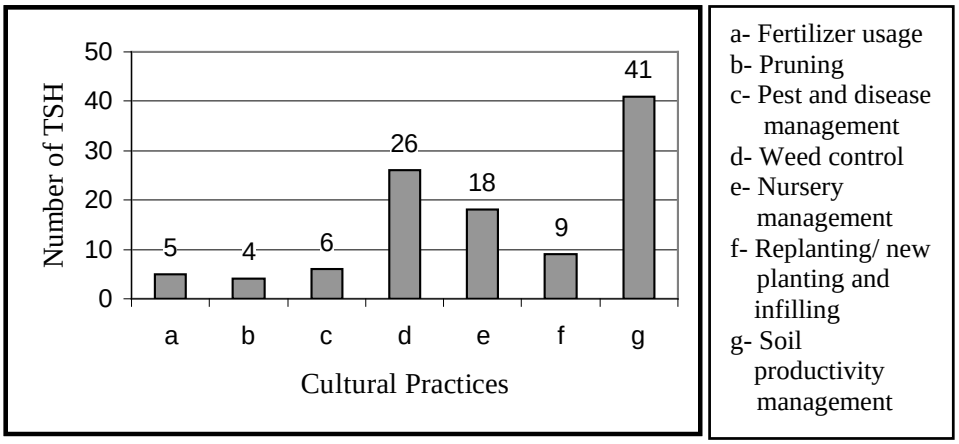
TSHs have shown a greater demand for new information and technology and it was 38%. They also had a considerable demand on advice to increase the productivity and advice to solve specific problems in the field. They had a very low demand on advice on marketing and plant protection measures (Figure 3).

Figure 3: Demand for various information



In terms of the demand for information on cultural practices, TSHs had the highest demand for information for soil productivity management. Weed control and Nursery management were the other key areas that they required information (Figure 4). Very few required information on pruning practices, fertilizer usage and pest and disease management.

Figure 4: Demand for information for cultural practices



Willingness to have a Fee-Based Extension Service

Forty two percent of the TSHs were willing to have another source of extension service. Of those, 92.9% were willing to have extension services through a private organization while the rest preferred a government organization. Of those who preferred to have a private organization to get extension services, 82.1% liked to have an organization which delivers only extension services whereas 15.4% and 2.6% of the TSHs like to have tea factory owners and input supplying companies to deliver extension services, respectively.

Attitudes towards a Fee-Based Extension Service

Eighty percent of the respondents had favorable and most favorable attitudes towards a fee-based extension service while 20% of the respondents had a least favorable attitude (Table 5). However, only 24% of the respondents were actually willing-to-pay for such a service. Of the respondents who were willing to pay, 13 of them gave the question prolonged consideration in an effort to arrive at the best possible value, 6 of them gave the question careful consideration but the effort was not prolonged, 2 of them gave the question some more consideration, one of them gave the question very little consideration and 2 of them did not give any consideration and wanted to give some answer to finish the interview.

Table 5: Attitudes towards a Fee-Based Extension Service

Attitude Category	Score Range	Number of TSHs
Most favorable	>24.13	26
Favorable	24.13 – 20.91	54
Least favorable	<20.91	20

Of the respondents who were not willing to pay, one of them gave the question prolonged consideration, 36 of them gave the question careful consideration but the effort was not prolonged, 18 of them gave the question some more consideration, 11 of them gave the question very little consideration and 8 of them did not give any consideration and wanted to give some answer to finish the interview.

Average WTP

$$\text{Average WTP} = \frac{\text{Sum of the bidding amounts}}{\text{Total number of respondents who were willing-to-pay}}$$

$$= \text{Rs. } 2055 / 24$$

$$= \textbf{Rs. 85.62}$$

The average WTP for a fee-based extension service by a farmer per month was Rs.85.62.

Factors Affecting the WTP

As explained in the methodology, a probit regression model was used to determine the factors that influence the WTP. Results of the analysis are represented in Table 6. Of the 7 variables in the model, only two – farming experience and the income proportion – were significant.

Table 6: Results of the probit regression analysis

Variable	Estimated Coefficient	Standard Error	*t*-ratio
Age	0.0031	0.0350	0.0877
Family size	0.0657	0.2812	0.2338
Education level	0.1143	0.1222	0.9357
Experience	**-0.1740**	**0.0538**	**-3.2353***
Land size	0.2525	0.6014	0.4199
Income proportion	**0.0002**	**0.0001**	**2.5965***
Gender	-0.0606	0.7333	-0.0826
CONSTANT	-2.6800	2.3481	-1.1414

* Significant at 0.05 level

Log-likelihood function = -17.271
Log-likelihood(0) = -55.108
Likelihood ratio test = 75.6748 with 7 d.f. p-value = 0.00000

The slope coefficient of farming experience was negative and significant. This suggests that the change in the weighted log of the odds ratio of paying for private extension services decreases with a unit increase in weighted farming experience. Taking the antilog of 0.1740 gives approximately 1.190, which means that for a unit increase in farming experience the weighted odds in favour of paying for private extension services decreases by 1.19 or about 19%. This could be primarily because when the farming experience increases, TSHs tend to use their own experience in cultivation rather than seeking for other information sources. Since they rely largely on their own experience, they were not willing to obtain new information for a fee.

The variable, income proportion was computed as a proportion of income accruing from tea with respect to their total household income and represented as a percentage. This was used in the analysis in order to overcome the effect of multicolinearity. This variable was significant and had a positive relationship with the dependent variable. The slope coefficient of 0.0002 suggests that the change in the weighted log of the odds ratio of paying for private extension services increases with a unit increase in weighted income. Taking the antilog of 0.0002 gives approximately 1.0002,

which means that for a unit increase in proportionate income from tea the weighted odds in favour of paying for private extension services increases by 1.0002 or about 0.02%. This reveals the TSHs minimal interest in private extension services. Although the variables, age, family size, education level and land size were not significant, they had a positive relationship with the dependent variable (Table 6). Gender was also a non-significant variable and had a negative relationship with the dependent variable. This could be due to female TSHs willingness to pay more for a fee-based extension service than the male TSHs.

Conclusions and Recommendations

Privatization of extension services is important in order to reduce the financial burden on the government. Currently, Sri Lanka is looking into the feasibility of implementing private advisory services. Given the situation, this study was conducted with the objectives of analyzing the tea smallholders' WTP for a fee-based extension service and the factors affecting their WTP. Results revealed that 66% of the respondents have received extension services from the TSHDA, but only 42% have received information at the right time. This is because most of the Extension Officers disseminate information through seminars and they rarely make individual visits. Although a majority of the TSHs rely greatly on their own experience, there was a high demand for new information and technology, advice to increase productivity and information on soil productivity management practices.

Although 42% of the TSHs were willing to have another source for an extension service, only 24% were willing-to-pay for such a service. The average WTP was Rs. 85.62 per month by a tea smallholder. Given the minimal willingness in contributing to a fee-based service, it could be pointed out that any organization delivering extension services for a fee will not be able to make a considerable profit out of the service. This minimal willingness in contributing to a fee-based service is primarily because most of the TSHs do not have enough income to pay from their relatively small and marginal operational land holding. This was proven to be correct in the analysis of the factors affecting the WTP where results showed that their marginal probability to pay for a fee-based extension service increases along with the increasing income from tea. Further, the lower income could be the primary reason why there were only 24% who really wanted to pay out of the 80% who have had positive attitudes towards a fee-based extension service. Given

the tea small holders' minimal interest towards a fee-based extension service, it could be concluded that implementation of a private advisory service in the tea smallholding sector in Galle district is not viable. It also shows that the government still has a role to play in delivering extension services to the TSHs.

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