

## Evaluating the Role of Rural Production Cooperatives to Promote Technical Knowledge of Farmers Case study: Wheat Farmers in Fars Province

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**Abstract:** Considering the importance of successful functioning of production cooperatives in achieving the objectives of macro development, identifying obstacles over their way are very important. Low level of education and technical knowledge as one of the most important barriers for the development and success of this cooperative is considered. In this study, the role of production cooperatives of Fars Province in promoting the level of technical knowledge of Wheat Farmers was assessed. The required data were collected by survey research from 148 member and non-member Wheat Farmers of production cooperatives in this province. In order to analyze data, factorial analysis of variance was used. The results showed that the individual factors including literacy level and age of farmers besides their farm size haven't any significant effect on improving the level of farmers' knowledge. In addition, membership in the cooperatives alone as influential factor on increasing the level of technical knowledge of farmers was not found. While the effects of the region and followed, interactions of cultivation area and membership of cooperatives on the level of farmers technical knowledge was significant. Meanwhile, the use of primitive services was not the reason of superior of Wheat farmers' innovation index in different cities. Thus, the affective force of primitive services hasn't operated as an efficient service in all cities for improving the level of technical knowledge.

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### 1. Introduction

In our era, cooperation is a suitable lever for economical development, which can be effective along with government policies to improve the conditions of life, work, and production and to promote the level of income and social condition of people. In this respect, states of many developing countries have tried to create a kind of social-economic system, in which a special position for department of cooperation is considered and cooperative system, in social-economic system of such countries, as a kind of "third method" between Western Capitalist System and Government system and eastern-focusing system has been selected and noticed (Cooperative, 1992).

Cooperatives play a pivotal role in creating a sustainable society (International Labor Office, 1997). Cooperatives can help to the vast majority of small producers to purchase basic machinery and consumer goods, finance, production and marketing of agricultural products. Also, the cooperatives are able to help the affair of collecting capitals of rural regions and reuse those capitals in agricultural-industrial projects. Also, the cooperatives through purchase, production and marketing scale (macro) reduce unit costs of production and the production of their stronger competitiveness. Furthermore, for the government organizations, to solve the problems of

agriculture community, through cooperatives is easier and more economical and the affair of extension services if it is done through cooperatives could be more effective and efficient (Nasser, 1993).

The object of cooperative movement in developing territories is not only to renew the old-economic methods, but also this; a fairer economic-social condition will be established. For example, today, most of these countries in the agricultural sector, small and even medium-sized agricultural units, able to provide sufficient productivity and efficiency and to achieve satisfactory production targets, even the prices are reasonable and appropriate (Nahavandi, 1970 and Abdurrahman and Smith, 1996). Consequently, regarding economy, it's been tried to prevent division of agricultural units and wherever the division is done, in the field of solidarity of farmers and concentration of their activities, the necessary efforts and guidance will be done (Nahavandi, 1970).

Paying attention to in many countries (especially developing countries), creating fundamental change in agriculture activity and to mechanize it needs more investment. This investment certainly for the owners of small farms is impossible financially and is not economy. But, this important problem is not remained unsolved and today, farmers in many regions of the world, with mutual

corporation and using their small savings, via founding cooperative could purchase the best agricultural technologies collectively and with joint capital and, in turn, each get advantage from their agricultural affairs (Nahid, 1968). Thus, one the most effective approaches in order to gain a "successful pattern of agriculture advancement and finally", macro objectives of development which contain economic growth, production increase, fairly distribution of income and finally the practical cooperation of rural community in different social-civil activities, formation of such people in the mould of groups and communities named "cooperatives of production", as it in addition to attempt to increase production and fairer distribution, its benefits create a propitious field to institutionalize their partnerships.

One important point which arises from reviewing socio-economic impacts of cooperative companies is that, although, there's a surface similarity regarding the name and financial specifications between cooperatives of different countries in the world, however, cooperative movement in third- countries of the world, from the viewpoint of conceptual, opinionative principles and economic conditions, different from cooperatives of industrial countries of Europe and America should be reviewed and judged (Tavon, 1992). Levee (1983), pioneered and notices that all cooperatives do not behave the same, even if, have been placed inside of country and under the same objectives and rules. As an example, in country of Switzerland which is located under net coverage about 900 crop cooperative, structure, function and main activities of local cooperatives from region to region is different and cooperatives adapted them with the needs of members and customers. Meanwhile, these differences are as result of unique long-term development of each cooperative (Azimi, 1996).

After revolution, designers of constitutional rule of Islamic Republic of Iran, considering the unpleasant experiences of the function of government and private sector, have concluded that a third way should be chosen to attract the partnership of the vast number of people in society. Thus, Iran's economic system based on three public(government), private and cooperative was established.

During recent years, the effort to create and establish production cooperatives was one of five-year plans of economic development in country. These associations mainly with the aim of leveling and irrigation systems integration and implementation of agricultural lands have been established. But, establishing such associations can be successful if the effective factors and structures over success or no success of them were being

examined, thus, with recognizing more behaviors of such associations can improve their function.

Study of the causes of success and failure is broad dimensions of rural cooperatives. The founding idea of cooperatives has been repeatedly tested (Ling and Lybrand, 1994). However, many studies have addressed the effectiveness of cooperatives is limited (Astapasydis, 1992). Some experts in this case a series of problems and some problems with one or more specific (generally "the case studies), have been mentioned.

Sidhoo and Sidhoo (1990) when examining the causes of success and nonsuccess of service cooperatives and cooperative of milk producers in Punjab, India, concluded that successful cooperatives have older institutional history, more members, more credits and inputs per each member, higher income and profit and more membership of small farmers in cooperative.

Shojakhany (1994), mentioned problems of the cooperative movement in India, including ignoring the cooperative principles, less government oversight of these organizations, the low level of public awareness and education of cooperative members, misuse of credit and loans, poor management, interference and activities and duties as the administrative structures of their special role in development. Canada (1994), knows the problems of agricultural cooperatives in the state of Andhra Pradesh in India include lack of awareness, motivation, participation, managerial skills and knows the spirit of democracy among members.

In a study by Padyal (1992), which is performed in the case of one of successful cooperatives in Bangladesh, one of the reasons for success was to place great importance for the members to participate in their meetings weekly, respectively.

Akpeh (1994), in Nigeria, studied effective structures on expansion of agricultural cooperatives and concludes that low level education of members (as an obstacle), however doesn't have a meaningful relationship with expansion of agricultural cooperatives, but causes weakening the active participation of members in the cooperative activities. Another research, which is performed by Ladle and colleagues (1994) in Nigeria, active partnership and education of members is mentioned as one structure which causes increase the number of members in agricultural cooperatives.

Stiglitz (1993), Stability credit policies is necessary for success of cooperative and believed that cooperative can't remained un-stability economic condition.

Jung (1992), states that cooperatives in Korea, couldn't provide causes of improvement and

empowering of cultivative services. He states that in the past in Korea, like most Asian countries, the attention was merely on production cooperatives, not on marketing, as in his belief, this subject is a weakness point of cooperative.

Some studies indicate the effect of "extension services" on improving the performance of cooperatives (Eskandari, 1992 and Tavon, 1994). Whereas, one of the duties of system is to educate farmers how to organize them effectively (Karami & Fanaie 1994), Khana (1993), indicated in a case study that nevertheless the benefits of cooperative, orientation of Marvjan is more towards non-cooperative guidelines.

Attwood (1989) believes that members of one cooperative should all help each other and by applying different technologies and innovations increase their products and vary them and also in other hand, by reducing costs, finish their production cheaper. So, completion can help cooperative and its firmness that the conception of cooperative and spirit of cooperation is perceived by members well. In the case of the cooperatives are able to compete with many divisions and its competitors.

Also, in Iran, regarding the role and importance of production cooperatives in process of rural development, in different experimental studies, planning viewpoints and to analyze this role have been examined. In this regard, Sadiqi and Darvishinia (2002) believe that farming activities of farmers in the mould of cooperatives result in more access of members of Cooperative Companies of Province of Mazandaran to Agricultural Machineries and this causes to improve the crop yield and promote their economic condition, as well. Also, educational-extension programs can play an important role in the success of cooperatives. Roohani (2000) indicated that by applying seeder machine and to expand the mechanization in cooperatives of Province of Hamadan, especially leveling the lands and to expand in-line cultivation and also presenting Continuous Educational- Promotive Services by experts of Cooperative Companies, optimization of production factors in companies toward control villages has been increased. Also, the results of Taherkhani & Heydari Saraban (2004) indicate that membership in production cooperatives is led to job creation and increase the income of villagers and finally advancement of rural regions of city of Meshkinshahr. In another study, Pezeshki Raad and Kiani Mehr (2001) investigated the role of cooperatives in rural production to improve the technical and economic state of wheat cultivator from city of Sabzevar. Results of this study showed that cases of receiving bank loan, number of banks, number of irrigation, optimum usage of seed and

level of technical knowledge, 42% of dependent variable changes(yield) and experiences, age, yield, optimum usage of pesticides and the total cost per hectare, 84 percent of dependent variable of net income is explained.

Thus, the functional significance of cooperative success in achieving macro-development goals, identifying obstacles is of great significance. Accordingly, we can adopt appropriate policies and strategies can take step to overcome the existing problems and final success of cooperatives. Accordingly, there's no doubt that by promoting the level of technical knowledge of members, we can overcome economic problems of cooperatives and do effective services for farmers via cooperatives. Now, the basic question here is that whether these cooperatives could be able to play their roles in this field? Then, appointing and to analyze the role of cooperatives of Province of Fars to promote the level of technical knowledge of wheat farmers and role of promotive services in this category, as main objective of this study, were studied.

## 2. Material and Methods

Applied technique in order to do this research, was Survey Research, that in which, after determining the society and recognize the case study region, by doing a key study and analyze it's results and do necessary reforms in measuring tools, to collect data in mentioned population was attempted. In past years, the Fars Province from the viewpoint of products such as irrigated wheat, rain fed barley and corn got the first place in country. Cooperative associations of producers in this province, related to matters of agricultural production, through provision of inputs (provide fertilizer, pesticides, seeds, etc.) and planning of different crops activities, as cooperative, which their primitive aim has been to produce. Based on statistics announced at the end of 2007, 171 production cooperatives in 792 villages of this province with total members of 52,411 persons have been reordered (Agricultural-e-Jihad Organization of Fars Province, 2007). Whereas, the purposes of this research was to investigate the role of these cooperatives to promote the technical knowledge of farmers, examine this level regarding information of one special product has been considered. Examinations showed that from total agricultural land excluding fallow annually over the province is 1,249,533 hectares, more than 83 percent (1,044,272 ha) is related to crop lands. 642 244 hectares of crop lands (61.5 percent), is covered by cooperatives and more than 32 percent of this amount is related to wheat (Agricultural-e-Jihad of Fars Province, 2008).

So, paying attention to the place of this province in production of wheat in country and the share of cooperatives to produce wheat, Fars Province was selected as case-study region and member and nonmember wheat cultivators in cooperative of this province, as research society, was chosen. Then, to perform sampling of the population studied was attempted. Sampling in this study, was Multi-Stage Stratified Random Sampling and based on it, 148 Wheat Farmers, members and non-members in cooperatives of Fars Province from three cities of Fasa, Marvdasht and Eghlid were selected. Thus, the essential data was collected from the beneficiaries. Tools for data collection were questionnaires. In order to better understand the ideas of respondents and also responding to aims of research, questions were collected open and close.

Then, the effective socio-economic factors include membership in cooperative of city, using extension services, age of farmer, level of education and size of farm which are performed from viewpoint of experts and in background of studies, have the most effect to promote the level of knowledge of farmers were examined. Among these variables, two variables like the level of knowledge of farmers and using extension services as a separate variable was not exploitable in questionnaire and were following different quantity and quality variable and parameters. Therefore, it was necessary to determine

this level as an index for each farmer. So, the numerical calculation with subject of adoption score of innovation (as an index for determining the level of their technical knowledge) and using extension services for each optimizer was addressed. In order to calculate these indices it was necessary at first the weight of innovations and extension services, farmers used in calculating the index should be determined. In this method, 37 Agronomy recommendation used as 37 innovation factors and 12 extension factor. The weighting factors used in the technique of the method of Analytical Hierarchy Process (AHP), were used (Ibrahimi, 1997 and Azar & Memaryany, 1995). In this method, two options with paying attention to one or more criteria were compared with each other and using a special spectrum, the quality evaluation of researcher about prominence of one option to other is turned as quantity. In this study, innovations relate to Agronomy operations and extension services, as an option and the yield of wheat per hectare, as comparison criteria, were planned.

In order to exploit the weight actors, at first, their impact on the crop of yield was studied as a couple. This information was collected as quality and by providing special form from related experts and using the presented spectrum in table 1, which is known to Satty Spectrum, is changed to quality.

**Table1: Quantity equivalent matrix cells of innovations and use of extension services**

Quality interpretation	Desirability with same importance	A little desirable or important	Great importance or strong desirability	Much more important or very much strong desirability	Very much more important or desirable
Quality equivalent of row vs. column	1	3	5	7	9
Quantity equivalent of column vs. row	1	1/3	1/5	1/7	1/9

\* The amounts approximately in terms of necessity using numbers of 8,2,4,6 are turned to quantity equivalent.

Next stage, the matrix of options is formed. General form of this matrix is as follows:

$$A = \begin{bmatrix} a_{11} & a_{12} & \cdots & a_{1j} \\ a_{21} & a_{22} & \cdots & a_{2j} \\ \vdots & \vdots & \vdots & \vdots \\ a_{i1} & a_{i2} & \cdots & a_{ij} \end{bmatrix}$$

The completed matrix A, in this case was like, for example, if from viewpoint of expert, between two options of a11 and a12, option a12 has

more effect to increase the yield and its effect with respect to the table above little more important, the cell corresponding to a12, will get 3. Similarly, all houses will be completed by comparing options. It is natural that a12 it is equivalent to 3, and cell a21 will be equal to one third.

After completing the information matrix is normalized. Thus, total numbers of each cell in each column is computed and the resulting number is divided on. Thus, matrix R is obtained. Each cell of this is called  $r_{ij}$  and is calculated as follows.

$$R = \begin{bmatrix} r_{11} & r_{12} & \dots & r_{1j} \\ r_{21} & r_{22} & \dots & r_{2j} \\ \vdots & \vdots & \vdots & \vdots \\ r_{i1} & r_{i2} & \dots & r_{ij} \end{bmatrix}$$

Next, the weight of each factor is calculated. For this purpose, homes of each row of the matrix R are summed together and divided by the number of columns. Thus the importance of each innovation coefficient is determined as follows:

$$W_i = \frac{\sum_{j=1}^n r_{ij}}{n}$$

Before using  $W_i$ , must assure from adaptation of responses for paired comparisons. For this purpose, it is necessary that the rate Consistency Rate (CR) is calculated. By definition, if  $CR \leq 0/1$ , comparisons have met necessary adaptation, otherwise in paired comparison till reach desired consistency rate should be reviewed. To calculate the CR, the Weight Sum Vector (WSV) and then Consistency Vector (CV) are calculated.

$$WSV = A.W$$

$$CV = \frac{WSV}{W} = \frac{A.W}{W}$$

Consistency Index (CI) in this case is:

$$C.I = \frac{\lambda_{\max} - n}{n - 1}$$

In which:  $\lambda_{\max} = \frac{(CV)_i}{n}$

Whereas, it's always possible, the most logical humans also when completing paired matrix will face to intellectual error and on the other hand, the most inadaptible humans in each matrix of  $N \times N$ , will have one adaptation rate, using random numbers for each matrix, one Random Index is extracted.

After determining Random Index, using the following adaptation rate, the primitive paired matrix, is determined.

$$CR = \frac{CI}{RI}$$

In order to calculate the acceptance score of innovation and index, using extension services for each optimizer, it's necessary that at first, the raw score relate to each agent is calculated. So, the considered factors are divided into three groups and in each group, regarding to the following instruction, the score of each user is determined.

$$r_{ij} = \frac{a_{ij}}{\sum_{i=1}^n a_{ij}}$$

A) Two- Option Questions: In this event, if the user has used an appropriate method (in terms of expert) or special extension services, number of one and otherwise number of zero will be given.

B) Multiple- Choice Questions: In this event, to the answer which is the best option from the viewpoint of expert and otherwise number of zero will be given.

C) Open Questions: In this event, if the answer presented here was in the mold of extension and research advices, number of one and otherwise number of zero will be given.

After calculating the raw scores Innovation Adoption Score (IAS) and extension Services Index (PSI) for each user are calculated as follows.

$$IAS = \sum C_i W_i \quad , \quad PSI = \sum C_p W_p$$

$C_i$  and  $C_q$ : Which are raw score of the  $i$  and  $q$ , in indices of innovation and extension services and  $W_i$  and  $W_q$  are the weights of these factors.

After determining the rate of innovation and the use of extension services, farmers were examined the effect of various factors on the level of knowledge. Whereas, the mentioned factors of membership in cooperatives and region of production include Nominal Data, using Simple Regression Analyze Method, we are not able to examine the impacts of these factors over agent of innovation. In cases, that the objective of study is to review the impact of one dependent variable on another variable including continual data, the ordinary method, using T-Test is for paired nominal variables and one way analysis of variance for multi-class variables (Human, 1994). But, when multi- agent evaluation including nominal data on one dependent variable is considered, the said methods are not able to present right answer to researchers. Thus, in order to Appropriate Analytical evaluation, the "Factorial Analysis of Variance" [10] could be used. This method, by Nekoe and Torkemani (2001), for reviewing the impact of irrigation methods, size of farm and type of pump have been used on irrigation costs.

An important characteristic of Factorial Analysis of Variance is than when using it, several hypotheses can be tested simultaneously. That is, simultaneous planning and analysis of action and

interaction of two or more factors which start working together, using this method is possible. Thus, the nature of Factorial Analysis of Variance can be said in this way that, which is a statistical method that analyses the intractable and independent impacts of one or more independent variables on Variation of dependent variable.

In Factorial Analysis of Variance, it's been assumed that each observed value in dependent variable is equaled with the sum of organized impacts arising random errors. Organized variance in scientific research, in fact, is that variance between groups reflect systematic differences between the groups. Error variance, indicating fluctuations, changes or diffraction effects caused by random factors (such as sampling variance) those they can never be controlled. If you cannot know, control or neutralize the organized variance, all of these unknown variances will be absorbed by Error variance. Such variance, in fact, without being impacted by difference between groups, is indicating variation arising from individual differences.

Based on information above, Fixed Impact Model, for analyzing the case mentioned in the current study, considering the impact of assumed factors, can be written as follows:

$$IAS_k = \mu + \alpha X_{\alpha k} + \beta X_{\beta k} + \gamma X_{\alpha k} X_{\beta k} + \lambda PSI_k + \theta_r X_{rk} + e_k$$

$$r = 1,2,3,4 \quad k = 1,2,\dots,148$$

In this regard,  $IAS_k$ , representing the level of technical knowledge operator  $k$  determining intensity level  $X_{\alpha}$  (membership and non-membership cooperatives), operating at  $X_{\beta}$  (various cities), operating at  $PSI$  (extension services) and in level of  $X_r$  (education level, age and size of farm).  $\mu$  is the mean of the total population of all communities may be formed.  $\alpha$  is fixed effect of membership in the cooperative,  $\beta$  and  $\gamma$  are fixed effect of different regions and areas of interaction in cooperative and  $e_k$  is a random error is introduced.

Given the above analysis, factor analysis of variance in this study can be examined and tested seven hypotheses that:

1. A hypothesis, which based on, the mean of all levels of membership in cooperative in society are the same and consequently, its main effect is zero, Therefore, we have;

$$H_0: \alpha = 0 \quad H_A: \alpha \neq 0$$

2 - Mean levels of all operating areas and wheat is the result of its main effects is zero. Thus,

$$H_0: \beta = 0 \quad H_A: \beta \neq 0$$

3 - Based on the hypothesis that the cooperative operating in the area of culture there is no interaction effect.

$$H_0: \gamma = 0 \quad H_A: \gamma \neq 0$$

4- A hypothesis, which based on, the mean of all agent levels of using promotive services in society is the same and consequently, its main effects is zero, Therefore, we have;

$$H_0: \lambda = 0 \quad H_A: \lambda \neq 0$$

5- A hypothesis, which based on, the mean of all agent levels of education in society is the same and consequently, its main effects is zero, Therefore, we have;

$$H_0: \theta_1 = 0 \quad H_A: \theta_1 \neq 0$$

6- A hypothesis, which based on, the mean of all agent levels of age in society is the same and consequently, its main effects is zero, Therefore, we have;

$$H_0: \theta_2 = 0 \quad H_A: \theta_2 \neq 0$$

7- A hypothesis, which based on, the mean of all agent levels, the agent of farm size in society is the same and consequently, its main effects is zero, Therefore, we have;

$$H_0: \theta_3 = 0 \quad H_A: \theta_3 \neq 0$$

In order to do calculations of this research, Factorial Analysis of Variance together with related Statistical Analyses, software of SPSSWIN is applied.

### 3. Results and discussions

According to the aforesaid research method and using gained data from matrix questioners completed by the related experts, calculation of the coefficients of effective factors on innovation index and promotive services in Fars province have been attempted. Table 2, indicates the description of effective factors and results of calculations and their importance on the score of innovation index of farmers in this province. According to this table, the type used in the most important factor among other factors is accounted for. The mean coefficient equals to 0.14 (14%). Also, five factors that from the viewpoint of experts have the most importance coefficient among 37 factors relate to the score of innovation index of farmers includes collection by machine, number of irrigation, date of collection and suitable quality of water. In addition, the indicators used to calculate the coefficients of the factors in Table 3 were obtained from the extension service. In this table, the most important factors who influenced on this index, among 12 factors, including presence of supervisor engineers in villages, conclude contract with them and numbers of meetings with promotive caseworkers about wheat discussions are shown.

Using the coefficients gained in tables 2 & 3, calculating indexes of innovation of farmers and using extension services for each farmer of sample society is done. Descriptive results obtained from this calculation in Table 4, are given. The mean values of the innovation and use of extension services in the province was 148 Owner 0.40 and 0.61, respectively.

According to this table, the minimum and maximum scores for innovation in cities of Marvdasht and Eghlid are seen. Also, the minimum amount of

extension services in the city of Fasa and its maximum is observed in Marvdasht.

**Table 2: Importance of effective coefficients on index of technical knowledge of wheat farmers in Fars Province**

Agent description	Coefficient	Agent description	Coefficient	Agent description	Coefficient
Rotation cultivation before farming	0.012	Rain irrigation method	0.018	Type of quality of usable pesticides	0.030
Date of cultivation	0.011	Irrigation numbers	0.019	Chemical battle with pest of wheat	0.031
Type of cultivation with centrifuge	0.014	Date of late irrigation	0.025	Time of spraying of insecticides	0.026
Type of cultivation with linear work	0.014	Amount of nitrogen fertilizer at the time of cultivation	0.021	Date of harvesting	0.021
Type of cultivation with cambinat	0.014	Amount of potassium fertilizer	0.024	harvesting wheat with machine	0.031
Rate of seed consumption	0.018	Amount of phosphate fertilizer	0.024	Have tractor	0.026
Disinfect the seed	0.018	Amount of fertilizer	0.033	Have seeder	0.021
Using luler	0.019	Number of fertilizer spraying	0.023	Have leveler	0.036
Using centrifuged fertilizer sprayer	0.018	Consume animal fertilizer	0.024	Have machine sprayer	0.032
Using seeder	0.019	Using machine fertilizer spraying	0.018	Have centrifuge	0.033
Using nutritive fertilizer	0.015	Chemical battles with weeds	0.026	Suitable earth texture	0.044
Leaking irrigation method	0.020	Time of chemical battle with weeds	0.027	Suitable water quality (from viewpoint of EC)	0.030
Type of variety	0.170				

**Table 3: Importance of effective coefficients on index of using extension services by wheat farmers in Fars Province**

Agent description	Coefficient
Distance of village to the nearest of agricultural services and extension center	0.014
Direct meeting with messenger in center of agricultural services and extension center in order to gain necessary technical information	0.040
Participate in extension classes, disclosure and watching educational films	0.115
Visit from sample wheat farms	0.084
Using radio and television programs	0.049
Using leaflet, declaration and extension poster	0.047
Refer to the management or Agricultural-e-Jihad of Kermanshjah	0.019
References of the agricultural messenger to wheat farms	0.098
Activity of extension helpers in village	0.083
Numbers of visits with extension helpers in the case of wheat discussion	0.052
Presence of supervisor engineer in village	0.176
To conclude contract with supervisor engineer	0.223

**Table 4: Descriptive statistics of calculation of indexes of innovation and using extension services in sample community**

Index score	City	No	Mean	Standard diviation	Min	Max
	Marvdasht	59	0.33	0.19	0.12	0.91
	Fasa	39	0.44	0.25	0.15	0.88
	Eghlid	50	0.44	0.22	0.12	0.85
	total	148	0.40	0.22	0.12	0.91
Using extension services	Marvdasht	59	0.60	0.06	0.50	0.77
	Fasa	39	0.59	0.05	0.44	0.67
	Eghlid	50	0.63	0.06	0.48	0.72
	total	148	0.61	0.06	0.44	0.77

After estimating the desired parameters, factor analysis of variance to assess the effect of various factors on the level of innovation was wheat. The results of this analysis are shown in Table 5. The results of table show that the sum of factors is approximate 80% of dependent variable, which is the same rate of the knowledge level of farmers and paying attention to the significant of test of F, the source of mean change of the whole community, this average, as one of the sources is taken into account. Reviewing the results show that none of factors like age of farmer, level of education, level of using extension services and size of farm couldn't be taken account for meaningful factors for changing the level of farmers' education. Reviewing other factors examined in Table 5 shows membership in the cooperative has no effect on the promotion of technical knowledge. On the other hand, the area planted significant effect on the dependent variable is the level of technical knowledge to farmers. Whereas, the mutual effect of membership in the cooperative and farming region over this agent was meaningful.

That is, the effect of cultivation region over the level of technical knowledge of farmers was meaningfully stronger than membership in the cooperative and cooperatives solely couldn't leave meaningful impact on increase of technical knowledge of farmers. In order to analyze with more details and whereas information of table 5 is not indicating the state of meaningful relation between statistics of the averages of farmlands, table 6 is provided and presented. According to this table, the mean values of innovation between Fasa and Marvdasht, there was a significant difference accordingly, mean values of innovation for wheat growers in Fasa city about 0.11 is more than city of Marvdasht. Yet, the average index of two services to promote the city is not statistically significant. Furthermore, the data table shows the mean scores of indicators of innovation and the use of extension services in the city were Eghlid about 0.11 and 0.03 of Marvdasht shows a statistically significant difference, but there was a significant difference of 0.03 in the index of using extension services between both cities.

Table 5: Results of Factorial Analysis of Variance model (effective factors on technical knowledge of wheat farmers)

Source of changes	Sum of Square (SS)	Degree of free (df)	Means of Square (MS)	F-TEST	Level of Significant
Mean	23.493	10	23.493	53.333	0.000
Age	0.099	1	0.099	2.249	0.136
Level of education	0.067	1	0.067	1.518	0.220
Extension services	0.079	1	0.079	1.803	0.182
Farm size	0.038	1	0.038	0.857	0.356
Membership in Cooperative	0.055	1	0.055	1.249	0.266
Cultivated region in province	0.499	2	0.250	5.667	0.004
Membership in Cooperative*	0.230	2	0.115	2.608	0.077
Cultivated region in province					
Error	5.903	134	0.044		
Total	29.396	144			

R Squared = .799 ( Adjusted R Squared = 0.784)

Table 6: Statistical paired comparison of the averages of index of innovation and using extension services

(I) City	(J) city	(I-J) Difference of averages of cities	
		Scoring index	Using extension services
Marvdasht	Fasa	-0.1076*	0.0054
	Eghlid	-0.1079*	-0.0262*
Fasa	Marvdasht	0.1076*	-0.0054
	Eghlid	-0.0003*	-0.0315*
Eghlid	Marvdasht	0.1079*	0.0262*
	Fasa	0.0003	0.0315*

\*, this sign shows that the mean difference is significant in level is lower than 0.05.

Considering the significant effect of mutual impact of membership in cooperative and farmland

over the variable level of technical knowledge of farmers in factorial analysis of variance have been



considered, and in table 7, this impact is examined in detail. According to this table, whatever the members of cooperative in cities of Marvdasht and Fasa has higher level of technical knowledge of farmers compare to nonmembers, but, I city of Eghlid, level

of technical knowledge of nonmember farmers was higher. Thus, membership in cooperative has same impacts over promoting the technical knowledge of farmers from different regions.

**Table 7: The mean of technical knowledge of member and non-member farmers in production cooperatives in case study cities**

Membership in cooperation	Cities	Average	Error	Distance of insurance 95%	
				Low band	High band
No	Marvdasht	0.235	0.06	0.117	0.353
	Fasa	0.337	0.08	0.178	0.496
	Eghlid	0.516	0.072	0.375	0.658
Yes	Marvdasht	0.349	0.033	0.283	0.414
	Fasa	0.471	0.038	0.395	0.546
	Eghlid	0.42	0.033	0.354	0.487

#### 4. Conclusion and Recommendations

While, among one of the most important effective individual factors on technical knowledge of farmers include level of literacy and age of farmer beside the size of farm, but, the results of this study showed that such factors have no effect on technical knowledge of farmers. Paying attention to gained analyses, it can be said that membership in cooperative is not mentioned as effective factor on technical knowledge of farmers. On the other hand, the significant impact of region over technical knowledge of farmers and then, mutual impacts of cultivation and membership in cooperative can be related to the outcome of powerful impacts of cultivation on technical knowledge of farmers. Among the strategies adopted by policy makers for promoting the agricultural knowledge of farmers, extension services in different areas, wheat farmers to

make a significant difference between the scores of cities is not innovation. Thus, it seems that the efficient extension services in all cities for the promotion of technical knowledge are not operating. Thus, a significant difference between the levels of technical knowledge of farmers in different regions must be sought other factors other than membership in the cooperative, extension services, farmers' education level, education level and the size of their field.

Whereas the level of technical knowledge of low members is one of the most important obstacles to promote and success of cooperatives, and the results of this study is indicating that cooperative of Pars Province was not successful in promotion of technical knowledge of farmers, there's no doubt that when want to promote the level should be diligent. In this direction, expansion of extension services was different from what was in the past and doesn't have

significant impact on extension of this knowledge. In this direction, concentration of such services for all members of cooperative as target groups and examining presented educations till gaining positive results is advised.

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