

Farmers' Participation Obstacles in Management of Irrigation Networks

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Received: July 19, 2016 Accepted: August 5, 2016 Online Published: September 27, 2016

doi:10.5539/jsd.v9n5p1

URL: <http://dx.doi.org/10.5539/jsd.v9n5p1>

Abstract

The purposes of this study are to analysis and group the participations' obstacles of users in usage management and the irrigation networks maintenance in Semnan province. It was applied research and causal-correlation method was used. The statistical population of the study consists of all farmers having used irrigation networks in the Semnan province (Garmsar and Damghan town) having a population over of 18650 and finally 255 of which answered the questions. The main instrument used for data collection was questionnaire. To determine validity, the questionnaires were given to experts and some doctorate students, and then to evaluate reliability of the questionnaires, a pretest has been done, which was on 30 random farmers of Tehran (Varamin area), the gained questionnaire's Alpha Coefficient was %88, it shows suitable reliability of the questionnaires. the main obstacles for the farmers' participation were political obstacles (government's inattention to roles of non-governmental organizations, the government's inattention to users' ownership right, the users being's not clear of goals of participation, the focus of the maintenance and management activities of irrigation networks by the government, The government's inattention to role of council) which have the most share (31.12) and then economical obstacles were (not economical in the maintenance and management of irrigation networks, lack of credits necessary for programs, usage management and the irrigation networks maintenance projects having the late outcome, financial inability for participation). Psychological and personal factors (unwell physical state for participation; programs are not adaptive with the farmers' needs) which have the least share (3.39) in explaining total variance of the participations' obstacles of users in usage management and the irrigation networks maintenance. These 5 factors explained 66.12 of total variance of all public participation's obstacles in the usage management and the irrigation networks maintenance.

Keywords: water management, the maintenance of irrigation networks, participation, obstacles, farmers, Semnan province

1. Introduction

The water resource management is a set of various managing steps aiming at the optimal usage of water resources and decreasing economical-social and bio-environmental damages. The presence of various standards and indexes of decision makes water resources decision complicated. In order for this process to be done, there are many approaches in a variety of scientific issues. One of these approaches which used more in the present study is to give and transfer water management resources to the farmers themselves.

In the mid 1980, governments all over the world have increasingly tried to transfer the irrigation networks management from governmental organizations to the farmers or other non- governmental organizations. This attempt have occurred in the both more and less developmental countries (the United States and Indonesia) and capitalism and participatory systems (Chili and China), and finally more and less free countries (Mexico and Sudan) (Karam Javan et al., 2008).

Most important effective factors in giving irrigation management to the farmers were financial pressures on the governments; lack of credits for irrigation management, inefficient and extensive destruction of irrigation networks, agriculture commercialization and privatizing and liberalization processes (Vermillion, 2004). Giving the management and maintenance of irrigation networks to water users is a global attempt which is increasingly

developing. Today, it isn't discussion on giving the resources management to farmers but the how of giving management is of highly important. It is crucial that managers and people in charge to be familiar with theoretical principle of participation, concept of sustainable development and problems and solution, and then with the help of experts and facilitators make the farmers and local people be involved in decision making, sense of responsibility, programming, designing and performing, the maintenance and utilizing management, the evaluation of programs of the well- done projects. According to Gayer (2000) problems such as lack of water in the lowest outputs, the weak maintenance of water distribution networks, lack of financial sources in the maintenance issues, injustice distribution of water , lack of desire for saving water , and drainage issues were main problems in common irrigation networks. Those above-mentioned issues have resulted in changing the present management. Consequently, decentralization and delegating water resources management cause increasing farmers' participation to invest and these results in motivation, responsibility, agricultural and economical productivity and ultimately charge return. Vermillion (2004) believes that if the efficiency of irrigation networks with the governmental management is low and if the water users' participation in maintaining networks is limited the managing devotion is more obvious. Semnan province's irrigation networks are located in towns Garmsar and Damghan. Having established the networks in order to attract financial resources and water users' participation in setting the network, individuals or associations have been given loans. However, in the structure phase is paid more attention to on the behalf of the zone water to attract financial participation, but no attention is given to the maintaining the networks. The presence of executive and legal problems brings about some difficulties in receiving price of water or water distribution. So it is necessary to transfer the management to the farmers to decrease government's charges in water maintenance and distribution, and to make better the utilization and maintenance of water networks. The present study aims at presenting participatory pattern by the study of the area properties and having access to effective factors in irrigation networks management in order that they could attract the farmers' participation without wasting time, energy, interest. The fundamental question of the study is to know what types of variables can impede the users' participation in doing better management and maintaining the water distribution and irrigation networks in Semnan province? Malek Mohammadi (1995) in a study around public participation indices in natural resources management, using Delphi method, introduces the effective factors on the farmers' participation in pasturage programs. He found out that the following issues are significant in natural resource management: the use of association approach in doing participatory programs, inattention to making profit for participatory programs, attention to education, determining general politics of the government for attracting public participatory, homogenizing people and the heads' goals in participatory programs, determining the amount of productivity of participatory scheme for people, determining motivational and political methods for public participatory, recognizing effective social-cultural factors in the promotion of the participatory programs, people training before delivering the participatory programs to them and people training to get familiar with the role of natural resources in attracting public participatory. Osooli *et al* (2011) in their study showed that the most important problems of sustainable water management in agriculture section of Kouhdashet were: low level of awareness and technical knowledge of farmers, financial problems of farmers to implement water optimal management and reply the loans, lack of budget allocated to water management plans and projects, excessive and illegal utilization of water, scattered lands, fragmented lands, share well.

Hosseini and Sabouri (2011) based on the results of their study about impact of extension activities on water resources management by wheat producers in Iran showed that 69% of variance in perceptions of respondents can be explained by the knowledge level about water management, capability of lecturer and relevance of educational contents with needs of beneficiaries.

Bagherian *et al* (2011) in their study indicated that level of participation in WMP¹ was moderate to low, however respondents were preferred more involvement in the social activities rather than economic and environmental. The results of this study also showed that the level of the respondent's attitude toward WMP was relatively high. The study also proved that there is a significant relationship between the level of participation and attitude toward WMP ($r=.489$ - $p=.000$).

Abdolmaleki *et al* (2011) in their study showed the positive and statistically significant relations between the extent of participation in watershed programs and the extent of users' participation in extension and educational courses, the extent of utilizing mass media, income, educational level, the extent of relationship with extension workers, the extent of trust to government staffs, membership in public and local institutions variables. Also,

¹ Watershed Management Programs

there was negative and statistically significant relation between users' participation and the extent of dependence to the government.

Zare et al (2009) in their study indicated that gender influenced on users satisfaction to management and facilities of forest parks, attitude towards people participation in administration and conservation of forest parks and users' willingness for participation in executive and managerial activities. The results show that the men had more willingness's for participation in managerial activities than women. Moreover, men and women had similar willingness in executive activities.

Ghasemi (2001) in the analysis of the effective factors in level of farmer's participation in civil projects stated that there is a positive and significant relationship between farmers' participation in the amount of people's travelling out the village, the membership of families in the village public organizations, motivation for progress, the mass media, income the family members and people's possession with the amount of their participation. Khalighi and Ghasemi (2003) in a study they determined the effect of economical – social problems on the amount of animal husbandman's participation in animal husbandry programs, They came up with that the size of cultivated ground and type of possession are the most important factors in animal husbandman's participation.

Jalali and Karami (2005) in a study in relation with determining effective factory on pasturage owners' participation in pasturage associations of Kurdistan province came to this conclusion that there is a positive and significant relationship between technical knowledge, literacy level, the participation's social results, the relationship with natural resources staff, extension services and supply inputs, profit-oriented with the amount of people's participation in association activities. Shariaty and his colleagues (2005) stated the following as the major and effective factors of the villagers' participation in the natural resources programs: literacy level, participating in extension-educational classes, the use of extension magazines and publications, the use of educational movies, the use of speech meetings and the use of television and radio programs, the number of contacts with extension agent. Samary (2003) cited in Kellogg 1998 believes that the following factors had significant effects on participation motivating: keeping in touch with people in a very respective manner, knowing and respecting people's indigenous knowledge, attention to democratic issues in participatory activities, holding various educational courses, having strong perspective in participatory activities and considering the unsuccessful probability and fluency with people. Chess and his colleagues (2007) in a study found out that training, warm relationship, gross product, the size of farm and technology play an important role in the farmers' participation in water associations. Damianos and Giannakopoulos (2002) in the analysis of the users' participation in agricultural-environmental programs in Greece found that the farmers' training, economical-social position, relation with mass media, agricultural experts, education level and relationship with neighbors affect on the farmers' participation in environmental programs.

Mendoza (2006) in the analysis of effective factors on participation in environmental-supervision programs concluded that those farmers having strong relationship with local organizations and those having more income and being as heads of owners have more motivation to participate .

2. Material and Methods

The present study is a type of applied research. It aims at, after analyzing the participation and effective factors in participation, presenting an extension proper pattern to attract the users' participation in the maintenance of irrigation networks management programs. By methodology, the present study is of causal-correlation and this study by the use of factorial analysis starts to categorize and summarize the regarded variables. The statistical population of the study was all the irrigation network users in Semnan province (Garmsar and Damghan town) who are over than 18650, the sample numbers were 266 of which 280 farmers added, and finally 255 subjects answered the questions. The proportional numbers of the users were selected as the sample was taken into accounts. The number of the users is in the zone 1, as 11550, in the zone 2 as 7100, in turn. So 173 subjects in the zone 1, and 107 ones in the zone 2 were selected. The main instrument in the study was questionnaire. After designing the questionnaire based on the research goals and hypotheses, the experts and doctorate students were given some questionnaires in order for the researcher to determine validity. Doing the determination, to have reliability of the research questionnaires a pretest was given for which 30 farmers from Tehran province (Varamin Zone) were randomly selected as sampling, then by using the software SPSSwin 16 Alpha Cronbach coefficient rate was measured. The gained Alpha coefficient was %88 which shows a very proper reliability of the questionnaire of study.

3. Results and Discussion

Based on the findings, most farmers in age range were over 50 years (87 people, %34.1), and then age 41-50 (81 people, %31.8). The mean of age was 45.28, so the farmers were old.

Based on agricultural activities background, the farmers have been working more than 20 years (79 people, %40). The mean of agricultural activities was 16.2 years with standard deviation of 21.9 (SD). The standard deviation 21.9 shows that the farmers have strong experiences in agricultural activities.

The analysis of the farmers' literacy level shows that frequency is more found among illiterate farmers (69 people, %27.1). Generally, more than %56 of the farmers had no proper education levels, and that can be problematic for the human development.

Table 1. Frequency distribution of respondents based on their personal characteristics

Personal characteristics	Groups	Frequency	percentage	Cumulative percentage
Age: n= 255	20-30	28	11	11
The least: 21	31-40	59	23.1	34.1
The most: 79	41-50	81	31.8	65.9
SD= 9.98	51 and above	87	34.1	100
Mean=45.28				
Agricultural Activities	Up to 5 years	22	8.6	8.6
Background: n=255	6-10	29	11.4	20
The least: 1	11-15	50	19.6	39.6
The most: 43	16-20	75	29.4	60
SD= 21.9	20 and above	79	40	100
Mean=16.2				
Level of Education: n=255	illiterate	69	27.1	
	primary	72	28.2	
	under diploma	65	24.5	
	diploma	27	10.6	
	higher diploma	12	4.7	
	BA and above	10	3.9	

Table 2. Prioritizing the respondents' ideas based on the obstacles of their participation in usage management and the irrigation networks maintenance

Participation's obstacles	mean	Standard Deviation	Variance Coefficient	Priority
Lack of credits necessary for usage management and the irrigation networks maintenance.	4.88	0.89	0.182	1
The goals of the users' participation in usage management and the irrigation networks maintenance are not clear	4.65	0.9	0.193	2
The educational and extension methods are not suitable in relation with irrigation systems	4.9	0.95	0.194	3
Weak relationship between users, experts and extension agent	4.75	1.11	0.234	4
Networks' not being adaptive with the villagers' needs	4.6	1.09	0.237	5
Usage management and the irrigation networks maintenance programs' not being economical	4.49	1.08	0.240	6
The focus of usage management and the irrigation networks maintenance activities by the government	4.53	1.17	0.258	7
financial inability in participation	4.55	1.21	0.266	8
Insufficient supervision on usage management and the irrigation networks maintenance	4.6	1.3	0.283	9
Inattention to role of the local leaders	4.77	1.14	0.275	10
Inability of the users in trusting the executor of the programs	4.29	1.2	0.280	11
The government's inattention to the role of non-governmental organizations	3.9	1.16	0.297	12
Usage management and the irrigation networks maintenance projects having the late outcome	4.21	1.28	0.304	13
The government's inattention to role of council in usage management and the irrigation networks maintenance	4.01	1.4	0.349	14
The government's inattention to the possession's right of the local users	3.8	1.34	0.353	15
Unwell physical state for participation in usage management and the irrigation networks maintenance	4.7	1.8	0.383	16
The absence of hygienic and welfare facilities	3.65	1.5	0.411	17

Table 2 shows that factors which impede the users' participation in maintaining the irrigation networks programs. According to the table information, the following factors are the most important and have the priority from 1 to 3: lack of credits necessary for management and maintenance the irrigation networks, the goals of the users' participation are not clear, the educational and extension methods are not suitable in relation with irrigation networks.

To classify the factors which impede the users' participation in usage management and the irrigation networks maintenance the researcher uses factorial analysis.

Table 3. The results of KMO test and Berlet in grouping the obstacles of users' participation in usage management and the irrigation networks maintenance

Type of test	The calculated amount
KMO test	0.833
Berlet test	978.349
Level of significant	0.000

Table 4. Classifying the obstacles of users' participation in usage management and the irrigation networks maintenance using the factorial analysis technique

factors	variables	Special amount	Special amount percent	total percent of all factors
Political obstacles	Government's inattention to roles of non-governmental organizations, the government's inattention to users' ownership right, the users being's not clear of goals of participation, the focus of the maintenance and management activities of irrigation networks by the government, The government's inattention to role of council.	30.63	31.12	31.12
Economical obstacles	Not economical in the maintenance and management of irrigation networks, lack of credits necessary for programs, usage management and the irrigation networks maintenance projects having the late outcome, financial inability for participation.	18.87	17.95	49.07
Social obstacles	Inattention to role of the local leaders, the absence of hygienic and welfare facilities, inability of the users in trusting the executor of the programs, inattention to cultural/ social features of the villagers, the local leaders and heads' disagreement with performing the programs.	10.36	7.75	56.82
Extension obstacles	The educational and extension methods are not suitable in relation with irrigation systems, weak relationship between the users and the experts of the natural resources, insufficient supervision in doing the programs.	6.12	5.41	62.23
Personal and psychological obstacles	Unwell physical state for participation; programs are not adaptive with the farmers' needs.	2.99	3.89	66.12

Based on the gained data table 4, the first and the main factor impeding the farmers' participation in the managing and maintaining the irrigation systems is political factors(government's inattention to roles of non – governmental organizations, the government's inattention to users' ownership right, the users being's not clear of goals of participation, the focus of the maintenance and management activities of irrigation networks by the government, The government's inattention to role of counselors). And after that there are economical factors (not economical in the maintenance and management of irrigation networks, lack of credits necessary for programs, late output, financial inability for participation). The fifth factor is as personal-psychological ones (unsuitable

physical state for participation, design's not being adaptive with farmers needs). As mentioned before, political factors had most shares as 31.12; the personal-psychological factors had lowest shares as 3.89, so these 5 factors explain 66.12 of total variance of all public participation's obstacles in the usage management and the irrigation networks maintenance.

Political obstacles (governments inattention to roles of non – governmental organizations; the government's inattention to users' ownership right the users being's not clear of goals of participation; the focus of the maintenance and management activities of irrigation networks by the government; The government's inattention to role of counselors) have the most share, and personal-psychological ones as the lowest in explanation of total variance of the variables. So the government can be the most important organization to remove the obstacles. It seems that there are some unsuitable and problematic rules make the users' participation in the maintenance the irrigation networks more complicated. On the other hand, reinforcing more associations in the rural areas can perform all developmental programs especially irrigation; if not so, lack of water damages whole of agriculture.

The political obstacles (government's inattention to roles of non-governmental organizations, the government's inattention to users' ownership right, the users being's not clear of goals of participation, the focus of the maintenance and management activities of irrigation networks by the government, The government's inattention to role of council) have the most share in decreasing participation. Samari (2003), Mallek Mohammadi (1995) and Mendoza (2006) indicated role of the political obstacles in decreasing or increasing participation in their studies.

The economical obstacles (not economical in the maintenance and management of irrigation networks, lack of credits necessary for programs, usage management and the irrigation networks maintenance projects having the late outcome, financial inability for participation) have important role in decreasing participation. This has been of importance in Vermilion (2004), Ghasemi (2001), Khalighi and Ghasemi (2003), Chess et al (2007) and Damianos & Giannakopoulos' (2002) studies.

The social obstacles (Inattention to role of the local leaders, the absence of hygienic and welfare facilities, inability of the users in trusting the executor of the programs, inattention to cultural/ social features of the villagers, the local leaders and heads' disagreement with performing the programs), which were the third kind of obstacles by the respondents, have been stated in some studies done by Khalighi & Ghasemi (2003), Jalali & Karami (2005) and Damianos & Giannakopoulos (2002).

Finally, the personal and psychological factors have had the least share as obstacles of public participation in the management and maintenance of the irrigation networks in explaining the total variance of the variables which have enforced in Damianos & Giannakopoulos (2002), Chess et al (2007) and Mendoza's (2006) studies.

4. Conclusion

- 1) The results show that local organizations have a positive effective in attracting the users for keeping sustain the public's participation management usage management and the irrigation networks maintenance projects. It is suggested that these organizations should be reinforced and establishing the relevant association in all over the province and also use appropriate ways to enroll users in mentioned associations.
- 2) Observing the users' possession rights plays an important role proportional to their motivation to the developmental programs, so it suggested that each projects perform in the way that respects possession rights.
- 3) One of the most important elements in terms of political obstacles is inattention to the goals of the executive programs, so it is recommended that the farmers should be informed about the aims of program by agriculture extension and other media and before turning to each kind of program.
- 4) Some of the programs of managing the irrigation networks like how to distribute and pricing issue as well should be done by the help of the farmers' ideas and opinions. It is recommended that local elections should pick up a trade union for that importance.
- 5) The government should give some parts of the executive affairs to the people through the councils; unfortunately, that is not done. Here, the local counselors should make decision about water affairs. This can be done by formulating farmers' communal counselors and the experts of the power ministry.
- 6) Benefits gained from water distribution are not given to the farmers, and the farmers are not informed of as well. If the government is looking for decreasing the charges in managing water affairs, they should associate the farmers in decision-makings, especially gained benefit.
- 7) Giving gratuitous and less profit loans can make the farm's irrigation methods better and renewal. Therefore, having such budget is of highly value.

8) The common meetings between the farmers and executors can cause people to be supported both spiritually and materially from water bases and resources. Consequently, it is recommended that the meetings would be done by the heads and social/ technical leaders of the villages.

9) The results of study show that level of education have a positive effective on the participation issue. The less literate farmers are considered as obstacles in terms of participation. So the less literate farmers should be equipped with training programs, and in doing so, we can make use of the farmers with higher education. To do extension programs, literate farmers should be involved.

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