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Studying the key factors responsible for the unsuccessfulness of under pressure irrigation systems: Case study of Ilam, Iran

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The purpose of the present paper is to study the key factors responsible for the unsuccessfulness of under pressure irrigation systems in Ilam Province. The research method is casual-relative which is conducted in the form of a survey research. The statistical society of this study includes 440 exploiters who own farming or garden lands and the credits of agriculture bank are granted to them to execute the rain irrigation systems. The sampling method to conduct the study is proportional stratified sampling. To determine the sample size, Kerjesy and Morgan table is used. According to the data of this table, a statistical sample of 250 persons is chosen. The basic tool used in collecting data of this study is questionnaire. To study the reliability of research tools, 30 persons of rural exploiters who are inhabitants of Ilam Province are chosen by random. According to this, the reliability factor of research tool is calculated 92% by using the Cronbach alpha coefficient. Data analysis and processing was conducted in two levels: Descriptive (central and dispersion tendency) and analytic (Spearman correlation coefficient and multi-variable regression in a step-wise form). Results of this study show that there is a meaningful relationship between variables of: The work of designer company, irresponsibility in giving services after installing, incompatibility of under pressure irrigation systems with agricultural-climatic conditions, low quality and broken equipments, the problem of moving pipes and equipments, high expenses of fixing and changing equipments, turn taking of the water, insufficient times and time of irrigation with the variable of unsuccessfulness of under pressure irrigation systems. Results of regression analysis of effective factors on unsuccessfulness of under pressure irrigation systems using step-wise method show that five factors, including: Moving pipes and equipments, low quality and broken equipments, lack of skill and proficiency in company employees for incorrect designing and installing; high expenses of fixing and changing equipments have totally determined the variance of 75%.

Key words: Under pressure irrigation, unsuccessfulness, farmers.

INTRODUCTION

Iran is located in the south of northern temperate zone between latitude 25 to 40° and longitude 44 to 64°. Due to the special geographical position and having disparate unevenness and the effect of the other factors, Iran is one of the dry zones of earth. The average amount of annual rain in Iran is lower than one-third of average annual rain of earth (86 mm) (Hayati and Lari, 2010). The number of the permanent and full of Water Rivers is very low and there is often no drop of water in the course of these rivers in dry seasons except in the north and west. A remarkable amount of river water is wasted especially in the rainy seasons. Many rivers may yet be briny because of moving and passing from briny lands or pouring briny water in the river water (Kordovani, 2005). From some of the experts' perspective, the first step to prevent the water crisis is increasing the water yielding. These experts believe that consuming water can be decreased by 10 to 50% in agriculture section, 40 to 90% in industry section and to one-third in cities without decreasing the economical efficiency or the quality of life.

This process can be viable by using modern technology and better methods (Postel, 2005).

With regard to the low amount of rain and snow in Iran, it is considered one of the arid countries of the world to the extent that we can see a remarkable difference in the irrigated and non-irrigated cultivation in most parts of the country. The average annual rain of Iran compared to 850 mm of the world average annual rain is 250 mm. Limitation of sweet recourses in Iran, non-standard exploitation of underground water, disability to control the flowing of surface water, increasing the pollution of water resources caused by home, agriculture, industry, and sewage, lack of long term program for managing the water resources, the problems caused by economical and financial deficiency, lack of research, scientific and study centers of water resources and finally lack of precise data banks of the resources, reservoirs, and consuming water may be considered the challenges toward stable management of Iran water resources (Vakili, 2005). Some influential ideas are popularized on modifying and improving the present state in rural and tribal societies. We can name these ideas as follows: studying the ruling situation on water rights from possible reforms when the water is scarce, establishing the water banks all over the country, enacting some laws to protect the related domestic issues, enacting some laws to supply and grant low interest guarantee loans to farmers, considering the limitations of urban development, boosting the water program in country, enacting some laws to force the water department to develop harmonious programs, encouraging the voluntary protection of water, clearing the law to simplify the water cycle, creating economical motives for investing in private sectors to protect water, forcing consumers to lower their dependency upon underground water and executing protective actions, improving water consuming and transmission efficiency, issuing the emergency permissions for using water, supplying pumps and different types of pipe to distribute and disseminate water, suggesting to administer the renovation programs of reservoirs and exploitation under the capacity of designing, evaluating the level of vulnerability of water resources, decreasing the water system losses, and changing the irrigation method from patch method to leakage (Khiarabi and Nadaf, 2004). Because of the climatic situation of the country, the warnings of experts about the excessive use of water in country, predicting the water crisis in future, there are a lot of attention to the water issue and the extension of implementing suitable methods of irrigation especially under pressure irrigation methods in the country economical development program. Based on the timed program established by the government to the end of the first program 350 ha and to the second program of development 2 millions ha of farms and gardens must be covered by under pressure irrigation systems.

The requisite credits for developing this technology are taken from credits of note number 3, and it was determined that 80% of bank interest should be paid by government (Hajari, 2006). Credit facilities of bank and financial institutes and the most important one; agriculture bank, and the allocated benefits granted to receivers of this technology from executive institutes leads to acceptance of this technology by a considerable number of farmers. Taking into consideration all the above-mentioned explanation, the experience of using the under pressure irrigation systems in every corner of the country shows that there will be not enough ground and space to overcome the crisis of scarcity of water resourced in Iran only by introducing the system through in charge institutes, especially agriculture organization and allocating credits with the maximum helping custodians. A lot of researches and studies have been conducted on the causes of unsuccessfulness of under pressure irrigation systems and we are going to mention some of them. In the research (Bagheri, 2005) some causes are mentioned as main causes of unsuccess-fulness of under pressure irrigation systems: irresponsibility towards giving services after installing, wind blowing, flowing of running water, incompatible irrigation systems with the agricultural-climatic situations, low quality and broken equipments, high expenses of fixing and changing the equipments, turn taking of water, insufficient times and the time of irrigation, the problem of moving pipes and equipment in farms, lack of proficiency and skilled employees in designing and installing the system.

In their research on disbelief in the under pressure irrigation systems, Qamarnia and Sepehri (2008) revealed that the causes related to the lack of concern to the water importance and its scarcity, the pattern of cultivation, technical problems, and economical causes related to the most important causes of unsuccessfulness of under pressure irrigation systems. They studied the effective factors on unsuccessfulness of under pressure irrigation systems from three perspectives: official, incompatibility of technology, and characteristics of farmers. From these researchers' point of view, windy regions, high level of water stagnation, executing the programs in clay lands, low quality equipments (in the form of the incompatibility of technology, lack of an efficient extension, lack of enough connection between farms, lack of researchers and extenders, lack of presenting education (in the form of execution system), old age, illiteracy, dispersion and smallness of land sections, retailers, low level of skill, weakness of management and lack of harmony between them (in the form of characteristics of farmers) are of the most important causes of unsuccessfulness of rainy irrigation systems.

In the studies of Torkmani (2008), some causes are considered as effective factors on stopping the development of these systems. These causes are scarcity of water, high access to cheap credits, high

expenses of investment, sharing the ownership of land and well, land restrictions like dispersion and smallness of land sections, lack of land, and physical and natural obstacles in lands. The result of research by Karami and Rezaei (2006) show that demographic characteristics, awareness and attitudes, ownership and income are among the effective factors on acceptance of this technology. It was considered that the effective factors on acceptance of under pressure irrigation systems including some variables such as high expenses of system, low quality water, and sectional land.

In their research, economical and physical factors in the form of factorial analysis are considered as having the most effect on acceptance of modern irrigation systems. Karbasi and Khaliyan (2000) construed the incompatibility of the type of designed system with climatic situations, qualitative and quantitative constructions of water resources, obeying the instructions, refusal from practicing the obligations by the companies that manufacture the tools and equipments of the region as the main causes of stopping the under pressure irrigation systems in farms. Results of Arayesh and Hosseini (2010) research show that the main cause of unsuccessfulness and failure of irrigation designs in developing countries is unstable and one-dimensional extension. According to their belief, lack of development in one section plays the role of a restraining factor on the other sections in such countries.

The results of a research conducted in Egypt (Howitt, 2000) also show the dissatisfaction of authorities on qualitative and quantitative extension of under pressure irrigation systems. The causes of such unsuccessfulness are derived from lack of compatible researches, lack of data, lack of institutes and protective services and not protecting the involved institutes. The results of research show that education has no meaningful effect on modernism. However, extension education has a meaningful effect on acceptance. The results of Hayati and Lari (2010) study in the field of choosing the irrigation technologies in California show that the farmers who use underground resources accept the technologies of drop and rainy irrigation. Results of this research show that the acceptance of drop and rainy irrigation technologies increases the product performance. These technologies are used in regions where the quality of land is approximately low and the cost of water is high. He also finds a meaningful relationship between the variables of the cost of water, the cost of corps and subsidiary for purchasing the irrigation equipments and acceptance of irrigation technologies. He also reminds that although the size of land is the most important and effective factor on acceptance of irrigation technologies, peripheral factors are important in understanding and acceptance of these technologies.

The results of Shresthna (2003) research show that increasing products, the use of water and workforce are among the important and effective factors on acceptance of irrigation technologies. In addition, the farmers' familiarity with this technology increases their knowledge about it; consequently, it decreases the dangers related to this technology and increases the possibility of acceptance of it. Some factors like amount of consumed water, performance, steep, the quality of soil, the size of land also affect the acceptance of irrigation system. In the research of Hodges (2004), understanding and familiarity with the weaknesses of farmers is considered the main obstacle on acceptance of protective technology and some factors such as product characteristics, financial state, state of resources (energy, water, and soil), characteristics of farmers (education, experience, managerial abilities), structure of ownership, expenses of farm and institutes which affect obedience are among the social criteria on acceptance of this modern technology. The results of Jalali and Karami (2005) research show that lack of comparative researches, lack of underlying data, scarcity of institutes, weakness of protective services, lack of credits, inadequacy of protective institutes and some of the governmental policies toward land and farming such as splitting and chopping the lands are considered as the effective factors on unsuccessfulness of improving the irrigation performance by extending the modern irrigation methods. The studies of Shah and Zilberman (2001) show that excessive evacuation of underground water affects the speed of extending this technology. The main purpose of the present paper is to study the causes of unsuccessfulness of under pressure irrigation systems in Ilam Province. The objectives are as follows:

i) Study the personal characteristics of addressees;
ii) Giving priority to the factors and variables that affect the unsuccessfulness of under pressure irrigation systems;
iii) Studying the relationship between the variables;
iv) Predicting and determining the collective effect of independent variables of study on dependent variable of under pressure irrigation systems.

MATERIALS AND METHODS

The research method is casual-relative which is conducted in the form of a survey research. The statistical society of this study includes 440 exploiters who own farms or garden lands and the credits of Agricultural Banks are granted to them to execute the rain irrigation systems. The sampling method used to conduct the study is proportional stratified sampling. To determine the sample size, Kerjsy and Morgan table was used. According to the data of this table, a statistical sample of 250 persons was chosen. The basic tool used in collecting data of this study is questionnaire. To ensure about the validity of questionnaire content, the experts' panel was used. To study the reliability of research tools, 30 persons of rural exploiters who are inhabitants of Ilam Province were chosen by random. According to this, the reliability coefficient of research tool is calculated as 92% using the Cronbach alpha coefficient. Data analysis and processing was conducted in two levels: descriptive (central and dispersion tendency), analytic (Spearman correlation

coefficient and multi-variable regression in a step-wise form).

RESULTS AND DISCUSSION

Personal characteristics

The average age of respondents is 45.11, the most frequency (48.8%) is in the age group above 45 and the lowest frequency (5.4%) is in the age group below 25. 28.5% (57 persons) of respondents had diploma and only 9.5% of them had B.A or higher education degrees. The average of lands under administration is 8.89 ha. 135 farmers with the highest frequency have land as their property and only 1.5% of them have land as the ownership of agro-industry. The addressees have average job experience of 20.7 years. 50.2% of respondents were used under pressure irrigation systems in order to irrigate the grains. The lowest degree of using these systems in citrus fruits is about 0.5%. About 35.45% of respondents announced that the river water is only a recourse that supplies their needed water and 10.1% of them used joint well to supply water. The distance of water pump to the farm is about 1000 km, giving priority to the effective factors on unsuccessfulness of under pressure irrigation programs. To identify the effective factors on unsuccessfulness of under pressure irrigation systems, 37 questions in the form of multiple choice questions (Likert spectrum) are applied in the questionnaires. Table 1 shows the effective factors on unsuccessfulness of under pressure irrigation systems.

According to Table 1 and the previous studies on respondents about the effective factors on unsuccessfulness of under pressure irrigation systems, the variables of crediting loan procedure, heavy payback and installments for installing these systems, lack of educational courses so as to be aware of the advantages of modern system of under pressure irrigation, high expenses of fixing and changing the equipments are of high priority, respectively. In addition, from farmers' point of view, the variables of deciding without consulting the exploiters in relation to executing the project, believing in that the amount of products will never be increased by using this irrigation system, low quality water (briny water) are of low priority in unsuccessfulness of under pressure irrigation systems, respectively.

Findings of perceptive analysis

Correlation study (the relationships between variables)

In order to study the relationships between the survey variables and the variable of unsuccessfulness of under pressure irrigation systems, the Spearman ranking correlation factor is used. The results are shown in Table 2.

The result of this table show that there is a considerable meaningful relationship between the variables of work framework of designer company, irresponsibility towards giving services after installing, wind blowing, flowing of running water, incompatible irrigation systems with the agricultural-climatic situations, low quality and broken equipments, high expenses of fixing and changing the equipments, turn taking of water, insufficient times and the time of irrigation, the problem of moving pipes and in farms with the variable of unsuccessfulness of under pressure irrigation systems. The results of this survey confirm the results of Arayesh and Hosseini (2010), Hajari (2006), Hayati and Lari (2010), Hoitt (2000), and Qamarnia and Sepehri (2008).

Analysis of multi-variable regression

At this step, a step-wise method is used in order to evaluate the collective role of independent variables on dependent variable of unsuccessfulness of under pressure irrigation systems. Step-wise method is a method in which the strongest variables enter the regression equation one-by-one and this continues until the meaningful test error becomes 5%. Tables 3 and 4 show the summary of regression model and factors of variables entering the regression equation, respectively.

First step: At this step, the variable that enters the regression equation is the variable of moving pipes and equipment in farms and this means that the mentioned variable has the most powerful effect. Here the correlation factor (r) is 0.71, determination factor (R^2) is 0.506, and the modified determination factor (r2) is 0.502. In addition, the (f) which is the result of analyzing the variance is meaningful at the level of p=0.000. Therefore, it can be said that the variable of moving pipes and equipment in farms has solely made about 50% change in the dependent variable of unsuccessfulness of under pressure irrigation systems. The regression equation at the first step is:

$$Y=13.9x1+ 81.28$$

Second step: After the variable of moving pipes and equipment in farms, the variable of insufficient times and the time of irrigation enters the equation. Here the correlation factor (r) is 0.804, determination factor (R^2) is 0.646, and modified determination factor (R^2) is 0.640. In addition, the (f) which is the result of analyzing the variance is meaningful at the level of (p=0.000). Based on the present findings, the variable of moving pipes and equipment in farms, insufficient times and the time of irrigation make about 64% change in the dependent variable. The regression equation at the second step is:

$$Y= 11.406x1 +9.11x2 + 56.57$$

Third step: At this step after entering the variables of

Table 1. Effective factors on unsuccessfulness of under pressure irrigation systems.

Effective factors on unsuccessfulness of under pressure irrigation systems	Mean	Standard deviation	Coefficient of variation	Rank
Deciding without consulting the exploiters about executing designs	3.31	1.33	0.401	37
Incompatibility of products with the drop and rainy irrigation	3.35	1.17	0.349	21
Lack of enough data about the advantages of modern irrigation systems	3.57	1.16	0.324	8
Disbelieving in the advantages of conducted programs.	3.46	1.14	0.329	12
Sectional farming lands	3.42	1.19	0.347	19
Official cumbersome rules	3.55	1.17	0.329	13
High rate of credits interest of irrigation program	3.53	1.25	0.354	27
Poor villagers	3.53	1.35	0.382	32
Previous negative experiences	3.32	1.16	0.349	20
Not being able to enjoy the credits (loans)	3.36	1.14	0.339	16
Low level of equipments security related to the modern methods of irrigation (stealing)	3.24	1.15	0.354	25
Lack of enough land	3.50	1.17	0.334	15
Lack of trust in the program executives	3.24	1.18	0.364	30
Wind blowing and flowing the running water	3.28	1.15	0.350	22
The problem of moving pipes and equipment in farms and spending time and employing workers for this	3.24	1.22	0.376	31
Incompatible irrigation systems with the agricultural-climatic situations	3. 34	1.19	0.356	28
Low quality and broken equipments	3.40	1.20	0.352	24
High expenses of fixing and changing the equipments	3.54	1.08	0.305	4
Lack of proficiency and skilled employees in designing and installing the system	3.43	1.14	0.332	14
Irresponsibility towards giving services after installing	3.19	1.09	0.595	36
Insufficient times and the time of irrigation	3.30	1.08	0.327	10
Geometrical shape and the topography of land	3.23	1.02	0.315	6
Lack of enough coverage by droppers	3.24	1.14	0.351	23
The distance of water pump to the farm	3.23	1.16	0.359	29
Lack of skilled mechanic	3.35	1.29	0.385	33
The aspect of distance to garage and imposing a lot of expenses to farmers	3.54	1.37	0.387	34
Lack of insurance of irrigation systems	3.63	1.19	0.327	11
Expensive under pressure irrigation systems compared to the traditional systems	3.82	1.18	0.308	5
Very low income as a farmer	3.70	1.20	0.324	9
The procedures of granting loans	3.87	1.07	0.276	1
Loan payback and installments for running these systems is very hard	3.90	1.09	0.279	2
The possibility of implementing it in a very low level is impossible or even harder	3.43	1.09	0.317	7
Lack educational courses for informing about the advantages of modern under pressure irrigation systems	3.58	1.09	0.304	3
Using these systems needs high specialized skills	3.33	1.15	0.345	18
Using this irrigation method does not increase the product performance	3.24	1.15	0.354	26
Low quality irrigation water (salinity of water)	3.44	1.34	0.389	35
Well dryness and decreasing the water of rivers	3.61	1.23	0.340	17

Very low = 1, low = 2, average = 3, high = 4, very high = 5.

moving pipes and equipment in farms and insufficient times and the time of irrigation, the variable of low quality and broken equipments enters the regression equation in which its correlation factor (r) is 0.844, its determination factor (R^2) is 0.772 and its modified determination factor (R^2) is 0.702. In addition, the (f) which is the result of variance analysis is meaningful at the level of p=0.000; by observing the given determination factor, we can state that 71% of changes in the dependent variable are caused by the variables of moving pipes and equipment in farms, insufficient times and the time of irrigation, and low quality and broken equipments.

Table 2. Relationships between the research variables.

S/N	First variable	Second variable	r	p
1	The work framework of designer company	Unsuccessfulness of under pressure irrigation systems	0.55**	0.000
2	Irresponsibility towards giving services after installing	Unsuccessfulness of under pressure irrigation systems	0.64**	0.000
3	Wind blowing, flowing of running water	Unsuccessfulness of under pressure irrigation systems	0.61**	0.000
4	Incompatible irrigation systems with the agricultural-climatic situations	Unsuccessfulness of under pressure irrigation systems	0.66**	0.000
5	Low quality and broken equipments	Unsuccessfulness of under pressure irrigation systems	0.62**	0.000
6	High expenses of fixing and changing the equipments	Unsuccessfulness of under pressure irrigation systems	0.49**	0.000
7	Turn taking of water, insufficient times and the time of irrigation	Unsuccessfulness of under pressure irrigation systems	0.57**	0.000
8	The problem of moving pipes and equipment in farms	Unsuccessfulness of under pressure irrigation systems	0.72**	0.000

** It is meaningful at the 0.01 level.

Table 3. Summary of regression model.

Model	r	R^2	Modified R^2	Standard error of estimation
1	0.711	0.506	0.502	15.38
2	0.804	0.646	0.640	13.08
3	0.844	0.712	0.705	11.84
4	0.858	0.736	0.726	11.39
5	0.870	0.757	0.746	10.99

Table 4. The factors of entered variable in regression equation.

Model	Variable	B	Standard error B	Beta	T	Sig
1	Moving pipes and equipment in farms	13.09	1.21	0.711	10.81	0.000
	Constant	81.28	4.26	-	19.05	0.000
2	Moving pipes and equipment in farms	11.40	1.06	0.620	10.75	0.000
	Insufficient times and the time of irrigation	9.11	1.36	0.385	6.68	0.000
	Constant	56.57	5.18	-	10.91	0.07
3	Moving pipes and equipment in farms	9.12	1.06	0.496	8.61	0.000
	Insufficient times and the time of irrigation	7.36	1.28	0.311	5.72	0.000
	Low quality and broken equipments	5.79	1.14	0.302	5.08	0.000
	Constant	51.21	4.80	-	10.65	0.32
4	Moving pipes and equipment in farms	8.46	1.04	0.460	8.12	0.000
	Insufficient times and the time of irrigation	6.75	1.24	0.285	5.40	0.000
	Low quality and broken equipments	4.71	1.15	0.246	4.09	0.001
	Lack of proficiency and skilled employees in designing and installing the system	3.69	1.17	0.179	3.14	0.01
	Constant	46.28	4.88	-	9.47	0.15
5	Insufficient times and the time of irrigation	7.62	1.22	0.414	5.03	0.000
	Low quality and broken equipments	3.69	1.15	0.193	3.18	0.000
	Lack of proficiency and skilled employees in designing and installing the system	3.78	1.13	0.183	3.34	0.001
	High expenses of fixing and changing equipments	3.61	1.18	0.172	3.06	0.040
	Constant	20.88	5.03	-	8.12	0.080

The regression equation of third step is:

$Y= 9.72x1 + 7.36x2 + 5.79x3 + 51.21$

Fourth step: After entering the previous variables, the variable of lack of proficiency and skilled employees in designing and installing the system enters the multi-variable regression equation in which its correlation factor (r) is 0.858, determination factor (R^2) is 0.736, and its modified determination factor (R^2) is 0.726. In addition, the (f) which is the result of analyzing the variance is meaningful at the level of (p=0.000).

The regression equation of forth step is:

$Y= 8.46x1 + 6.75x2 + 4.71x3 + 3.69x4 + 46.28$

Fifth step: After entering the previous variables, the variable of high expenses of fixing and changing the equipments enters the regression equation in which its correlation factor (r) is 0.870, its determination factor (R^2) is 0.757, and its modified determination factor (R^2) is 0.746. In addition, the (f) which is the result of analyzing the variance is meaningful at the level of p=0.000.

The regression equation of fifth step is:

$Y= 7.62x1 + 6.14x2 + 3.69x3 + 3.78x4 + 3.61x5 + 40.88$

Results of regression analysis about the effective factors on unsuccessfulness of under pressure irrigation systems with the help of step-wise method show that five factors can totally determine the variance of 75%. These factors are movement of pipes and equipments, low quality and broken equipments, lack of skill and proficiency in company employees for incorrect designing and installing, high expenses of fixing and changing equipments.

Conclusion

This paper studied the key factors in unsuccessfulness of under pressure irrigation systems in Ilam Province. According to the studies carried out on respondents about the effective factors on unsuccessfulness of under pressure irrigation systems, the variables of crediting loan procedure, heavy payback and installments for installing these systems, lack of educational courses so as to be aware of the advantages of modern system of under pressure irrigation, high expenses of fixing and changing the equipments are of high priority, respectively. In addition, from farmers' point of view, the variables of deciding without consulting the exploiters in relation to executing the project, believing that the amount of products will never be increased by using this irrigation system, and low quality water are of low priority in unsuccessfulness of under pressure irrigation systems, respectively. In this paper, there is a meaningful relationship between the variables of the research framework of designer company, irresponsibility towards giving services after installing, wind blowing, flowing of running water, incompatible irrigation systems with the agricultural-climatic situations, low quality and broken equipments, high expenses of fixing and changing of the equipments, turn taking of water, insufficient times and the time of irrigation, the problem of movement equipment in farms with the variable of unsuccessfulness of under pressure irrigation systems. Besides, the result of regression analysis about the effective factors on unsuccessfulness of under pressure irrigation systems with the help of step-wise method show that five factors can totally determine the variance of 75%. These factors are movement of pipes and equipments, low quality and broken equipments, lack of skill and proficiency in company employees for incorrect designing and installing, high expenses of fixing and changing equipments.

RECOMMENDATIONS

According to the acquired results from this survey, the following recommendations are presented to improve the situation and accelerate the success of under pressure irrigation systems.

(1) Based on the gathered data in the descriptive statistics of respondents, roughly half of the statistical society of survey is older than 45 years of age. This point shows that under pressure irrigation systems have not yet been able to gain acceptability among the young people. This issue is not considerably agreeable especially by emerging the inverse migration of agriculture graduates to villages in order to gain land for farming. Therefore, it is recommended that various communicative channels such as national media and even provincial channels should disseminate information publicly. Advertise brochures at the first step, and then the procedure of implementing the under pressure irrigation systems can be accelerated by injecting encouraging factors, for example, low interest loans and long term installments.

(2) The results of the survey show that the low quality and broken equipments, lack of proficiency and skilled employees in designing and installing the system are among the most important factors in unsuccessfulness of under pressure irrigation systems. Thus, it is recommended that the company that is on the contract side must be chosen from reputed and with high credit ones with clear background and precedence, and the period of giving services or system guarantee must be chosen at least in a 5-month period.

(3) The results of regressive analysis about the effective factors on unsuccessfulness under pressure irrigation systems show that the variable of the problem of moving

equipment in farms is the first variable that enters the equation and makes about half of the changes in dependent variable. Therefore, it is recommended that this issue should be solved through technical discussing and using the knowledge of experts as good as possible or a mediate solution with low expenses from the aspects of timing and financial matters and emergent need to human force should be suggested.

REFERENCES

Arayesh B, Hosseini J (2010). Regression Analysis of Effective factor on People Participation in protecting and using Natural Resources in Ilam Province. AJBAS. 5(2): 228-234.

Bagheri M (2005). The behavior of under pressure irrigation acceptance among the farmers of Ardabil, the M.A thesis, university of Ardabil.

Hajari M, Ali G (2006). The necessity for developing the under pressure irrigation methods and studying the procedures of executing the program, the scientific conference f national design of under pressure irrigation and stable development, Tehran.

Hayati DM, Lari B (2010). The problems and the obstacles of implementing rainy irrigation, the scientific-research magazine of the economy of agriculture and extension, 6th year, Tehran, p. 32.

Hodges AW (2004). Adoption of energy and water conserving irrigation technologies in Florida. Florida cooperative Extension System institution of Florida and Agricultural sciences, university of Florida.

Howitt RE, Wallender W (2000). Economics analysis of irrigation technology selection: The effect of declining performance and management in social, economics and institutional in third world irrigation management, by R.K. Sampth and R.A. Young, 15: 437-464.

Jalali M, Karami E (2005). Lack of continuity of rainy irrigation technology, the case study of farmers of Pilo village of Marivan, The periodical of village and development. Tehran, p. 1.

Karbasi A, Khaliyan S (2000). The study of economical evaluation of under pressure irrigation systems. The series of articles of 3rd conference of Iran economical agriculture, Mashhad.

Karami E, Rezaei MK (2006). Predicting the rainy irrigation acceptance, the models, the scientific-research periodical of the science and techniques of agriculture, Tehran, p. 10.

Khiarabi J, Nadaf H (2004). Transmission and distribution of water and under pressure system, first conference of programming and policy making of underlying affairs in agriculture section, the underlying advisory in agriculture section, the advisory of agriculture, Tehran, pp. 94-98.

Kordovani P (2005). The water recourses and its issues in Iran, surface and underground water and the problems of exploiting them, first edition, the publications of Tehran University, Tehran, pp. 124-131.

Postel S (2005). The last oasis: water the vital. Translated by Abdolhossien Vahab Zadeh and Amin Alizadeh, the publication of Mashhad Jahad Daneshgahi. pp. 44-54.

Qamarnai H, Sepehri S (2008). The study of model under pressure irrigation systems conducted in Kermanshah Province. The scientific conference of national design of under pressure irrigation and stable development, Tehran.

Vakili M (2005). A speech about the water affairs, the periodical of water and extension, 4th year, Tehran, p. 4.

Torkmani JA (2008). The effective factors on the extension of under pressure irrigation systems in Iran. Scientific-research periodical of agricultural economy and extension, 6th year, Tehran, p. 22.

Shah FA, Zilberman D (2001). Technology Adoption in the presence of an exhaustible resource. Am. J. Agric. Econ., 18: 291-299.

Shresthna R (2003). Adoption and Diffusion of drip Irrigation Technology: Tehran university press, pp. 125-150.