J. Agr. Sci. Tech. (2015) Vol. 18: 39-53

Farmers' Satisfaction with Agricultural Extension Service and Its Influencing Factors: A Case Study in North West Ethiopia

A. Elias[1*], M. Nohmi[2], K. Yasunobu[2], and A. Ishida[3]

ABSTRACT

Customer satisfaction is the most important element for developing and sustaining organizational priorities and practices. Thus, we examined farmers' overall satisfaction with agricultural extension services and its determinants using data collected from 150 beneficiary farmers in North West Ethiopia. The findings show that about 55 percentage of the interviewees were satisfied whereas 45 percentage of them were dissatisfied with the extension services, implying that the program still has a lot of room for improvement. The empirical result based on ordered logit model revealed that perceived economic return, regular extension contact, family size and off-farm income were driving factors for farmers' satisfaction. On the other hand, limited technology choices, high price of inputs, inconvenient loan system and undefined boundary between the extension services and the local politics were among the reasons given by dissatisfied farmers. Thus, from a policy perspective, the findings suggest a need to develop demand-driven extension service instead of the existing supply-driven one. Such service should be aiming to enhance the rewards from farming in order to maintain participation and farmers` satisfaction, which influence the sustainability of the extension program.

Keywords: Agricultural extension service, Ethiopia, Farmers' satisfaction, Ordered logit model.

INTRODUCTION

Agriculture is the most important sector for sustaining growth and reducing poverty in Ethiopia. It accounts for 85% of employment, 50% of exports, and 47% of Gross Domestic Product (GDP) (FAO, 2010; CIA, 2014). There has been growing awareness that sustained increases in poverty reduction in Ethiopia are more likely to be achieved through improvement in the agriculture sector. Hence, several extension approaches have been followed in Ethiopia since 1950's and various programs were implemented to provide farmers with relevant agricultural information and appropriate technologies that could improve productivity and household income. Since 1995 the extension program known as Participatory Demonstration Training and Extension System (PADETES) which falls under the National Extension Intervention Program (NEIP) has been implemented focusing on supply-driven package approach which consists of enhanced supply and promotion of improved seeds, fertilizers, on-farm demonstrations of improved farm practices and technologies and close follow up of farmers' plots (Kassa and Abebaw, 2004; EEA [Ethiopian Economics Association], 2006; Kassa, 2008; Gebremedhin *et al.,* 2009; Asfaw *et al.,* 2012). However, in spite of implementing the agricultural extension program Ethiopia remains one of the poorest countries in the world (USAID, 2013), vulnerable to

[1] The United Graduate School of Agricultural Sciences, Tottori University, 4-101 Koyama-Minami Tottori-shi, 680-8553, Japan.
[*] Corresponding author; e-mail: asres97@yahoo.com
[2] Faculty of Agriculture, Tottori University, Japan.
[3] Faculty of Life and Environmental Science, Shimane University, Japan.

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.16.4]

recurrent food shortfalls, national food insecurity (Abate *et al*., 2011) and widespread rural poverty (Spielman *et al.,* 2011). For instance, between 1998 and 2012 the average number of Ethiopians in need of food assistance fluctuated between 3 million and 14 million (IRIN, 2012). The country ranks at 173th out of 187 nations in terms of Human Development Index (UNDP, 2013). Evidence on the impact of agricultural extension on productivity and poverty has been a mixed experience to date, with increased use of fertilizer but poor productivity growth (World Bank, 2006). Although many farmers seem to have adopted the packages promoted by the extension service, up to one third of the farmers who have tried a package had discontinued its use (Bonger *et al*., 2004; EEA, 2006). Indeed, Bonger *et al*. (2004) also find that poor extension services were ranked as the top reason for non-adoption. Moreover Elias *et al*. (2013) observed that the effect of extension program participation on farm productivity is marginal.

The above evidence confirms that after operating for nearly two decades, the program's performance is low. This raises questions about its effectiveness and, more importantly, its sustainability. According to Flores and Sarandón (2004), farmer's satisfaction is considered to be an important indicator of sustainability which has become the leading target of scientific research and policy agenda (Ridaura *et al*., 2002). Client satisfaction evaluations can address the reliability and responsiveness of services or the willingness of providers to meet clients' needs (WHO, 2000). Evaluating the satisfaction rate of farmers is highly important for a number of reasons. First, the farmers are the intended beneficiaries of the program and thus, they should have the right to judge its performance. Second, as end users, the farmers have personal experiences with the program that are not shared by non-users. Third, the sustainability of the program ultimately depends on the willingness of the farmers to continue participating in it, which is a reflection of their satisfaction. However, past studies have not paid enough attention to farmers' satisfaction with agricultural extension programs in Ethiopia. Therefore, this study examines agricultural extension (PADETES) program users' overall satisfaction with the extension service and identifies the relationship between level of satisfaction and socio-economic, extension service related and other variables.

In the following section, we present an overview of agricultural extension in Ethiopia and a conceptual framework consisting of a set of hypotheses that can hypothetically describe the effects of several factors on farmers' satisfaction with agricultural extension service. The methodology section outlines the econometric procedures employed. Besides, it also outlines the sampling procedures of the study and type of data used for analysis. The results and discussion section provides and discusses the estimated results of farmers' satisfaction with agricultural extension service. The last section summarizes the main findings, and draws some policy implications and outlook for further research.

Overview of Agricultural Extension in Ethiopia

Agricultural extension has long history in Ethiopia. A historical survey of the agricultural extension system in Ethiopia (Kassa, 2003; Gebremedhin *et al*., 2006) reveals that it has been at the forefront of agricultural development drives for the last several decades since government-led agricultural extension services commenced in the 1950s. The Alemaya [later renamed Haromaya] College of Agriculture and Mechanical Arts, that had links with Oklahoma University in the US, was the first to be entrusted with the task of reaching out to farming communities by providing extension services and disseminating research-based knowledge and adult education (Davis *et al*., 2010). Extension

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.16.4]

services were later provided to a larger number of farmers in the 1960s under the Comprehensive Integrated Package Project. In the mid-1980s, various new programs were implemented, such as the National Program for Food Self Sufficiency, the Modified Training and Visit (T and V) Approach, and the Peasant Agriculture Development Extension Projects. The implemented programs provided relevant agricultural information and appropriate technologies, notably improved crop varieties that could improve productivity and household income.

In the early 1990s, smallholders became the focus of interventions in agriculture in general and agricultural extension in particular. At the same time, a pilot extension system supported by the Sasakawa Global 2000 (SG-2000, the Sasakawa Africa Association and Global 2000 of the Carter Centre) was introduced in 1993, involving 160 farmers in demonstration exercises focusing on maize and wheat production (Gebremedhin *et al*., 2006). The success of the SG-2000 scheme, resulting in a boom harvest in 1995, prompted the government to adopt the national agricultural extension intervention program that is a major component of Agriculture Development Led Industrialization (ADLI). Based on this, new extension program, the Participatory Demonstration and Training Extension System (PADETES), was introduced. The objective of PADETES was to achieve pro-poor sustainable development in rural areas through increasing farm productivity (yield), reducing poverty, increasing the level of food security, increase the volume and variety of industrial raw materials (primary products), and producing for the export market (Kassa, 2003; EEA, 2006; Kassa, 2008). Currently, extension is provided primarily by the public sector, operating in a decentralized manner through which extension is implemented at the *woreda* (district) and *kebele* (Peasant association) level. Almost in its two decade's life, PADETES program has increased the number of public Development Agents (DAs) dramatically from 2,500 to 47,500 during the period of 1995 to 2008 through the provision of a three year diploma program at Agricultural Technical and Vocational Education Training (ATVET) colleges. This rapid expansion has been accompanied by the establishment of Farmers Training Centers (FTCs) to become the focal point of extension support with a range of technical skills, and provide abroad range of demand-responsive extension and short-term training services in every *kebele* in the country. Each FTC is to be staffed by three DAs (one each in the areas of crops, livestock, and natural resource management) (Spielman *et al*., 2008). Each DA is expected to train 120 farmers per year in his or her field of specialization. However, the DAs recruitment and training has largely succeeded in meeting its numeric targets, while FTCs have lagged behind (Spielman *et al*., 2011) due to lack of basic infrastructure and facilities, skill, funding for operational costs, appropriate approaches and tools and linkage for accessing knowledge and information (Lemma *et al*., 2011).

Conceptual Framework of The Study

Satisfaction in this study is conceptualized as the effective reaction of a farmer towards the use of extension service. Specifically we used the same concept provided by Raboka (2006) who defines satisfaction as the fulfillment of certain prior expectations related to a product or service. Farmers' satisfaction with the agricultural extension service can be affected by several factors such as personal and farm attributes (age, education, family size, land size and livestock ownership), perceived economic return, perceived package appropriateness, participatory nature of extension program, use of multiple communication methods, access to credit and training, frequency of extension contact and year of experience in extension participation (Figure 1). We discuss in detail how these aforementioned factors

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.16.4]

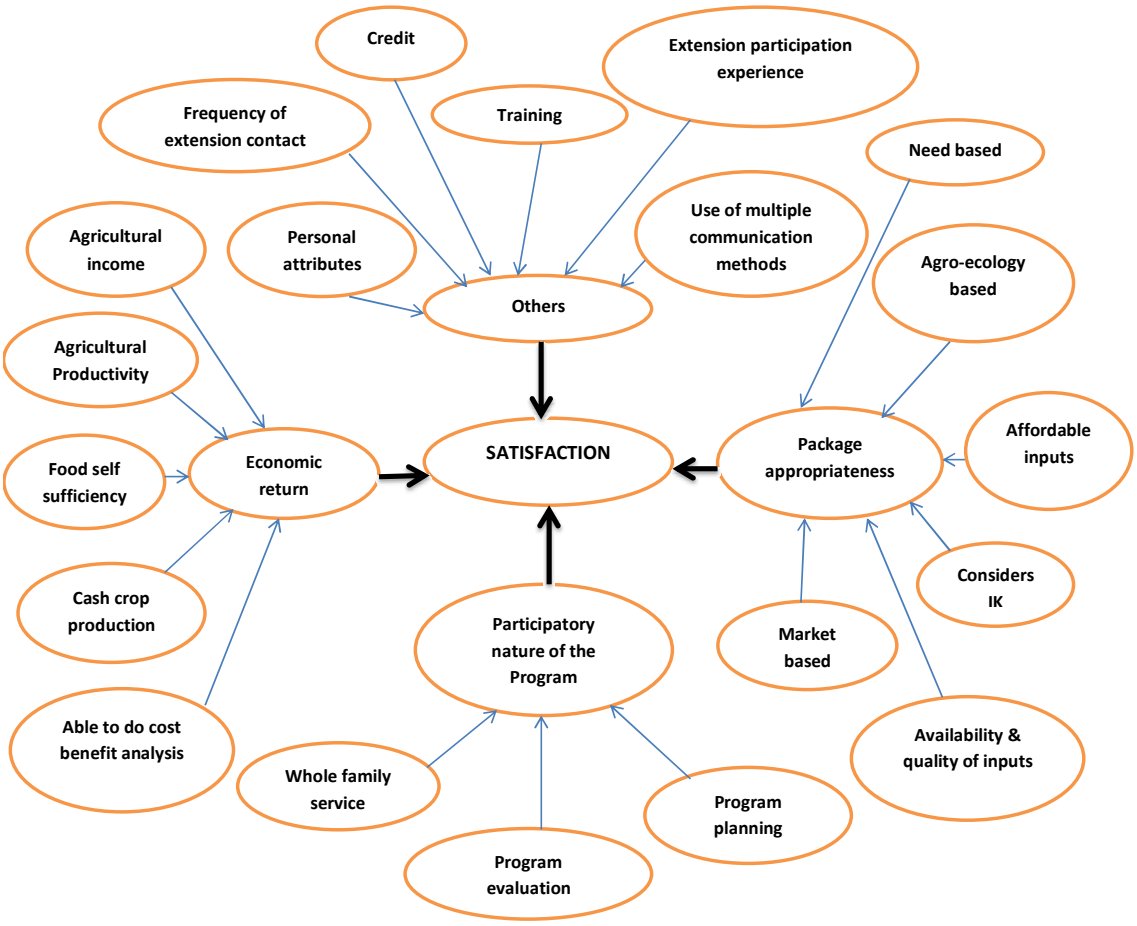

Figure 1. Proposed frame work of the study.

may affect the satisfaction rate of farmers as follows.

According to Lavis and Blackburn (1990) and Terry and Israel (2004) older farmers are more satisfied with the services provided by extension than younger farmers which may be related to their farm experience. On the contrary, older farmers are often viewed as less flexible, and less willing to engage in a new or innovative activity due to fear of risk whereas young farmers may be more risk averse to implement new technologies on their farm (Elias *et al*., 2013). Hence the influence of age on farmers' satisfaction is ambiguous.

Education increases the person's resources and the capacity to achieve goals but also it expands one's awareness of alternatives and the rewards expected from one's activities. Aphunu and Otoikhian, (2008) argue that, being literate is necessary in effective extension communication. The better the educational status, the better they wisely utilize extension services (Hegde, 2005; UNESCO, 2005). Moreover, Terry and Israel (2004) found that the higher clients' education level the greater their likelihood of satisfaction in extension service. In line with the reasoning, we propose that farmers` education status influence positively his/her satisfaction with the extension service.

Asset ownership which is usually used as a proxy to explain the wealth status of rural households in Ethiopia can be explained by different variables. These are family size, livestock ownership, and land that might help

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.16.4]

farmers to mitigate labour shortage, incomplete credit, insurance markets (Zerfu and Larsony, 2011; Ayalew and Deininger, 2012) and to implement extension advices effectively. Thus, we propose that asset ownership positively influences farmers' satisfaction with extension service.

Apart from personal and farm attributes, economic benefits gained from the service are major determinants for satisfaction. Among these outcomes perceived economic return is a major component. Benefits should be viewed as one of the most important investments a service provider makes to optimize users' performance, provide opportunities for them to succeed financially and gain sustainable competitive advantage. Therefore, the perceived economic return which was measured in terms of benefits gained after receiving extension service such as agricultural productivity, agricultural income, food self-sufficiency, able to produce cash crops and able to do cost benefit analysis influence positively farmers' satisfaction.

Perceived package appropriateness/relevance of extension packages is also a determinant factor for farmers' satisfaction. According to FAO (1995), the "relevance of agricultural extension activities" is defined as the relationship between existing formulated agricultural extension topics in the extension service with farmers' expressed problems in farm work and need areas for agricultural advice. In this study package appropriateness/relevance is conceptualized as the extent to which the objectives and real practice of the program are consistent with local requirements and priorities. To measure this concept the following indicators were used. Packages provided for farmers are need based, agro-ecology based, market based, affordable inputs, availability and quality of inputs and consider indigenous knowledge (IK) of farmers. As noted by Brennan (2005), people are more likely to accept solutions that are consistent with their local situation and culture.

Participatory approaches are considered an important aspect of improving agricultural extension provision to improve accountability and increase transparency in organizational performance. According to Cohen and Lemma (2011), the approach to extension service delivery until now remains top-down, with accountability mainly flowing upward. However it is important to engage beneficiaries in different activities especially in planning and evaluation of the extension program. Hence data was collected regarding the participatory nature of the extension program based on farmers' perception about their participation in planning, evaluation of extension activities and whether the service is whole family service or not.

Communication is a major component of agricultural extension and extension agents utilize various methods to deliver messages to their clienteles. Extension educators should choose different methods of information delivery to maximize program efficiency, effectiveness (Jones *et al*., 2007) and client satisfaction (Jones *et al*., 2010). In addition according to Faramarzi and Langerodi (2013), use of communication channels has positive and significant relationship with farmers' attitude towards extension service. In line with the reasoning, we propose frequent use of different communication methods influences farmers' satisfaction positively.

Credit access helps farmers through the alleviation of capital constraints and thus enables farmers to make timely purchases of inputs that they cannot afford from their own resources. Economic factors influence farmers' satisfaction (Damisa *et al*., 2008). Hence, we propose use of credit might have positive relationship with farmers' satisfaction. In addition access to training can also an important factor to build farmers' knowhow as well as skill and in turn it might have positive influence for farmers' satisfaction.

Frequency of extension contact on a regular bases help farmers' to learn and discuss in detail about agricultural extension knowledge and innovations which influence farmers' decision that enable them to take action. In this study, we assume that farmers with

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.16.4]

regular extension contact are more satisfied with the extension service. Furthermore, farmers' experience of the extension positively influences their satisfaction due to their acquaintance with exposure.

METHODOLOGY

Data Collection

The data used in this study were obtained from a household survey conducted in three selected *kebeles* of Gozamin district, East Gojam zone, North West Ethiopia in May and June 2012. A multi-stage sampling procedure was used to select the district, *kebeles* and farm households. In the first stage, Gozamin district was selected purposively for satisfying the following criteria; where extension program have been implemented for a relatively longer period of time, the availability of different agro-ecologies and its representativeness to the Ethiopian highlands. The Ethiopian highlands comprise nearly 45% of the total land area of 1.12 million square km, and support over 85% of the country's population that are overwhelmingly rural. The three *kebele*s were randomly selected out of the total 25 *kebele*s in the district. Random sampling technique was employed to select a total of 150 agricultural extension service user farm households. Sample farmers were identified from a list made available by the front-line extension workers, and then the information was confirmed by the farmers. The data were collected using structured and pre-tested questionnaire. Interviews and focus group discussions (consisting of nine groups, each of the groups consisting of 10 farmers) were used to compliment the data obtained through the field survey. Due to limited activities of animal husbandry and natural resource management extension sections, most (99%) of the respondents were crop extension package users.

Reliability and Validity of the Measurement Items

An exhaustive list of possible relevant variables with their measurement items (Table 1) was proposed based on literature review and discussion with experts in the field and academicians. This list included items reflecting perceived economic return from extension service, perceived relevance of extension packages, participatory nature of the extension program, use of multiple communication methods as well as all relevant personal and socio-economic factors. The list was then subjected to relevancy rating by a panel of 25 judges, constructed by subject experts and senior officials. Based on their rating for relevance of each variable to the topic of the study, Relevancy Quotients (RQ) were computed by dividing obtained score by potential score and then multiplying the result by 100. The statement, which has got a Relevancy Quotient value of 85 or more, was included in the data collection. To elicit responses on frequency and extent, the face validity of the selected items were ensured from relevancy rating and reliability analysis during pre-testing and after data collection. The result had the same standardized values (Cronbach's Alpha value), which is consistent with the recommended value of greater than or equal to 0.7 (Henseler *et al*., 2009; Hair *et al*., 2012), indicating their validity and reliability.

Empirical Methods

As stated earlier, the core variable in this study corresponds to farmers' satisfaction with agricultural extension service. To obtain the levels of farmers' satisfaction with agricultural extension service, respondents were asked the question "*What is your overall satisfaction with the current agricultural extension program?*" The farmers' response ranged from strongly dissatisfied (1) to strongly satisfied (5). Aside from their overall satisfaction farmers

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.16.4]

[DOR: 20.1001.1.16807073.2016.18.1.16.4] [Downloaded from jast.modares.ac.ir on 2024-10-12]

Table 1. Summary of variables and measurement items.

			Raw score		Aggregated score	
Variables	Description of measurement items	Measurement levels	Mean	*SE*	Mean	*SE*
Age	Household head age in year				45.71	10.39
Education	Household head education status	0= Illiterate, 1= Literate			0.49	0.42
Family size	Family size in adult equivalent				3.20	1.03
Livestock in TLU	Number of livestock ownership in Tropical Livestock Unit (TLU)				8.80	3.83
Extension experience	Extension participation experience in year				9.14	3.39
Training	Number of training received for the last 3 years				5.18	5.22
Credit	Use of credit for the last 3 years	0= No, 1= Yes			0.48	0.41
Off farm income	Value of off farm income gained the previous year (in birr)				311.27	877.8
Frequency of extension contact	Frequency of contact between extension workers and farmers	0= once a year, 1=monthly, 2= weekly			0.5	0.51
Perceived economic return	Agricultural productivity after receiving extension service.	0= Deteriorated, 1= Somewhat improved, 2= Improved	0.91	0.66	0.85	0.37
	Agricultural income after extension service		0.81	0.50		
	Condition of food self-sufficiency after extension service		0.85	0.50		
	Cash crop production after extension service		0.79	0.48		
	Ability to do cost benefit analysis		0.47	0.51		
Perceived package appropriateness	The extension packages are need based	0= Disagree, 1= Moderately agree, 2= Agree	0.21	0.41	0.43	0.29
	The extension packages are agro-ecology based		0.72	0.45		
	The extension packages are market based		0.40	0.49		
	The extension packages consider IK of farmers		0.47	0.50		
	The extension packages are affordable by farmers		0.22	0.42		
	The availability and quality of inputs are good		0.20	0.40		
Perceived participatory nature of the extension service	The extension service is whole family based	0= Disagree, 1= Moderately agree, 2= Agree	0	0	0.22	0.42
	Farmers are participating in planning and implementation of the service		0.25	0.55		
	Farmers are participating in extension evaluation		0.19	0.31		
use of multiple communication methods by extension workers	Home visit	0= Never, 1= Sometimes, 2= Frequently	0.78	0.73	0.37	0.23
	Farm visit		0.72	0.76		
	On farm demonstration		0.16	0.37		
	Demonstration at farmers training center		0.08	0.27		
	Extension workers office visit		0.81	0.39		
	Model farmers visit		0.60	0.49		
	Field day		0.85	0.35		
	Exhibition		0.01	0.12		
	Print media		0.01	0.12		
	Television		0.01	0.12		
	Radio		0.25	0.56		
	Telephone		0.12	0.42		

were asked about three different aspects of the program: (a) Relevance/appropriateness of packages; (b) Participatory nature of the program, and (c) Type of communication methods used by extension workers. To measure these aspects of the program several statements were prepared and used on a Likert-scale base. The response choices (see Table 1) are typically considered ordinal meaning, they represent sequentially ordered categories. To combine the multiple variables used for measuring the three aspects of the program, factor analysis are used to generate the composite score that describes the concept of the original word or phrase (Starkweather, 2012; Bravo *et al.*, 2012).

To identify determinants of satisfaction ordered logit mode is applied in this study. The model has been used widely to analyze ranked responses (Green and Hensher, 2009). The dependent variable was initially measured using a 5 point Likert-scale. However due to insufficient variability in the dependent variable, the analysis was conducted using a three item scale. Suppose that the values of Y represent the ordered items. Let Y_i be the level of satisfaction of a farmer, defined as:

$$Y_i = \begin{cases} 0: Not\ satisfied \\ 1: Moderatly\ satisfied \\ 2: Satisfied \end{cases} \quad (1)$$

Y is not a continuous value but categorical thus a larger value means better satisfaction with the service. In this case, there exists a known natural number (m), such that:

$$P[y_i \in \{0,1,2...m\}] = 1 \quad (2)$$

This type of data is usually modeled *via* latent (unobserved) variable model given by:

$$Y_i^* = \alpha + \beta_i X_i + \varepsilon \quad (3)$$

Where, Y_i^* = Latent (unobserved) measure of satisfaction faced by the respondents, X_i = A vector of explanatory variables, α, β_i = Coefficients to be estimated, and ε = A random error term (assumed to follow a standard normal distribution for logistic distribution). The observed or defined categorical satisfaction variable Y_i is determined from the model as follows:

$$Y_i = \begin{cases} 0 \rightarrow Not\ satisfied\ if\ Y_i^* \le 0 \\ 1 \rightarrow Moderatly\ satisfied\ if\ 0 < Y_i^* \le \mu_1 \\ 2 \rightarrow Satisfied\ if\ Y_i^* > \mu_1 \end{cases} \quad (4)$$

Where, μ_1 is a set of thresholds of the satisfaction gap to be estimated with the parameter vector β and α. The probability associated with the coded responses of an ordered probability model is as follows:

$$\Pr(Y_i = j) = \Pr(\mu_{j-1} < Y_i^* \le \mu_j) = \Pr(\mu_{j-1} < [\alpha + \beta_i X_i + \varepsilon] \le \mu_j) \quad (5)$$

Where, j represents the ranked value of satisfaction. The random error 'ε' is such that:

$$\Pr(Y_i = j) = \Pr(\mu_{j-1} < Y_i^* \le \mu_j) = F(\mu_j - \alpha - \beta_i X_i) - F(\mu_{j-1} - \alpha - \beta_i X_i) \quad (6)$$

In a simplified form,

$$\begin{cases} \Pr(Y_i = 0) = F(\alpha - \beta_i X_i) \\ \Pr(Y_i = 1) = F(\mu_i - \alpha - \beta_i X_i) - F(\alpha - \beta_i X_i) \\ \Pr(Y_i = 2) = 1 - F(\mu_i - \alpha - \beta_i X_i) \end{cases} \quad (7)$$

In ordered logit, $F(x)$ is specified as the logistic distribution function given by:

$$F(x) = \frac{\exp(x)}{[1 + \exp(x)]} \quad (8)$$

RESULTS AND DISCUSSION

Farmers Overall Satisfaction with Agricultural Extension Service

The results of the empirical analyses in Table 2 revealed that about 55% of the interviewees were satisfied whereas 45% of them were dissatisfied with the extension services, implying that the program still has a lot of room for improvement. Moreover, the mean aggregated score for

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.16.4]

Table 2. Frequencies of farmers' overall satisfaction with agricultural extension service.

	Raw score		Aggregated score	
Overall satisfaction level	Frequency	Percent	Frequency	Percent
Strongly dissatisfied	9	6.00		
Dissatisfied	58	38.67	0	44.67
Moderately satisfied	42	28.00	1	28.00
Satisfied	35	23.33	2	27.33
Strongly satisfied	6	4.00		

appropriateness/relevance of packages, participatory nature of the program and communication methods used by extension workers were less than 0.5 (Table 1). This implies that the extension service is not perceived by the farmers as relevant, participatory and practices multiple communication methods to disseminate agricultural knowledge and innovations.

Determinants of Farmers' Satisfaction with Agricultural Extension Service

The proportional odds assumption test ($\chi 2$= 10.76, P= 0.631) was undertaken. The result confirms that regressed parameters are the same across logits, simultaneously for all predictors, affirming that the ordered logistic model is relevant to explore the effect of agricultural extension service related determinants on the dependent variable (probability of farmer satisfaction). In other words, the insignificant chi-square value suggests that order logit's assumptions are met. The chi-square tests for goodness-of-fit of the model (Table 3) justify that the regression results are significant. As indicated in Table 4, family size, credit, off-farm income, perceived economic return and frequency of extension contact were significant determinants of farmers' satisfaction with agricultural extension

Table 3. Statistical tests for model appropriateness and goodness-of-fit.

Test	*Chi*-square	*P*-value
Proportional odds test	10.76	0.6310
Likelihood ratio	120.79	0.0000

Table 4. Order logit estimates and marginal effects of variables on farmers' satisfaction.

Variables	Parameter estimate	*SE*	*P*-value	Odds ratio
Age	-0.0217	0.0271	0.422	0.9785
Education	0.0756	0.2211	0.732	1.0787
Family size	0.4365	0.2539	0.086*	1.5473
Livestock (TLU)	-0.0036	0.0556	0.948	0.9964
Extension experience	-0.0378	0.0723	0.601	0.9629
Training	0.0643	0.0400	0.108	1.0664
Credit	-0.5528	0.4540	0.081*	0.3157
Off farm income	0.0005	0.0003	0.048**	1.0004
Frequency of extension contact	1.0594	0.5238	0.043**	2.8846
Perceived economic return	2.758	0.5509	0.000***	12.7801
Perceived package appropriateness	0.2846	0.7403	0.701	1.3293
Perceived participatory nature of the extension service	0.7602	0.5392	0.159	0.4676
Use of multiple communication methods	0.5438	0.9823	0.677	1.7226
Threshold value	2.88	0.431	0.000***	
Log likelihood	-86.9843			
Pseudo R^2	0.41			

*, ** and ***: Significant at 90, 95 and 99% respectively.

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.16.4]

service whereas other proposed predictors such as age, education, livestock ownership, extension experience, training, participatory nature of the program, perceived package appropriateness and use of multiple communication methods were not significant. Those variables whose odds coefficients are statistically insignificant are not included in the following discussion.

The effect of family size is positively significant, implying that for a unit increase in family size, the odds of being satisfied with agricultural extension service increases by factor of 1.5473, holding all other variables constant. This might be due to the labour intensive nature of the Ethiopian agriculture system. Households with better availability of family labor more likely implement the extension advices (like method of cultivation, plantation etc.) that help them to increase their agricultural productivity and other farm related benefits.

The role of off farm income for farmers' satisfaction with agricultural extension service is positively significant at 5%. For a unit increase in off farm income, the odds of being satisfied with agricultural extension service increases by a factor of 1.0, holding all other variables constant. This is attributed to the fact that the majority of resource poor farmers in Ethiopia lack the necessary means to implement extension advices. Hence those who are doing off farm activities to earn additional income contribute not only to the increase of total income, but, more importantly, to income stability that facilitates farmers to afford the expenses of extension service inputs. As noted by Diiro (2013) higher adoption intensity and expenditure on purchased inputs was observed among households with off-farm income relative to their counterparts without off-farm income.

Perceived economic return is highly significant at 1% for farmers' satisfaction with agricultural extension service. For a unit increase in perceived economic return score, the odds of being satisfied with agricultural extension service increases by a factor of 12.8, holding all other variables constant. As explained in previous sections, benefit or economic rewards provide opportunities to succeed financially and gain sustainable competitive advantage. Therefore, it is reasonable to say the higher economic return from extension service the greater likelihood of farmers' overall satisfaction with extension service. Our result is consistent with studies reported by Coughenour and Swanson (1988) who found that satisfaction with farming is associated with farmers' perceptions of the economic rewards of farming.

Frequency of extension contact is positively significant at 5% for farmers' satisfaction. For a unit increase in extension contact score, the odds of being satisfied with agricultural extension service increases by a factor of 2.89. As the extension worker is the main source of information and training of farmers in adopting new extension packages, their frequent contact with farmers is important for improving the effectiveness of the extension services.

Despite the importance of credit to alleviate capital constraints of farmers, surprisingly its effect on farmers' satisfaction with agricultural extension service is negatively significant. The probability of being satisfied with the agricultural extension service is 0.32 times smaller for credit-users than non-users. This could be partly attributed to the fact that credit users in the study area are influenced by the nature of credit arrangements that reduces the attractiveness of the service. To be eligible, a farmer must have repaid all previous loans (Dercon, 2000). This fact is also confirmed during our focus group discussion with farmers. If farmers are unable to pay the previous loans they would be forced to sell their asset such as livestock, house and others. Moreover, inconvenient payback time and lack of insurance in instances of crop failure (Carlesson *et al.*, 2005) are other factors for farmers' dissatisfaction. Furthermore, Spielman (2008) states that current credit distribution system is increasingly ineffective and fiscally unsustainable in the long run. However these are a tentative hypothesis to explain the

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.16.4]

unexpected result and needs further empirical study.

Why Farmers Are Dissatisfied With Agricultural Extension Service?

As shown in our results the majority of farmers were dissatisfied with the extension service. We have had focus group discussion with farmers to get answer for why most of them are dissatisfied. The majority of the farmers stated that lack of quality and diversified improved seeds, limited technology choices, high price of inputs (chemical fertilizer) and inconvenient loan system are the top reasons for their dissatisfaction with the extension service. Farmers indicated that there is serious problem with the quality, diversity and availability of improved seeds in the study area. They have experienced crop loss due to seed quality. In addition, even though they have great need to access different types of crop seeds, they only access improved seeds for maize, wheat and teff crops. Their opinion is consistent with previous literatures. For instance, according to Spielman *et al*. (2010) and DSA (2006) the role of improved seed is not overemphasized due to shortcomings in seed quality such as broken seed, low germination rates, presence of mixed seeds and timeliness of delivery that have been longstanding issues in Ethiopia. In other words, the existence of supply-driven instead of demand-driven extension service limits farmers' satisfaction. Therefore, it is important to note that packages provided for farmers should have high quality, be accessible, affordable and need-based to enhance farmers overall satisfaction with agricultural extension service.

Undefined boundary between the extension service and the local politics is another reason for farmers' dissatisfaction. Farmers' said that there is clear discrepancy among extension service users to access training, frequent extension advices and agricultural inputs. Those who are mobilizing the community to support the ruling party get better access to services than ordinary farmers. This fact is well confirmed by previous literatures such as World Bank (2010) which indicated that politicians provide public services to clients in exchange for political advantage. Other studies by Cohen and Lemma (2011) and Berhanu (2014) also stated that the implicit goal in establishing uncontested monopoly over the Ethiopia's agricultural extension system is driven by the lust for obtaining legitimacy and acceptance from smallholders whose support is instrumental in averting threats and boosting prospects for unhindered regime survival and security under the façade of periodic electoral exercises. Farmers also explained about their disappointment about the current situation of farmers' training centers. FTCs are established in each of the

Figure 2. Focus group interview as research instrument (photo taken by first author, June 2012).

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.16.4]

kebeles included in our study but none of them were functional as expected to form an important node between extension and farmers due to lack of basic infrastructures and facilities, trained human resource, and funding for operating costs.

CONCLUSIONS

This study examines the level of farmers' satisfaction with agricultural extension service and identifies determinant factors for farmers' satisfaction. Results of the analysis show that about 55% of sample farmers were satisfied with the existing agricultural extension service while the other 45% were dissatisfied, implying that the program still has a lot of room for improvement. Although the ordered logit model results do not show exactly which aspects of the program need improvement, it indicates which aspects the extension service providers should concentrate on and make improvement to increase the satisfaction of farmers. The empirical results revealed that perceived economic return, frequency of extension contact, off farm income and family size increase the probability of farmers' overall satisfaction with the agricultural extension service. As the perceived economic return is the most important driving factor for satisfaction, the extension service needs to focus on diversified farm technologies that suits with specific needs of farmers. Besides promotion of cash crop production remains important to enhance economic rewards from farming. More importantly, there is a need to go beyond "one size fits all" solutions and provide demand-driven extension service instead of the existing supply-driven approach. In this way, farmers' satisfaction with the service and acceptance of the extension program can increase. Moreover, frequency of extension contact is another important factor for farmers' satisfaction, implying that the need to arrange frequent extension contact that enables farmers to develop trust and make them accountable to adopt improved technologies. Generally, the extension service should maintain farmers' satisfaction as the sustainability of the program ultimately depends on the willingness of the farmers to continue participating in it, which is a reflection of their satisfaction. Indeed, agricultural extension program policy makers and implementers should monitor and evaluate the implementation process of the agricultural extension service on the ground to augment the reliability, sustainability and users expectation.

We acknowledge, however, the results of this study need to be viewed in the light of its limitations. These limitations, along with the study findings, suggest directions for further research. The study did not use large sample size and geographic area coverage which affect generalization of the findings. Besides, it did not include the reflection of other stakeholders. Hence, further studies remain important to obtain a more representative picture of farmers' satisfaction with agricultural extension service in Ethiopia.

REFERENCES

1. Abate, T., Shiferaw, B., Gebeyehu, S., Amsalu, B., Negash, K., Assefa K. and Hagmann, J. 2011. Systems and Partnership Approach to Agricultural Research for Development: Lessons from Ethiopia. *Outlook Agric.,* **40(3)**: 213–220.
2. Asfaw, S., Shiferaw, B., Simtowe, F. and Lipper, L. 2012. Impact of Agricultural Technologies on Smallholder Welfare: Evidence from Tanzania and Ethiopia. *Food Policy,* **37**: 283-295.
3. Aphunu, A. and Otoikhian, C. S. O. 2008. Farmers' Perception of the Effectiveness of Extension Agents of Delta State Agricultural Development Programme (DADP). *Afr. J. General Agric.,* **4(3)**: 165-169.
4. Ayalew, D. and Deininger, K. 2012. *Causes and Implications of Credit Rationing in Rural Ethiopia. The Importance of Spatial Variation.* Policy Research Working Paper No. 6096, The World Bank e-Library.
5. Berhanu, K. 2014. The Political Economy of Agricultural Extension in Ethiopia: Economic Growth and Political Control. *21th KUASS*

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.16.4]

(Kyoto University African Studies Seminar). http://jambo.africa.kyoto-u.ac.jp/kuass/KUASS%2821th%29.pdf
6. Bravo, C. P., Spiller, A. and Villalobos, P. 2012. Are Organic Growers Satisfied with the Certification System? A Causal Analysis of Farmers' Perceptions in Chile. *Int. Food Agribus. Man.,* **15(4)**: 115-136.
7. Brennan, M. A. 2005. *The Importance of Incorporating Local Culture into Community Development.* EDIS, Florida Cooperative Extension Service, University of Florida.
8. Bonger, T., Ayele, G. and Kumsa, T. 2004. *Agricultural Extension, Adoption and Diffusion in Ethiopia*. Research Report 1, Ethiopian Development Research Institute (EDRI), Addis Ababa.
9. Carlesson, F., Kohlin, G., Mekonnen, A. and Yusuf, M. 2005. *Are Agricultural Extension Packages What Ethiopian Farmers Want? A Stated Preference Analyses.* Working Paper No. 172, Department of Economics, Goteborg University.
10. CIA (Central Intelligence Agency). 2014. *The World Fact Book*. https://www.cia.gov/library/publications/the-world-factbook/geos/et.html
11. Cohen, M. J. and Lemma, M. 2011. Agricultural Extension Services and Gender Equality: An Institutional Analysis of Four Districts in Ethiopia. IFPRI Discussion Paper No. 01094. Washington, D. C.
12. Coughenour, C. M. and Swanson, L. E. 1988. Rewards, Values and Satisfactions with Farm Work. *Rural Soc.,* **53 (4)**: 442–459.
13. Diiro, G. M. 2013. Impact of Off-farm Income on Agricultural Technology Adoption Intensity and Productivity: Evidence from Rural Maize Farmers in Uganda. IFPRI Working Paper No. 11. Washington, D. C.
14. Damisa, M. A., Abdulsalam, Z. and Kehinde, A. 2008. Determinants of Farmers' Satisfaction with Their Irrigation System in Nigeria. *Trend. Agric. Econ.,* **1(1)**: 8-13.
15. Davis, K., Swanson, B., Amudavi, D., Ayalew, D., Flohrs ,A., Riese, J., Lamb, C. and Zerfu, E. 2010. *In-depth Assessment of the Public Agricultural Extension System of Ethiopia and Recommendations for Improvement*. IFPRI Discussion Paper No. 01041. Washington, D. C.
16. Dercon, S. 2000. *Growth and Poverty in Ethiopia in the 1990s: An Economic Perspective.* Centre for the Study of African Economies, Oxford University.
17. DSA (Development Studies Associates). 2006. *Study on Improving the Efficiency of Input Markets.* Ministry of Agriculture and Rural Development, Addis Ababa, Ethiopia.
18. EEA (Ethiopian Economics Association). 2006. Evaluation of the Ethiopian Agricultural Extension with Particular Emphasis on the Participatory Demonstration and Training Extension System (PADETES). Addis Ababa, Ethiopia.
19. Elias, A., Nohmi, M., Yasunobu, K. and Ishida, A. 2013. Effect of Agricultural Extension Program on Small Holders' Farm Productivity: Evidence from Three Peasant Associations in the Highlands of Ethiopia. *J. Agr. Sci.,* **5(8)**: 163-181.
20. FAO. 1995. Improving the Relevance and Effectiveness of Agricultural Extension Activities for Women Farmers: An André Mayer Research Study, FAO, Rome.
21. FAO. 2010. *Ethiopia Country Brief.* www.fao.org/countries/55528/en/eth/
22. Faramarzi, N. and Langerodi, M. C. 2013. Investigating Farmers' Attitude Regarding Advisory Services of Agricultural Technical and Engineering in Sari Township. *Int. J. Agric. Crop Sci.,* **5(23)**: 2878-2884.
23. Flores, C. C. and Sarandón, S. J. 2004. Limitations of Neoclassical Economics for Evaluating Sustainability of Agricultural Systems: Comparing Organic and Conventional Systems. *J. Sustain. Agr.,* **24 (2)**: 77–91.
24. Gebremedhin, B., Hoekstra D. and Tegegne, A. 2006. *Commercialization of Ethiopian Agriculture: Extension Service from Input Supplier to Knowledge Broker and Facilitator.* IPMS Working Paper No. 1, International Livestock Research Institute, Nairobi (Kenya).
25. Gebremedhin, B., Jalata, M. and Hoekstra, D. 2009. Smallholders, Institutional Services, and Commercial Transformation in Ethiopia. *J. Agr. Econ.,* **40**: 773-787.
26. Greene, W. and Hensher, D. 2009. Ordered Choices and Heterogeneity in Attribute Processing. *J. Transp. Econ. Pol.,* **44(3)**: 331-364.
27. Hair, J. F., Sarstedt, M., Pieper, T. and C. Ringle, M. 2012. The Use of Partial Least Squares Structural Equation Modeling in Strategic Management Research: A Review of Past Practices and Recommendations for Future Applications. *Long Range Plann.,* **45**: 320-340.

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.16.4]

28. Hegde, N.G. 2005. *Traditional Extension Methods in Modern Agriculture.* Indian Farming Special Issue on World Food Day, PP. 45-47
29. Henseler, J., Ringle, C. M. and Sinkovics, R. R. 2009. The Use of Partial Least Squares Path Modeling in International Marketing. *Advances in International Marketing,* 20: 277–319.
30. IRIN (Integrated Regional Information Networks). 2012. *Humanitarian News and Analysis Ethiopia*. IRIN, Nairobi (Kenya).
31. Jones, R., Goheen, A., Dhuyvetter, K., Kastens, T. and AmanorBoadu, V. 2007. Using Distance Education in Extension Programming. *J. Agr. Appl. Econ.,* **39(2)**: 265-274.
32. Jones, L. E., Diekmann, F. and Batte, M. T. 2010. Staying in Touch through Extension: An Analysis of Farmers' Use of Alternative Extension Information Products. *J. Agr. Appl. Econ.,* **42(2)**: 229-246.
33. Kassa, B. 2003. Agricultural Extension in Ethiopia: The Case of Participatory Demonstration and Training Extension System. *J. Soc. Dev. Afr.,* **18(1)**: 49–83.
34. Kassa, B. and Abebaw, D. 2004. Challenges Facing Agricultural Extension Agents: A Case Study from South-Western Ethiopia. *Afr. Dev. Rev.,* **16(1)**: 139–168.
35. Kassa, H. 2008. Agricultural Extension in Ethiopia: Historical Evolution, Relevant Policies and Challenges. In: "*Digest of Ethiopia's National Policies, Strategies and Programs*", (Ed.): Assefa, T.. Eclipse Printers, Addis Ababa.
36. Lavis, K R. **and** Blackburn, D. J**. 1990.** Extension Clientele Satisfaction. *J. Extension,* 28-36.
37. Lemma, T., Sehai, E. and Hoekstra, D. 2011. Status and Capacity of Farmer Training Centers (FTCs) in the Improving Productivity and Market Success (IPMS) Pilot Learning Woredas (PLWs). Retrieved from: http://cgspace.cgiar.org/handle/10568/16899
38. Raboca, H. 2006. Determinants of Customer Satisfaction and Service Quality: The Case of Romanian Public Services. *Transylv. Rev. Adm. Sci.,* **16**:124-135.
39. Ridaura, S. L., Masera, O. and Astier, M. 2002. Evaluating the Sustainability of Complex Socio-environmental Systems: The MESMIS Framework. *Ecol. Indic.,* **2 (2)**: 135–148.
40. Spielman, D. J., Davis, K., Negash, M. and Ayele, G. 2011. Rural Innovation Systems and Networks: Findings from a Study of Ethiopian Smallholders. *Agr. Hum. Value.,* **28**:195–212.
41. Spielman D. J., Byerlee, D., Alemu, D. and Kelemework, D. 2010. Policies to Promote Cereal Intensification in Ethiopia: The Search for Appropriate Public and Private Roles. *Food Policy,* **35**:185-194.
42. Spielman D. J. 2008. Encouraging Economic Growth in Ethiopia: Perspectives on Agricultural Input Markets. Agricultural Extension and Advisory Services, and Agricultural Education and Training. Briefing Note Prepared for DIFID. IFIPRI, Washington, D. C.
43. Starkweather, J. 2012. *How to Calculate Empirically Derived Composite or Indicator Scores?* Research and Statistical Support Consultant.
44. Terry, B. D. and Israel, G. D. 2004. Agent Performance and Customer Satisfaction. *J. Extension,* **42(6).** Available at: http://www.joe.org/joe/2004december/a4.php .
45. UNDP. 2013. *Human Development Report.* UNDP, New York. UNESCO. 2005. *Foundations of Adult Education in Africa*. UNESCO Institute for Education, Cape Town, South Africa.
46. USAID. 2013. Empowering Women through Agricultural Development in Ethiopia**.** https://www.usaid.gov
47. World Bank. 2010. Agriculture and Rural Development Series: Gender and Governance in Rural Service: Insight from India, Ghana, and Ethiopia. World Bank, Washington, DC.
48. World Bank. 2006. Ethiopia: Policies for Pro-poor Agricultural Growth. Washington, DC.
49. World Health Organization. 2000. *Client Satisfaction Evaluation*. Work Book 6. WHO, Geneva.
50. Zerfu, D. and Larsony, D. F. 2011. Incomplete Markets and Fertilizer Use: Evidence from Ethiopia.

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.16.4]

رضایتمندی کشاورزان از خدمات ترویج کشاورزی و عوامل موثر بر آن (مطالعه موردی: شمال غرب اتیوپی)

ع. الیاس، م. نوحمی، ک. یاسونوبو، و ا. ایشیدا

چکیده

رضایتمندی مشتری مهم ترین عنصر برای توسعه و حفظ اولویت‌ها و عملیات سازمانی است. بنابراین، ما رضایت کلی کشاورزان از ترویج خدمات کشاورزی و عوامل موثر بر آن را با استفاده از داده‌های جمع‌آوری شده در شمال غرب اتیوپی از صد و پنجاه کشاورز سودبر مورد بررسی قرار دادیم. یافته ها نشان می دهند که حدود ۵۵ درصد از مصاحبه شوندگان راضی بودند در حالی که ۴۵ درصد از آنها از خدمات ترویجی ناراضی بودند. این امر نشان می دهد که این برنامه هنوز هم نیاز به بهبود دارد. نتیجه تجربی مبتنی بر مدل مرتب لاجیت داد نشان داد که درک بازده اقتصادی، تماس ترویجی منظم، اندازه خانوار و درآمد خارج از مزرعه عوامل عمده رضایتمندی کشاورزان هستند. از سوی دیگر، گزینه‌های محدود فن آوری ، هزینه بالای نهاده‌ها، سیستم وام دشوار و مرز تعریف نشده بین خدمات ترویجی و سیاست‌های محلی از جمله دلایل ارایه شده توسط کشاورزان ناراضی بودند. بنابراین، از دیدگاه سیاست، یافته‌ها نشان دهنده نیاز به توسعه تقاضا محور خدمات ترویجی به جای خدمات عرضه محور می باشند. این خدمات باید با هدف افزایش پاداش از کشاورزی به منظور حفظ مشارکت و رضایتمندی کشاورزان و به تبع آن پایداری برنامه ترویجی صورت پذیرند.

[Downloaded from jast.modares.ac.ir on 2024-10-12]

[DOR: 20.1001.1.16807073.2016.18.1.16.4]