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Mechanisms Affecting Evaluation of Context Factors in the extension Plan of Accelerating Transfer of Findings in Damavand City from Perspective of Farmers and Experts

Peyman Falsafi[1], Mehdi Kerdari[2], Mohammad Sadiq[3], Somayeh Jangchi Kashani[4]

[1]Assistant Professor of Research, Agricultural Research, Education and Extension of Organization, Tehran, Iran

[2]Graduate student, Agricultural Extension and Education, Islamic Azad University GARMSAR

[3]Member of Young Researchers Club, Islamic Azad University of Garmsarelite

[4]Ph.D. Agricultural Development, Science and Research Branch, Islamic Azad University, Tehran, Iran

Corresponding author: Somayeh Jangchi Kashani, Agricultural Development, Science and Research Branch, Islamic Azad University, Tehran, Iran

Abstract: The survey aims to study the structures affecting evaluation of the context factors in the promotional plan of accelerating transfer of findings in the city of Damavand from perspective of Farmers and experts. The present study includes two statistical societies; the first society includes all farmers of Damavand city participating in the promotional plan of accelerating transfer of findings (N=1908) of which 114 persons were selected by Cochran formula using simple stratified random sampling method. The second statistical society includes experts running the extensional plan of accelerating transfer of findings in Damavand (N=40)for which census or full enumeration method was used to gather information due to limited number of the participants. The research tool was questionnaire reliability and validity of which was confirmed. Data analysis was performed using SPSS version 18.insufficientgovernment support of farmers, lack of social and cultural infrastructures, lack of awareness of the farmers and rejection of the project principles by the farmers, are prioritized by the experts as the first to fourth weaknesses of the plan of accelerating transfer of findings. Spearman correlation test showed there is a significant positive correlation between the farm size, experience of being selected as advanced farmers, experience of working as extension agents assistants, participation in extension, and evaluation of context factors of the plan of accelerating transfer of findings from farmers' viewpoint. The results of Stepwise Multivariable Regression showed that farm size, experience of working as extension agents assistants, and attending tension agents assistantsexplain62% of changes in the dependant variable (Evaluation of the context factors in the plan of accelerating transfer of findings from farmers' viewpoint).

Keywords: extension evaluation, Plan of Accelerating Transfer of Findings, Farmers, agricultural extension – Iran

Introduction

Rapid changes in agricultural knowledge and information and new approaches in agriculture in the world require different agricultural activists and especially farmers to continually engage in learning and teaching in order to play better roles in the development of agriculture (Zamani Miandashti and Malek Mohammadi, 2009). This can only be achieved by applying compatible research findings as a result of linking research and agricultural extension in the form of knowledge system and agricultural information (Nowruzi et al., 2006).Agricultural extension system is a complete set of organizations that supports and facilitates people's participation in agricultural production to solve problems and obtain information, skills and technologies to improve their welfare and livelihood (Birneret al., 2006).Agricultural extension is defined both as a system and a set of functions. Functions of the promotion system include technology transfer for sustainable agricultural production, transfer of management to mobilize and organize the farmers, rural communities and groups and transfer of capabilities for training, human resource development and to strengthen local capacity (Ponniahet al., 2008).

Experts believe that in addition to rapid transfer of innovations from research stations and pilot farms to farmers, particularly commercial farmers (Miller, 2006), the link between these two sectors (research and promotion)will lead to finding new problems, making decisions about the process and analysis of knowledge, information management and evaluation of outcomes and promotional activities (Katz, 2005).Thus, a necessary condition for achieving agricultural and rural development is a coherent relationship between the promotion, research and agriculture (Zamanipour, 2001).Without functional linkage between research and promotion, research is unable to increase innovations useful for rural people and promotion can not provide services that show problems of rural people or can not enable them to use opportunities (Plusset al., 2008). The link between research and agricultural extension leads to cooperation

between research and extension to find new problems, making decisions about what should be studied, decision making about process and analysis of knowledge, access to the means of agricultural production, information management and evaluation of outcomes and impacts of promotional activities (Katz, 2005). Nowruzi and Malek Mohammadi (2007) name the organizational integration of research and promotion, creation of interfaces, participation of senior researchers in on-the-job-training of promotional staff, creating a common organizational unit, performing field tests jointly, common locations for the two institutions and rotational movement of agricultural extension and research staff as the main mechanisms of communication between the research and promotion.

The plan of transfer of research findings is one of sub-systems of agricultural knowledge and information system which leads to deep link between elements such as farmers, administrative, research, and education staff, expert farmers, etc. and includes research- comparative projects, research - promotional projects and plans to accelerate the findings transfer (Zamani Miandashti and Malek Mohammadi, 2009).The plan of accelerating transfer of research findings aims to quantitative and qualitative increase and sustainable production of agricultural products by accelerating transfer of findings and technical issues, improving productivity and conservation of natural resources in order to produce healthy and clean products. The dominant approach in this plan is based on activity and coordination of sub-sectors, integration and appropriate use of existing resources, accelerating transfer of technical advice and research findings in the form of an integrated approach drawn from the conventional and participatory approach (Kalantari et al., 2008). This plan includes some methods such as training workshops, promotional visits, representative and model farms and guidance methods as well (Nowruzi et al., 2006).In implementation of such plans, research and agricultural extension should involve farmers from start to end of activities. In this process, agricultural researchers, with cooperation and support of agricultural extension, do

comparative research in the fields of farmers and if desired results are achieved, they will be extended in the region (Kalantari et al., 2008).

Since every plan and project at every stage can be deviated from its path by different social, economic and cultural factors and may fail to reach the desired goals, evaluation plans should be always considered as an important element in training-promotional programs. Evaluation of plans and projects is one of managerial tools that is effective in the process of review, correction and completion of methods (Feli et al., 2007).The purpose of evaluation is to describe the effect of educational actions or training programs. The purpose of interest in evaluation is the effectiveness of a training program. For this reason, in the evaluation, comparison between people is neither necessary nor desirable (Kiamanesh, 2006). Evaluation is one of the most effective measures that can facilitate the quality of works; measures that contribute to transparency of the current situation by identifying the current status, discovering strengths and weaknesses, and explaining planned or unplanned effects of program, in light of which, the authorities, while being aware of success of the program, become informed of comments of the program beneficiaries and in case of facing any question or problem, they will be successful in moving towards qualifying the activities, products, services, etc. by selecting the appropriate and timely strategies(Darani and Salehi, 2006).Many researchers have done research on evaluation of promotional plans as follows:

Bijani et al (2008) showed that wheat farmers benefiting from promotional training have better performance and generate more revenue in comparison with those who did not benefit from such promotional training. Efficiency coefficient to compare revenue of the two groups in regard to consumption expenditures in providing promotional training to them was 11.25. This indicates that in lieu of each Rial investment in promotional training, 11.25 Rialshave been added to the income of trained farmers compared with untrained group. Kalantari et al (2008) in their study concluded that variables and

characteristics of agricultural education, experience of being promotional worker or top farmer, familiarity with the project and rate of interest, the field adjacency to the center of agricultural services, number of farmers' contacts with experts, attending the classes and promotional visits, the number of loans received by the farmers are positively correlated with indicators of success and effectiveness of the projects. Lack of timely access to inputs, lack of adequate knowledge about application of technical advice, inefficiency of findings and recommendations, additional costs and non-compliance of the recommendation with the farmers' conditions are respectively considered as reasons of failure to implement technical recommendations of the transferred projects. Zamani Miandashti and Malek Mohammadi (2009) suggest that motivation and interest and active participation of the organizers, properly supply of liquidity requirements of the plans and supportive policies to continue the use of technologies by farmers were recognized as important factors influencing the plans that showed poor participation in the projects. Finally, the results showed that characteristics of the project, farmers and situational factors have significant effects on the effectiveness of the plans. Shiri et al (2011) showed a positive significant correlation between the plan effectiveness and referral of the plan observers to the farmers, the observer experts' use of teaching aids, the observer experts' attitudes towards the wheat pivotal plan, relationship of the observer experts with other educational institutions, use of various methods of training by the observer experts of wheat pivotal plan, number of farmers covered by the observer experts, technical support of the observer experts by Agriculture Jihad, the land area under supervision of the observer experts, obstacles and problems of the plan from viewpoint of the observer experts.

Hakimi (2012) concluded that there is a significant difference between the average yield before and after transfer of findings. Therefore the applied promotional methods have been compared and ranked as effective means of increasing wheat production. Up-to-date practices in the farm, training workshop and the week called "transfer of findings"

had the highest efficacy among them and up-to-date practices in the farm was detected as the best method for transferring data. Dinar et al (2007) states that public and private promotional services in agricultural production were competing with each other. Finally farms that used both public and private promotional services showed greater technical efficiency than those who did not use or only used one of them.AL-Sharafat et al (2012) argue that economic benefit obtained by the farmers who have benefited from promotional services is almost equal to those farmers who have not used these services. These findings indicate that there is not a significant difference between amounts of agricultural production of these two groups. Davis et al (2009) showed that lack of time and information are the main reasons for farmers' failure to participate in the promotional plans.

Stage and annual evaluation of the plan of accelerating transfer of findings includes volume and quality of performed activities and its results and it is possible to compare them with the pre-project situation. In addition to the stage and annual evaluation, evaluation study of the plan in the form of scientific research and survey leads to identify the effectiveness, strengths and weaknesses. However, in the present study, context dimension of the plan of accelerating findings transfer have been evaluated as part of CIPP (Context, Input, Process and Product) evaluation model.

Research Purposes

This study aims to investigate the structures affecting evaluation of the context factors in the promotional plan of accelerating transfer of findings in the city of Damavand from farmers' viewpoint. To this end, the following specific purposes are considered:

- To describe individual, agricultural and educational- promotional characteristics of farmers participating in the plan of accelerating data transfer in the city of Damavand;

- Evaluation of the context factors in the promotional plan of accelerating transfer of findings in the city of Damavand from perspective of farmers (assessment of infrastructure preparation, evaluation of operational availability of the farmers for the project and evaluation of the experts readiness to enter the plan);
- Identifying weaknesses of the plan of accelerating transfer of findings in the city of Damavand from perspective of experts and
- Explanation of changes of dependant variable (Evaluation of the context factors in the promotional plan of accelerating transfer of findings) based on the independent variables

Methodology

This study is a quantitative research in terms of nature, non-experimental research in terms of variables control, applied research in terms of purpose, and scientific-communicative research in terms of methodology. This study includes all 1908 farmers participated in the plan of accelerating transfer of findings (N=1908).The sample size is 114 persons according to Cochran formula (n=114). Then, regarding magnitude of each category of the statistical society (Absard, Roodehen, Damavand and Sarbandan / Jayan), the sample size was selected using random proportional stratified sampling from each class. It is worth noting that the weaknesses and challenges of the plan of accelerating transfer of findings were examined from perspective of all experts implementing the project (n=40). Due to their limited number, census or full enumeration method was used to gather information. The main tool for gathering the information was a questionnaire consisted of three parts which were developed considering drafts, objectives and hypotheses of the research. The first part of the questionnaire measures the dependent variable(Evaluation of the context factors in the plan of accelerating transfer of findings) in 3 indices of infrastructure preparation (4 items), operational availability of farmers (6 items) and experts' readiness (3 items).The

second section examines the individual, agricultural and education - promotional characteristics of the farmers and finally, in the last section, an open question was developed to identify weaknesses of the plan of accelerating transfer of findings from experts' viewpoint. To determine validity of the questionnaire, several copies of which were provided to the professors of Agricultural Extension and Education and experts of Agriculture Jihad Department of Damavand and necessary corrections were made upon their recommendations. A pilot test was conducted to test reliability of the research tool, and the questionnaire reliability was achieved 0.95 according to the obtained data and using special formula of Cronbach alpha coefficient in the software SPSS that is indicative of the tool reliability. To analyze the data, descriptive and inferential statistics were used. The variables were described using descriptive statistics such as frequency, frequency percent, cumulative percent, minimum, maximum, mean, standard deviation and coefficient of variation. Also Spearman Correlation Test and Multivariable Regressions were used to test the hypothesis.

Results

Individual, agricultural and education-promotional characteristics of farmers:

The average age of farmers was 44.45 years (44 years old) with Standard deviation of 12.10 that most of them (43 persons or 39.1 %) were in the age group of 36-46 years old. Most of respondents (35 persons or 32.4%) had high school diploma. The findings show that average family size of the respondents was 5 persons or 4.78 with SD =1.43. The farmers had already received loans for 3 times on average. Also average field experience of the majority of farmers was 25.7 years (26 years) with SD=12.85. The majority of farmers (41 or 39.40%) have had agricultural activities between 16 to 26 years. The respondents were engaged in farming and gardening activities on 24.92 hectares of land on average and most of respondents were owners of the lands (89.3%). The majority of farmers (88 persons or 80%) has not been selected as a top farmer. Most

of them (59 persons or 53.6%) had no experience of working as a promotional worker. Most of respondents (45 persons or 39.5%) participated a lot in the promotional-training classes. Distance of most of the farmers' field (23 persons or 23.2%) was 20 km to the nearest center of agricultural services.

Table 1- Description of individual, agricultural and education– promotional characteristics of the farmers (n=114)

Maximum	Minimize	**SD**	The mean	**Variable**
70	25	12/10	44/45	Age (years)
8	2	1/43	4/78	Family members (person)
10	0	2/70	3/06	Number of getting a loan (times)
55	5	12/85	25/70	Agricultural activities history (years)
127	0/30	26/97	24/92	Farm size (ha)
20	1	10/30	6/65	Distance from the farm to the nearest agricultural service center (km)

(Resource: the research findings)

Evaluation of context factors in the promotional plan of accelerating transfer of findings from the farmers' perspective:

In order to evaluate desirability of the context factors in the promotional plan of accelerating transfer of findings 3 indices of infrastructure preparation (4 items), operational availability of farmers (6 items) and experts' readiness (3 items) were used with 5-point Likert scale and the respondents were asked to specify suitability of the context factors from very few (1) to very much (5).The results indicate that "Employment record of agricultural researchers participating in the project" and "experience of agricultural promotional agents participating in the plan" were considered as the first priorities respectively with a variation coefficient of 17.83% and

18.01% and "experience of farmers as promotional worker" and "experience of being selected as a top farmer" were considered as the last priorities with variation coefficient of 33.47% and 35.16% (Table 2).

Table 2- Prioritization of evaluation of context factors in the plan of accelerating transfer of findings (n=114)

Maximum	Minimize	**SD**	The mean	
1	%17/83	0/56	3/14	Evaluation of context factors in the promotional plan of accelerating transfer of findings
2	%18/01	0/60	3/33	- Experience of agricultural researchers participating in the project
3	%18/59	0/61	3/28	- Experience of agricultural promotional agents participating in the plan
4	%20/84	0/54	2/59	- Timely access of farmers to inputs
5	%21/53	0/87	4/04	- Timely access of farmers to markets
6	%22/03	0/78	3/54	- Experience of farming and gardening
7	%23/28	0/78	3/35	- The willingness of farmers to develop the plan
8	%27/05	0/79	2/92	- Education of agricultural researchers participating in the project
9	%28/89	0/63	2/18	- Technical knowledge of farmers
10	%29/73	0/91	3/06	- Farmers' familiarity with the plan
11	%30/46	0/78	2/56	- Benefiting from tools, equipment and machinery
12	%33/47	0/77	2/30	- Guarantied and timely purchase of strategic products of the farmers
13	%35/16	0/83	2/36	- experience of farmers as promotional worker

1=very few, 2=few, 3=moderate, 4=much, 5=very much

(Resource: the research findings)

Also all items (benefiting from tools, instruments and machinery, timely access of farmers to inputs, timely access of farmers to markets, guarantied and timely purchase of strategic products of the farmers) were summed and re-coded in order to distribute frequency of farmers according to index of infrastructure preparation

With regard to the items and Likert scale used to assess the infrastructure preparation, after re-coding, the scale "very few" was scored as 1-4, the scale "few" was scored as 5-8, the scale "moderate" was scored as 9-12, the scale "much" was scored as 13-16 and the scale "very much" was scored as 17-20. The results show that the majority of farmers (64%) believe that the infrastructure preparation for the promotional plan of accelerating transfer of findings is in moderate level (Table 3).

Table 3- Distribution of respondents' frequency according to the preparation of infrastructures in the promotional plan of accelerating transfer of findings (n=114)

Congregational Percent	Percent Frequency	Frequency	**Status**
0	0	0	(1-4) Very Few
0	8/8	10	(5-8) Few
8/8	64	73	(9-12) Moderate
72/8	27/2	31	(13-16) Much
100	0	0	(17-20) Very much

(Resource: the research findings)

The above operation was performed on the index of farmers' operational availability (Farmers' familiarity with the project, technical knowledge of farmers, farming and gardening experience, farmers' experience of working as promotional workers, experience of being selected as top farmer, and the farmers' willingness to develop the

plan) and experts' readiness (education of the agricultural researchers participating in the project, employment record of the agricultural researchers participating in the project and work experience of agricultural promotional agents participating in the plan) and the results of Tables 4 and 5 show that most of respondents (81.60%) believe that they have moderate preparation to participate in the plan of accelerating transfer of findings. Also most of them (51.8%) stated that experts show moderate readiness to participate in the plan.

Table 4- Distribution of respondents' frequency in terms of operational availability in the promotional plan of accelerating transfer of findings (n=114)

Congregational Percent	Percent Frequency	Frequency	**Status**
0	0	0	(1-6) Very Few
0	0	0	(7-12) Few
81/6	81/6	93	(13-18) Moderate
97/4	15/8	18	(19-24) Much
100	2/6	3	(25-30) Very Much

(Resource: the research findings)

Table 5- Distribution of respondents' frequency in terms of experts' readiness in the promotional plan of accelerating transfer of findings (n=114)

Congregational Percent	Percent Frequency	Frequency	**Status**
0	0	0	(1-3) Very few
0	0	0	(4-6) Few
51/8	51/8	59	(7-9) Moderate
87/7	36	41	(10-12) Much
100	12/3	14	(13-15) Very much

(Resource: the research findings)

Correlation of evaluation of context factors in the promotional plan of accelerating transfer of findings from the farmers' perspective with other variables:

The results of the correlation indicates a positive significant correlation of 99% between the farm size, experience of being a top farmer, experience of working as a promotional worker and participation in the training-promotional classes and context factors of promotional plan of accelerating transfer of findings from farmers' perspective (Table 6).

Table 6- Total Results of the correlation between variables (n=114)

p	r	Correlation	Second Variable	First Variable
0/327	0/094	Spearman	Evaluation of context factors of promotional plan of accelerating transfer of findings	Age
0/740	−0/032	Spearman	Evaluation of context factors of promotional plan of accelerating transfer of findings	Education
0/695	−0/038	Spearman	Evaluation of context factors of promotional plan of accelerating transfer of findings	Family Members
0/199	0/128	Spearman	Evaluation of context factors of promotional plan of accelerating transfer of findings	Taken Loans
0/301	0/102	Spearman	Evaluation of context factors of promotional plan of accelerating transfer of findings	Agricultural Experience
0/001	0/311**	Spearman	Evaluation of context factors of promotional plan of accelerating transfer of findings	Farm Size
0/000	0/344**	Spearman	Evaluation of context factors of promotional plan of accelerating transfer of findings	Experience of being selected as a top farmer
0/000	0/401**	Spearman	Evaluation of context factors of promotional plan of accelerating transfer of findings	Experience of working as a promotional agent
0/000	0/507**	Spearman	Evaluation of context factors of promotional plan of accelerating transfer of findings	Participation in Training-Promotional Classes
0/576	0/057	Spearman	Evaluation of context factors of promotional plan of accelerating transfer of findings	The Farm distance to the nearest center of agricultural services

**Significance level 99%

(Resource: the research findings)

Analysis of explanatory variables in the evaluation ofcontext factors in the promotional plan of accelerating transfer of findings from the farmers' perspective:

Linear Multivariate Regression is a method by which the predictor variables create a regression equation to summary the measured values of prediction in one formula. In this research a stepwise regression has been used by SPSS software to obtain regression equation. To obtain the regression equation of evaluation of context factors in the plan of accelerating transfer of findings from the farmers' perspective, after entering all significant independent variables, farm size, experience of working as promotional agent and participation in the training-promotional classes remained in the equation. These variables could explain 62% (R^2=0.629) of changes in the criterion variable (Evaluation of the context factors in the plan of accelerating transfer of findings from the farmers' perspective). Farm size shows more beta (β=0.527) than other variables which were entered into the regression. As a result it plays more roles in prediction of the variable of evaluation of context factors in the plan of accelerating transfer of findings from the farmers' perspective (Table 7).

Table 7- Analysis of Linear Multivariate Regression (Independent variable: Evaluation of context factors in the plan of accelerating transfer of findings from the farmers' perspective) (n=114)

Sig	t	Beta	B	Adjusted R Square	R square	R	Independent Variable
0/000	28/397	-----	30/257	-----	-----	----	Constant
0/000	8/537	0/527	0/078	0/398	0/403	0/635	(x_1) Farm Size
0/000	5/276	0/316	0/560	0/543	0/552	0/743	experience of working as (x_2) promotional agent
0/000	5/084	0/322	1/411	0/629	0/640	0/800	participation in the Training- (x_3)promotional classes
R=0/800				*R square*=0/640		*A.d.R*^{2}=0/629	

(Resource: the research findings)

Totally, using the results of table 7, the following regression equation can be presented based on beta for the whole society:

$Y = 0.527(X_1) + 0.316(X_2) + 0.322(X_3)$

Weaknesses of promotional plan of accelerating transfer of findings from the Experts' perspective:

In order to identify weaknesses of the plan of accelerating transfer of findings, an open question was considered to explain challenges and problems of the plan by the experts. Results of Table 8 indicate that the highest frequency of the plan weaknesses relates to lack of support of the farmers by the government (39 cases), lack of cultural and social infrastructures (39 cases),lack of knowledge of farmers (38 cases) and rejection of the principles of the project by the farmers (38 cases).

Table 8- Weaknesses of the promotional plan of accelerating transfer of findings from the experts' perspective (n=40)

Number of Respondents	**Weaknesses of the promotional plan of accelerating transfer of findings from the experts' perspective**
39	- Lack of government support of farmers
39	- Lack of social and cultural infrastructures
38	- Lack of knowledge of farmers
38	- Rejection of the project principles by the farmers
30	- Distance of the village from the Agricultural Jihad Centers
29	- Inadequate information about the project
29	- Lack of access to information about the project
20	- High production costs in the early years
16	- Lack of communication of the farmers with the plan
16	- Limited to a certain number of farmers
15	- Lack of continuity of the plan
15	- Absence of agricultural researchers and experts in the fields
13	- Drought and water shortage
13	- Lack of liquidity of farmers
13	- Lack of security for crops and livestock
12	- Lack of support of private sector
10	- Lease of the area agricultural lands by illegal Afghan citizens
10	- Lack of culture in accordance with climatic conditions
10	- The absence of a model for visits by farmers

(Resource: the research findings)

Discussion and Conclusion:

The average age of farmers was 44 years. Most of them (43 persons or 39.1%) were in the age group of 36-46 years old. The majority of respondents (35 persons or 32.4%) had high school diploma. Average family size of the respondents was 5 persons with SD =1.43. The farmers had already received loans for 3 times on average. Also average field experience of most of farmers was 26 years with SD=12.85. The respondents were engaged in farming and gardening activities on 24.92 hectares of land on average. Most of farmers (80%) have not been selected as a top farmer. Most of them (53.6%) had no experience of working as a promotional agent. The majority of respondents (39.5%) participated a lot in the promotional- training classes. Distance of Most of farms (23.2%) was 20 km to the nearest center of agricultural services.

The correlation analysis showed that there is a positive significant correlation of 99% between the farm size, experience of being a top farmer, experience of working as a promotional agent and participation in the training-promotional classes and context factors of promotional plan of accelerating transfer of findings from farmers' perspective. Bijani et al (2008), Kalantari et al (2008), Zamani Miandashti and Malek Mohammadi (2009), Shiri et al (2011), Hakimi (2012) and Dinaretal (2007) found similar results in their research. AL-Sharafat et al (2012) concluded that there is no deference between economic benefits of farmers who have used promotional services with those who have not used the services.

Variables "farm size, experience of working as a promotional agent and participation in the training-promotional classes" could explain 62% (R^2=0.629) of changes in the criterion variable (Evaluation of the context factors in the plan of accelerating transfer of findings from the farmers' perspective).

Weaknesses of the plan include lack of governmental support of the farmers, lack of social and cultural infrastructures, lack of knowledge of farmers and rejection of the

project principles by the farmers. Kalantari et al (2008), Zamani Miandashti and Malek Mohammadi (2009), and Davis et al (2009) in their investigation pointed to lack of government support and lack of knowledge of the farmers.

Suggestions

As farm size has been entered into the regression equation, therefore it is suggested that larger farms, owners of which are able to take more risks, are used as model operation units in order to become a model for other farmers especially smallholder farmers.

Since the level of participation in the promotional-training classes has been entered into the regression equation, therefore it is suggested that training classes are heldfor the farmers to introduce objectives, principles and function of the plan of accelerating transfer of findings and benefits of full implementation of the plan are explained in these classes so that the plan would be introduced to the farmers.

As lack of knowledge of farmers is considered as one of the main weaknesses of the plan of accelerating transfer of findings, therefore it is recommended that training classes are held with the aim of improving farmers' information.

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