

Full Length Research Paper

Determinants of farm women participation in agricultural extension training programs: A case from selected district of Oromia Region of Ethiopia

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This study was conducted to determine factors influencing participation of women in modular training programs. Purposeful sampling method was employed to select three farmers training centers (FTCs). Based on this, cross-sectional data were collected from 150 women farmer respondents selected using systematic random sampling method. The study applied binary logit model to identify factors affecting women participation in modular training program. The logit model results revealed that family labor, information seeking behavior and extension contact had a significant and positive influence on the participation of women farmers in modular training programs.

Key words: Women, extension, participation, training.

INTRODUCTION

Most farmers in Ethiopia operate at the subsistence level in an extensive agricultural system, on which the national food security and agricultural development depends. Particularly the striking fact is that rural women take the leading role in agricultural activities, making up to 60-80% of labour force (Central Statistics Authority, 2008). However, their contributions to agriculture and rural development are seldom noticed (Tewodaj et al., 2009; Gurmesa, 2011). Recent evidence suggests that women farmers' productivity is constrained by a lack of appropriate skills training. Rural women's access to training and education is essential to develop livelihood strategies that build on the opportunities created. Agricultural extension services has however, long focused on male farmers, in keeping with the perception that "women do not farm", a perception that ignores the wide range of farming activities in which women engage. A widespread "perception bias" regarding the actual role of women in agriculture can contribute to a low priority of providing better services to women (Tewodaj et al., 2009; Tesfaye et al., n.d; Deribe, 2007). The perception bias prevents efforts being made to provide agricultural services to women. In Ethiopia, according to Ministry of Agriculture (2009), the Farmer Skills Training Centers

offer various skills-oriented courses on improved farming techniques. In this regards, more than 20 training modules have been prepared on different areas of agriculture (crop husbandry, animal husbandry, natural resource development, increasing agricultural productivity). Besides this, farmers training centers conduct modular green certificate training for six months and certificate training for 3 months.

Five Year Growth and Transformation Plan of Ethiopia (Ministry of Finance and Economic development, 2010) recognizes the pivotal role of agriculture and rural development by increasing male and female smallholder productivity and production supported through farmer training. The Education and Training Policy (1994) also emphasize the important role of education and training to promoting equality and to reducing poverty. According to the guidelines of Ministry of Agriculture, the objective of FTC-based modular trainings is to impart knowledge and develop skills of farmers in technical production and natural resource

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management as well as post-harvest, processing and marketing/entrepreneurship. In all the above, the number of women participation in modular training programs is very less. Though the policy document and guideline is there in writing in recognizing and developing their capacity, however the issue of its practicability is under question. Therefore, this study assesses the issues in status of women participation, the challenges and factors affecting farm women participation in modular training programs.

Objectives of the study

The specific objectives were:

- To analyze factors affecting women participation in modular training at Farmers Training Center.
- To explore determinates of women participation in modular training at Farmers Training Center.

RESEARCH METHODOLOGY

Sampling technique and sample size

The study population comprised all women farmers in three purposively selected villages of the study district where the FTCs were delivering modular training. Sample size of the study was determined depending on the nature of the study, cost, time, and cooperation of involved participants of the study. From several approaches to determine a sample size, this study applied a simplified formula provided by Yamane (1967) cited in Glenn (1992) to determine the required sample size at 95% confidence level, degree of variability = 0.05 and level of precision = 8% (0.08);

$$n = \frac{N}{1 + N(e)^2}$$

was employed for sample size

determination, where ‘N’ is total population for the study, ‘n’ is the sample size and ‘e’ is the margin of error at 0.08. A multi stage sampling was used to select the villages and sample households. At the first stage, out of the total 37 villages found in the district, 3 villages with FTCs providing modular training programs were selected purposefully. Then, 52 modular training women participants and 98 non-participants were selected according to the probability proportional to size through systematic random sampling.

Types and source of data

For this study, both qualitative and quantitative data types were used from primary and secondary sources available. Primary data were collected from sampled respondents on different variables hypothesized to affect women participation in modular training at FTCs using

semi-structured interview and check lists from the relevant respondents. From survey work, qualitative information was also gathered through focus group discussions, observations, and key informants interview. Secondary data were searched from journals, reports, proceedings, unpublished and published documents.

Method of data analysis

Based on the objective of the given study and nature of the data available, different data analysis methods were required using different approaches. Descriptive and inferential statistics were employed for the given objectives such as mean, percentage, frequencies and standard deviations, and graphs were used in a descriptive manner to summarize and categorize the data. Logistic regression model was employed to identify determinant factors that affect the participation of women farmer in modular training at FTCs. Some hypothesized variables were tested using chi-square and T-test accordingly. Moreover, it was also analyzed using qualitative data based on the interpretations and expectations of various notions. In this study, “participation in modular training” (dependent variable) was treated as dichotomous variable. Therefore, this study applied logit model to identify the determinants between women participants and non-participants in modular training at FTCs in the study area.

Following Gujarati (1995), Aldrich and Nelson (1984), and Hosmer and Lemeshow (1989), the functional form of logit model was specified as follows:

$$P_i = \frac{1}{1 + e^{-(\beta_0 + \chi_i)}} \tag{1}$$

We can write the above equations:

$$P_i = \frac{1}{1 + e^{-Z}} \tag{2}$$

Where, P_i was the probability of being participants in modular training program;

$$Z = \beta_0 + \beta_1\chi_1 + \beta_2\chi_2 + \dots + \beta_n\chi_n;$$

β_0 is an intercept;
 $\beta_1, \beta_2, \dots, \beta_n$ are slopes of the question;

χ_i = n explanatory variables.

The probability that a given woman farmer participant in the training was expressed by (2). Similarly, the probability for being non-participant was:

$$1 - P_i = \frac{1}{1 + e^{Z_i}} \tag{3}$$

$$\frac{P_i}{(1 - P_i)} = \frac{1 + e^{Z_i}}{1 + e^{-Z_i}} = e^{Z_i} \tag{4}$$

Then, $\frac{P_i}{(1-P_i)}$ was simply the odd ratio in favor of women participation in modular training.

Finally, taking the natural logarithm of equation (4), we obtained:

$$L_i = \ln \frac{P_i}{(1-P_i)} = z_i \text{-----} \quad (5)$$

If the disturbance term (U_i) is introduced, the logit model becomes:

$$z_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \text{-----} - \beta_n u_i \text{-----} \quad (6)$$

Where L_i is the odds ratio, which was not only linear in x_i but also linear in parameters and $x_i =$ vector of relevant explanatory variable.

RESULTS

Factors affecting women participation in modular training

Marital status

The respondents were categorized as single, married, divorced and widowed. However, the results show that most of the respondents fall under the married category. Out of the total sampled respondents, 68.7% were married and living with their husbands, 22% were widowed, while 6.7% and 2.7% were divorced and single respectively. Comparatively, married category was higher, and other categories were lower in non-participant category than participant category. The result from chi-square ($\chi^2=19.2281$, p-value=0.000) shows significant association between marital status and participation in modular training at less than one percent level of probability.

Educational level

The survey result reveals that education status of women farmers in the study area was considerably low. The majority of the respondents were illiterate. Among the total respondents, 53.3% were illiterate, 28% could read and write, 11.3% were primary level, 5.3% and 2% attended secondary school and above secondary level of education respectively. The illiteracy level was higher in participant group than non-participant group. Result of chi-square test ($\chi^2=8.4623$, p-value=0.076) indicated that there was significant association between education level and participation at less than ten percent probability level.

Information seeking behavior

Of the total respondents, 62% of women farmers rarely seek information, while 38% never seek information

about modular training. Thus, 92.3% and 45.9% rarely seek information, and 7.7% and 54.1% never seek information in participant and non-participant category respectively. Chi-square statistics ($\chi^2=31.0312$, p-value=0.000) indicate that there was significant association between participation and information seeking behavior at one percent probability level.

Cosmopolitans

Cosmopolitans were the degree of orientation of the respondent towards the social system to which she belongs. It provides more chances of exposure to external information. Out of the total respondents, 63.3% and 35.3% visited nearby town sometimes and once a week respectively. Thus, 69.4% and 28.6% women farmers of non-participant category visited nearby town sometimes and once a week, while in participant category, 51.9% and 48.1% women farmers visited nearby town sometimes and once a week respectively. The result of chi-square ($\chi^2=6.3656$, p-value=0.096) revealed that there was an association between visiting nearby town and participation in the training at ten percent probability level. The summary results of dummy/discrete explanatory variables of personal characteristics are presented in Table 1.

Land holding size

The size of the land reflects land using right as an important farm asset. It was assumed that the larger the farm size, the higher the possibility of participating in modular training at farmers' training center to get knowledge and skill of better practice of farming. In the study area, the survey result showed that there was variation in land holding size from zero to two and half hectare. The total mean land holding size was 0.92 ha, and average land holding size was 0.73 and 1.28 for non-participant and participant groups respectively. The average land holding size between respondent groups indicated that there was significant mean difference (t-value = -6.9375, p-value = 0.001) between participant and non-participant groups at less than one percent probability level.

Livestock ownership

In the study area, farmers undertake mixed farming where livestock rearing was one of the important economic activities. It was assumed that women farmers who have large number of livestock are likely to participate in modular training program. The major livestock reared in the study area were cattle, goat, sheep, donkey, mule and chicken. The number of livestock of the sample respondents owned was converted into total tropical unit (TLU) for the purpose of this study. Livestock ownership varied from zero to twelve

Table 1. Summary result of dummy/discrete explanatory variables of personal characteristics.

Variable	Category	Non-participant		Participant		Total		χ^2	p-value
		F	%	F	%	F	%		
Marital status	Single	1	1.0	3	5.8	4	2.7	19.2281***	0.000
	Married	79	80.6	24	46.2	103	68.7		
	Widowed	14	14.3	19	36.5	33	22.0		
	Divorced	4	4.1	6	11.5	10	6.7		
	Total	98	100	52	100	150	100		
Educational level	Illiterate	50	51.0	30	57.7	80	53.3	8.4623*	0.076
	Read and write	33	33.7	9	17.3	42	28.0		
	Primary	8	8.2	9	17.3	17	11.3		
	Secondary	4	4.1	4	7.7	8	5.3		
	Above secondary	3	3.1	0	0.0	3	2.0		
	Total	98	100	52	100	150	100		
Information seeking behavior	Never	53	54.1	4	7.7	57	38.0	31.0312***	0.000
	Rarely	45	45.9	48	92.3	93	62.0		
	Mostly	0	0.0	0	0.0	0	0.0		
	Total	98	100	52	100	150	100		
Cosmopolitans	Never	1	1.0	0	0.0	1	0.7	6.3556*	0.096
	Sometimes	68	69.4	27	51.9	95	63.3		
	One a week	28	28.6	25	48.1	53	35.3		
	Most often	1	1.0	0	0.0	1	0.7		
	Total	98	100	52	100	150	100		

* and *** are significant at <10% and <1% probability level, respectively.

among sample respondents, while total mean livestock ownership was 4.77. The mean livestock ownership between respondent groups indicated that there was significant mean difference (t-value = -6.8472, p-value = 0.000) at less than one percent probability level.

Participation in off/non-farm activities

Participation in off-farm and non-farm activities is an important economic activity to support livelihood of the rural people. It was expected to have negatively affect participation of women farmer in modular training program because farmers usually move from their residence to a different area. The major off/non-farm activities practiced in the area were selling labor, fire wood and charcoal selling, brewing, collecting crop straws, etc. From the total respondents, 51.3% did not participated in off/non-farm activities and 48.7% participated in off/non-farm activities. Participation in off/non-farm activities was higher for non-participant group than participant group. Thus, participation in off/non-farm activities was 56.1% for non-participant and 34.6% for participant of the respondent sample, while 65.4 and 43.9% respondents of the participant and non-

participant groups respectively did not participate in the activities. The chi-square result ($\chi^2=6.2903$, p-value=0.012) indicated that there was significant association between off/non-farm activities and participation in the training.

Access to irrigation

Access to irrigation scheme helps to increase agricultural productivity. Farmers can produce two to three times in a year rather than waiting traditionally for the rainy season. It is expected to have positive relationship with participation in modular training because access to irrigation encourages women farmers to look for knowledge and skills through training to increase production and productivity with access to irrigation. In the study area, farmers produce different items like chat, potato, apple, papaya, onion, cabbage, etc., for consumption and income purpose. Out of the total respondents, 46.7% had access to irrigation scheme, while 53.3% did not have access to irrigation scheme. Thus, 76.9% of participant category and 30.6% of non-participant category had access to irrigation scheme, while 69.4 and 23.1% of non-participant and participant

Table 2. Summary result of dummy explanatory variables of socio-economic factors.

Variable	Category	Non-participant		Participant		Total		χ^2	p-value
		F	%	F	%	F	%		
Off farm/non-farm activities	No	43	43.9	34	65.4	77	51.3	6.2903**	0.012
	Yes	55	56.1	18	34.6	73	48.7		
	Total	98	100	52	100	150	100		
Access to irrigation	No	68	69.4	12	23.1	80	53.3	29.2751***	0.000
	Yes	30	30.6	40	76.9	70	46.7		
	Total	98	100	52	100	150	100		

Source: Own survey; ** and *** are significant at <5% and <1% probability level respectively.

categories respectively did not access irrigation scheme. The chi-square result ($\chi^2=29.2751$, p-value=0.000) indicated that there was highly significant relationship between access to irrigation and participation in modular training (Table 2).

Family labor

Family labor is labor force at ten or greater age group in the family. Family labor in the family contributes for relaxation of women farmers to participate in modular training. It was calculated in labor equivalent for the purpose of this study. The maximum and minimum family labor was 0 and 4.5, and 1.75 and 7 for non-participant and participant categories respectively. The t-value (t-value = -9.6860, p-value = 0.000) showed that there was highly mean significant difference between respondent categories at less than one percent probability level.

Annual income from farm

Annual income from farm refers to annual farm income obtained from sale of crop, livestock and livestock products. The amount of income obtained from farm activities could encourage women farmers' participation in the training to get the skill and knowledge to invest in farm activities for more income. The survey result revealed that the maximum and minimum farm income of total sampled respondents from farm activities were 17000 and 1600 ETB, respectively. The average income from farm for participant group was 7336.5 ETB and for non-participant group was 6609.7 ETB. Comparatively, income from farm for the non-participant group is relatively dispersed than that for the participant group with standard deviation of 3554.8ETB and 3060.4ETB respectively. The survey result indicated that there was no significant mean difference (t-value= -1.2488, p-value=0.0213) between the two groups.

Attitude towards development agent

Attitude towards development agents (DAs) was the

degree of positive or negative opinion of women farmers towards development agents. Based on the survey scale result, responses were categorized into low, medium and high score categories. Thus, lower and higher score shows negative and positive women farmers' attitude towards development agents respectively. Out of the total respondents, 42.9% of non-participant category fall under low score and had negative attitude towards development agent, 57.1% fall under medium score, and there was no response for positive attitude towards development agents. Respondents in participant group had medium (55.8%) and positive (44.2) attitude towards development agent. The chi-square result ($\chi^2 =65.6432$, p-value=0.000) was significant at less than one percent probability level.

Women reproductive role

Women reproductive role includes roles like child bearing, and domestic tasks done by women required to guarantee the maintenance, welfare and reproduction of the family labor force. It is expected to greatly affect participation of women in modular training. According to the result of data collected from total sample respondents, 72% of the sample respondents said that reproductive role did not affect their participation in modular training, while 28% of sample respondents said that their participation in the training was affected by the reproductive role. Thus, 39.8% and 5.8% of the non-participant group and the participant group were respectively affected by reproductive role for the participation in modular training. The chi-square result ($\chi^2=16.9312$, p-value=0.000) showed that there was significant association between reproductive role and participation in the training at probability level of less than one percent (Table 3).

Institutional factors

Institutional factors include variables that might influence women farmers' participation in modular training program which include distance from FTC, extension contact, and

Table 3. Summary result of dummy explanatory variables of gender factors.

Variable	Category	Non-participant		Participant		Total		χ^2	p-value
		F	%	F	%	F	%		
Attitude towards Das	Low	42	42.9	0	0.0	42	28.0	65.6432***	0.000
	Medium	56	57.1	29	55.8	85	36.7		
	High	0	0.0	23	44.2	23	35.3		
	Total	98	100	52	100	150	100		
Women reproductive role	No	59	60.2	49	94.2	108	72	16.9312***	0.000
	Yes	39	39.8	3	5.8	42	28		
	Total	98	100	52	100	150	100		

*** is significant at <1% probability level.

Table 4. Frequency distribution extension contact by respondent category.

Frequency of extension contact	Respondent category					
	Non-Participant		Participant		Total	
	F	%	F	%	F	%
No contact	9	9.2	0	0	9	6
Once in four weeks	69	70.4	24	46.2	93	62
Once in three weeks	16	16.3	17	32.7	33	22
Once in two weeks	4	4.1	7	13.5	11	7.3
Once in a week	0	0	4	7.7	4	2.7
Total	98	100	52	100	150	
χ^2						23.7495***
p-value						0.000

Source: Own survey; *** is significant at <1% probability level.

social participation.

Distance from FTC

Distance from FTC was the distance of residence of sample respondents from FTC. Women farmers close to FTC would have chance to get information and advice from development agent, and able to participate in the modular training because it required them lesser amount of time and energy. The maximum and minimum distance for non-participant and participant groups was 0.5 and 4 km, and 0.1 and 3 km respectively, while the average distance for non-participant group was 2.59 and for participant group it was 1.85 km. The t-test statistics shows that there was highly significant mean difference (t-value=4.6527, p-value=0.000) between two groups and significant at less than one percent probability level.

Extension contact

Extension contact refers to women farmers contact with development agents to obtain agricultural extension

advisory service. Women farmers’ decision making regarding participation in modular training could be influenced by frequency of extension contact. According to the survey result, of the total sample respondents, 94% did have contact with development agents, while only 6% did not have contact with development agents. As shown in Table 4, all of the participant group and 90.8% of the non-participant group did have extension contact, while only 9.2% of the non-participant group did not have extension contact during data collection. The chi-square result ($\chi^2=23.7495$, p-value=0.000) indicated that there was significant association between the frequency of extension contact and participation in the training of the groups at probability level of less than one percent.

Social participation

A person’s affiliation and involvement in social activities or the involvement of a person in any formal and informal organization would have opportunities to various kinds of agricultural information, and this consequently leads to participation in modular training. There was not much

Table 5. Mean social participation score difference by respondent category

Type of participation	Respondent category	n	Mean	S.D	t-value	p-value
Degree of participation	Non-participant	98	3.43	1.478	-7.1145***	0.000
	Participant	52	5.44	1.934		
Frequency of participation	Non-participant	98	4.42	1.799	-4.5934***	0.000
	Participant	52	5.71	1.289		
Total score of participation	Non-participant	98	7.86	2.939	-6.5698***	0.000
	Participant	52	11.27	3.188		

Source: Own survey; *** is significant at <1% probability level.

Table 6. Summary results of continuous explanatory variables.

Variable	Respondent category				t-value	p-value
	Non-participant		Participant			
	Mean	SD	Mean	SD		
Land holding size	0.73	0.465	1.28	0.442	-6.9375***	0.000
Livestock ownership	4.93	1.913	5.36	2.342	-6.8472***	0.000
Family labor	1.63	1.299	3.86	1.421	-9.6860***	0.000
Income from farm	6609.7	3554.8	7336.5	3060.4	-1.2488NS	0.2137
Distance	2.59	0.977	1.85	0.814	4.6527***	0.000
Social participation	7.86	2.939	11.27	3.188	-6.5698***	0.000

Source: Own survey; *** is significant at <1% probability level, NS is not significant.

difference for participation in formal and informal organizations between the two groups. All of the sample respondents of the participant category, and 95.9% of the sample respondents of the non-participant category participated in formal/informal organizations. The chi-square result ($\chi^2=2.1806$, p-value=0.140) indicated that there was no significant association between participation in formal/informal organizations, and participation in the training. However, there was significant association in degree and frequency of participation with participation in modular training program. The average mean difference of degree and frequency of participation indicated that there was high mean difference between the participant and non-participant categories. Both t-value of degree (t-value=-7.1145, p-value=0.000) and frequency (t-value=-4.5934, p-value=0.000) of participation in formal and informal associations were significant at less than one percent probability level. It can be concluded that participation in formal/informal associations had no difference in modular training participation, but the role/status and frequency of participation, and their aggregation (t-value=-6.5698, p-value=0.000) had shown the mean difference between the two groups. Table 5 shows the degree, frequency and total score of social participation, and the score of mean difference by the respondent category.

Results of the binary logistic regression model

Here, this study sets to identify the most important hypothesized independent variables which are expected to have influence on participation in modular training have been present (Table 6). Identification of these factors alone is however not enough to stimulate policy actions unless the relative influence of each factor is known for priority based intervention. Here, binary logistic regression econometric model was used to see the relative influence of different personal, socio-economic, institutional and gender variables on participation and its intensity in modular training program at the training center. Prior to the estimation of the model parameters, it is crucial to look into the problem of multi-collinearity among the potential selected variables. There are two measures that are often suggested to test the existence of multi-collinearity. These are: variance inflation factor (VIF) for association among the continuous explanatory variables and contingency coefficients for dummy variables.

Results for women participation in modular training

The logit model results are used to study factors influencing the participation of women farmers in modular

training program. The results of the logistic regression model estimate indicate that out of the 14 explanatory variables included, five variables were found to have significant influence on the probability of being a participant in the modular training program. The variables considered significant to determine the participation of women farmers in modular training program were: family labor availability (FAMLAB), residence distance from training center (DISTANCE), reproductive role (REPROD), information seeking behavior (INSEKBEH), and frequency of extension contact (EXTCON). As the model results showed, the remaining nine explanatory variables were found to have no significant influence on the probability of being participant in the modular training program (Table 7). These variables include: marital status (MARISTA), educational level (EDULEV), cosmopolitans (COSMO), social participation (SOCIPAR), land holding size (LANDHOS), access to irrigation (IRRIGA), livestock ownership (LIVOWN), participation in off-farm/non-farm (PAROFNON), and income from farm (INCOFAR) are not statistically significant for women participation in modular training program. This might imply that there is no significant difference between the average marital status, educational level, cosmopolitans, social participation, land holding size, access to irrigation, livestock ownership, participation in off-farm/non-farm and income from farm of participants and non-participants in the modular training program. Subsequently, the significant explanatory variables, which have effects on participation of women farmers in the modular training program in the study are discussed.

Family labor (FAMLAB)

The result of the study has shown that availability of family labor positively influenced women participation in modular training at less than one percent significance level. The probable reason is that the availability of family labor would give women farmers free time and get relaxed for participation in modular training. Absence or shortage of family labor will affect women participation in modular training. As indicated in Table, a unit increase of family labor will result in 10.3% of increase of women participation in modular training at farmers training centers keeping all other things constant.

Distance

The increase of distance from training centers in the study area was negatively related to women participation in modular training, and significant at less than five percent significance level. Increase of residence distance from training centers take more time of women farmers, and as a result women farmers decline to participate in the training program. This study is in line with the study conducted by Kaba (2009) who stated that as DAs center

distance increases, the frequencies of DA to visit farmers decrease. Similarly, Fisseha (2009) found distance as constraint which causes an influence on implementing the mandatory role of FTCs. As shown in Table 7, a unit increase of distance results in the probability of decreasing by 8.9%, assuming other things are kept constant.

Reproductive role (REPROD)

As expected, women reproductive role was negatively related to women participation in the training at less than ten percent significance level. The obvious reason is that women reproductive role takes more of their time which affects their participation in modular training. This study is in agreement with the findings of Kaba (2009) and Mahilet (2005). They concluded that reproductive activities are tedious and require a lot of women's time, energy, and consume their productive working time, so that women are always so busy in day to day accomplishment of reproductive activities. The result of the model indicated that a unit increase in women reproductive role activity results in probability of decreasing women participation in modular training by 11.9% keeping other factors constant.

Information seeking behavior (INSEKBEH)

The survey result in the study area indicated that information seeking behavior was positively related to women participation in the training at less than five percent significance level. The probable reason is that as women farmers seek and expose themselves to agricultural related training from different sources, there is high chance of participation in modular training. This study matches with that of Asres (2005) who indicated that increase of information seeking behavior leads to increase of access to development information. The study is also in line with the study conducted by Deribe (2007) and TSION (2008). They put positive relation of information seeking behavior with agricultural information and extension of farm women, and farmer information concerning the given agro technologies packages respectively. As indicated in the Table of the model output, a unit increase of information seeking behavior results in the probability of 18.4% increase of women farmer participation in modular training.

Extension contact (EXTCON)

The frequency of extension contact is positively related to women participation in the training at one percent level of significance. The role of extension contact is great for women farmers to get advice and awareness about agricultural related training, hence modular training. The more women farmers frequently get extension contact, the more the probability of their participation in modular

Table 7. The maximum likelihood estimates of the binary logit model.

Variable	Coefficient	Standard error	Marginal effect	Z-value	P-value
Constant	-13.283	4.143	0.0724	-3.21	0.001***
MARISTA	0.023	0.631	0.0015	0.00	0.997
EDULEV	0.124	0.430	0.0083	0.29	0.772
FAMLAB	1.526	0.479	0.1026	3.18	0.001***
DISTANCE	-1.323	0.545	-0.0889	-2.42	0.015**
REPROD	-2.395	1.282	-0.1188	-1.87	0.062*
COSMO	0.039	0.765	0.0026	0.05	0.959
SOCIPAR	0.203	0.139	0.0136	1.46	0.145
INSEKBEH	2.733	1.314	0.1837	2.08	0.038**
EXTCON	1.366	0.557	0.0918	2.45	0.014***
LANDHOS	0.652	0.745	0.0438	0.88	0.381
IRRIGA	0.556	0.797	0.0380	0.70	0.485
LIVOWN	0.059	0.228	0.0039	0.26	0.795
PAROFNON	-0.636	0.769	-0.0429	-0.83	0.408
INCOFAR	0.018	0.013	0.0012	1.44	0.151

Source: Survey data model output (2012); -2 Log likelihood function = -28.804114; Pearson Chi-Square (χ^2) = 136; Pseudo R² = 0.7024; P = 0.0000.

***, ** and * are significant at $\leq 1\%$, $< 5\%$ and $< 10\%$ probability level, respectively.

training. This study is in line with the study conducted by Deribe (2007), who stated that women farmers' frequency of contact with DA increases frequency of participation on various extension activities. Other findings by Jemal (2010), Kaba (2009) and Tsion (2008) concluded that farmers with frequent extension contact had access to agricultural information, knowledge and participate in extension package. As shown in Table 7, a unit increase of frequency of extension contact results in the probability of increasing women participation in modular training by 9.2%, keeping other factors constant.

DISCUSSION

One of the finding barriers to access of women participation in modular training was women reproductive role. The scheduling of training should take into account women chores. Without understanding a woman's domestic duties, it may not be possible to meet her development needs effectively. Therefore, there should be actionable policy supported on how to deliver training to those women farmers with domestic work load. Women with shortage of family labor did not participate in modular training. As such, women with family labor shortage should be identified and giving training at the appropriate time and place according to their choice and flexible manner rather than intensive regular training. Another way of supporting women farmers with shortage of labor is mobilizing labor for them with the help of local administration to enable them participate in the training without stress.

Distance was found to be a barrier for women farmers'

participation in modular training. Women farmers within the distance of 3 km were found to be participants of the modular training. It was found that women within 2 to 3 km distance participated in the training with great difficulty. The trainers should consider the distance between farmers' residence and the place where the training is conducted. This can be done by organizing women trainees in one area and giving them training where they feel is the appropriate place and time for them. Therefore, training should not be fixed at one center unless it is important to do so when necessary.

Information seeking behavior was found as a positive factor for women farmer participation in the modular training. Women farmer information seekers about agricultural related training were found to be participants of modular training. Information about modular training should be made available at all levels. Local administration has to involve disseminating information about modular training, for example, in the form of announcement, community radio, field visit, etc.; specific type of information that women seek need to be identified; and sex disaggregate data need to be collected, documented, disseminated and used. Other institutions like input supplier, cooperatives/unions, NGOs including model farmers should involve in disseminating information about modular training. Women farmers with frequent extension contact were found to be participants of modular training. This implies women farmers with less frequency or no extension contact did not participate in modular training. Therefore, it is recommended that women farmers in respective village, and DAs should be sensitized to be responsive towards women farmers and

their needs. There should be complete list and systematic document of women farmers in each village, and plan accordingly. DAs should be recognized and there should be consideration of incentive for their work effort.

This study revealed that modular training in the study was implemented without the prior studies of training needs and interests of women farmers. Training Need Assessment should be prepared with full participation of women farmers so that they can participate and properly learn. This resulted in the design of inadequate duration and instructional methods which failed to meet the realities of women farmers in the area. Therefore, systematic training needs assessment processes should be conducted based on type, depth, and scope of problems and needs and diversified characteristics of women farmers. Illiteracy was one of the constraints of the finding which affect women farmers' participants at FTCs during modular training. Though extension agents tried to accommodate both literate and illiterate women farmers according to their capacity of learning, there was problem for illiterate farmers to catch up with important sessions of modular training. In some FTCs, extension agents have faced a problem in delivering the lecture to farmers, because illiterate farmers have difficulty in reading and writing. To overcome this problem, one of the FTCs has already started to teach illiterate farmers adult education program with cooperation from teachers in primary school, though it was inconsistent and inadequate. To solve the problem of illiteracy and to create educated farmers in rural areas, the concerned governmental and non-governmental organizations have to design a basic education program to eradicate illiteracy from the study area.

The results of this study indicated that there is lack and absence of FTCs facilities to meet women farmers need which influence women farmers' participants during modular training. Lack of water supply except one center, absence of child playing center, absence of refreshment, etc., were major problems women faced. Hence, there is a need to make concerted effort to capacitate the FTCs. Towards this end, policy makers should allocate sufficient resources to FTCs facilities which meet the need of the women farmers, and enhancement of NGOs working on women need and FTCs facilities. There was indication of lack of awareness in this study which should be given attention. Women participants in women's associations and community conversation because of intervention of some NGOs were found to be participants of modular training. Attitudinal problem and influence of culture can be met through organizing women in groups and giving them leadership positions. Effort has already been made in organizing women in associations, but more work should be done to strengthen it. It should be supported with policy formulations to involve women counterparts in the discussion of women issues to bring expected behavioral change. A policy guideline may be framed at national or regional levels to evolve special formal or

informal trainings focusing on women in all sectors where they play major roles.

In general, appropriate intervention strategies, and best experience sharing are needed at national and regional levels in order to make modular training at FTCs more attractive and need-based for women in the study area.

Conclusion

Rural women farmers make significant contribution to subsistence agriculture and work in all aspects of agriculture. Farmers training centers based modular training is among the development efforts undertaken by the government of Ethiopia to build the capacity of rural farmers in knowledge and skills. The study found that women participation in modular training is affected by different socio-economic, cultural, institutional and personal factors which deter women participation in modular training. Women farmers face significant barriers in accessing modular training and challenged at FTCs due to low literacy levels, domestic obligations, distance, lack of awareness and lack of facilities at the center. FTCs need to make training accessible to illiterate women, build literacy skills, ensure that training takes domestic duties into account, and help women realize the value of training in both the short and long run.

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