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Effective Factors on Rural People's Non-Participation of Mahabad's Dam Catchment in Watershed Management Projects

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Abstract

The purpose of this descriptive-correlation study was to investigate effective factors on rural people's non-participation of Mahabad's dam catchment in Watershed Management Projects. The research instrument was structural questionnaire with close-ended questions, which its validity confirmed by panel of academic staff and reliability of questionnaire was confirmed. The target population of this study consisted of all householders who lived in Mahabad's dam catchment (N=2458) out of them, according to Cochran's formula 175 people were selected by using cluster sampling in a simple randomization method (n=175). The descriptive results showed lack of financial ability for participating in watershed management, lack of awareness about watershed management efficiency, the long-term rate of return on the investment attracted in watershed management were the main variables related to rural people's non participation in watershed management. By applying Factor Analysis Explanatory Technique, effective factors on rural people's non-participation in watershed management were reduced to five factors namely weakness of agricultural extension services, getting watershed management out of governmental control, no achieving success to implement another rural projects by government, and no considering local individuals or organization by government. These five factors expressed 84% of the total variance of the non-participation people on Mahabad's dam catchment in watershed management projects. Therefore points to these factors could solve the barriers of non-participation people on Mahabad's dam catchment in watershed management projects.

Keywords:
Non-Participation, Catchment, Watershed Management, Mahabad Township, Iran

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INTRODUCTION

Increasing demand for food in the world was the result of increasing population and changing consumption patterns. Therefore this problem caused to more attention on water resources and soils in agriculture for obtain sufficient food for population. On the other hand the lack of proper and efficient management of water and soil resources in the fields of agriculture, caused to increase the process of water resources and soil degradation. Besides these issues, the problems associated with slope, made up of rocks fragile areas, the flood and sediment dams, reservoirs and irrigation networks, caused to that authors and researchers were interesting to find ways the prevent of erosion in water and soil resources. This is beginning to take shape as a new science as watershed management. Watershed management is called to mechanical, biological and management practices in the watershed area in order to promote social and economic status of the residents and based on the sustainable use of resources takes place (Darghouth *et al.*, 2008).

Undoubtedly, watershed is concerned as one of the major activities has fundamental role to the management of land, water and vegetation resources, optimum utilization of resources and the preservation of fundamental capital (Sadeghi *et al.*, 2004). Also, watershed management can be properly managed life conditions (Ghanbari and Ghodosi, 2008). The watershed can be attributed to the utilization of these resources (water and soil) in order to increase agricultural production, and watershed management is essential for sustainable livelihood of rural people for increase their income (Yoganand and Gebremedhin, 2006), increase soil moisture levels (Shah, 2001), increased crop diversity (Renfro, 2004), erosion control (Kerr *et al.*, 2002), employment for rural people (Reddy *et al.*, 2004), increases the groundwater levels (Wani *et al.*, 2005), and reduce the migration of rural people to urban areas (Yoganand and Gebremedhin, 2006).

Watershed management plan were depending on the success of public participation in decision-making, implementation and maintenance of a project. Evaluation of projects shows that when people in different stages was participated, and conducted to the different needs of rural people, were succeed and continuity. People's participation in various projects such watershed management projects greatly has increases the successful projects rate (Movsaey, 2009). Yaganand and Gebremedhin (2006) in the same study showed that 60 percent of the watershed projects participants are convinced that stakeholder participation was essential to the success of watershed management project. Durham and Brown (1999) have reported the success of watershed management projects don't dependents to the government support or a particular structure, but that popular participation was very essential.

Participatory watershed management can be defined as a process that aims to create a sustainable system that is self-support is necessary (Wani *et al.*, 2005). Despite the importance of watershed management, and participation of local people in watershed planning, this question arises that why the villagers and residents of the watershed regions don't have participate in watershed management projects?

Movsaey (2009) investigated the causes of this subject in the watershed management plans of Fars province, and stated that economic factors) Non-economic watershed management plans, lack of funds needed to implement the projects, long-term returns and financial inability) were the main obstacles to the participation of local people in the watershed projects. Also Movsaey (2009) by use of multiple regression analysis showed that variables such as lack of confidence among beneficiaries of the project, lack of funds needed to implement the project, non-accordance projects with the needs of the rural poor and lack of proper training methods related to watershed management plans have main role in to the explaining participation stakeholders in watershed management plans. Hematzadeh and Khaliqy (2006) showed that 87.70 percent of stakeholders who don't participated in watershed projects have expressed: 39 percent had no knowledge about plans, 35 percent lack of capital and more than a quarter of them points to lack of awareness of the

benefits of the project as their reasons for non-participation in watershed management plans. Bagaey *et al*. (2006) also points to the reasons for non-participation in watershed management projects in the rural: The difficulty in obtaining loans, the content isn't consistent with the needs of rural projects, financial inability, lack of respect and lack of trained manpower and skilled experts. Hosseinpour (1993) showed that revealed of attention to educational activities in the region, rural illiteracy and low literacy, lack of coordination among agencies providing services, the presence of troublesome rules and regulations on the use of credits and investments were the most important soil conservation and watershed management issues for villagers in the Hezar River in Iran. By these studies concluded that the economic, social, cultural, education-advocacy, policy making and formulation of poorly designed (in terms of purpose, content, implementation, etc.) were affective components on rural people non-participation in watershed management plans.

The present study has been done in the field of rural non-participation in the watershed management for investigate the factors affecting the non-participation of rural people in Mahabad dam watershed management projects. Mahabad dam in West Azerbaijan province has an important role on agricultural activities. This dam is known as one of the major arteries in the basin of West Azerbaijan province in Iran.

This area is composed of two sub home as name Kavtar and Bytas. Also Mahabad dam is covered 82 villages, 15,374 people (2,458 households) and 79,300 hectares. Annual precipitation of Mahabad dam laying around 1.8 million cubic meters of container per year and loss ratio of it is about 0.61 percent and at the critical situation in the country is located in the fifth dams (Talibpourasl and Khezri, 2010). Continue this process led to the irreparable damage and will cause damage to the local economy of rural people. Therefore in recent years some of the watershed projects like biological projects (transplant, grass lading, keeping pasture) and mechanical projects (construction sediment retention mortar, gabion dam) has been carried out in rural areas.

The Main purpose of the paper was to study effective factors on non-participation rural people of Mahabad's Dam catchment in watershed management projects in Iran. And also:

Identify Priority variables on non-participation of stakeholders in the watershed projects.

Describe the demographic characteristics of respondents.

Identification the effective factors on rural people's non-participation of Mahabad's dam catchment in watershed management projects.

MATERIALS AND METHODS

The methodology used in this research involved a combination of descriptive and quantitative research and included the use of correlation and descriptive analysis as data processing methods. The target population of this study consisted of all householders who lived in Mahabad's dam catchment (N=2458) out of which, according to Cochran's formula 175 people were selected using cluster sampling in a simple randomization method (n=175). Cronbach's Alpha coefficient was 0.84 which demonstrated that the questionnaire was highly reliable.

The questionnaire was an instrument to collect data. The instrument was divided to two sections. The first section focused on evaluating the affective factors on non-participation of respondents' in Dam catchment in watershed management projects (26 items). The second section was designed to gather data about of respondents' characteristics such as sex, age, educational level and etc. In both of these section five-point Likert-type scale was used to quantify responses which ranged: 1=very low, 2=low, 3=medium, 4=high, and 5=very high. The face validity was established by a panel of experts consisting of faculty members in natural resources and extension-education specialist in university and agricultural officers of Mahabad Township. The data were coded and analyzed by using the Statistical Package for the Social Science (SPSS 21) for windows. Descriptive statistics (frequencies, means, standard deviation, range, minimum, and maximum) were used to describe analyzed data. Also, explanatory factor analysis

was employed to identify effective factors on rural people's non-participation of Mahabad's dam catchment in watershed management projects.

RESULTS AND DISCUSSION

Describe the demographic characteristics of respondents

The average age of respondents was 36 years, that the majority of them (n=85 or 48.60 %) ranged from 41-53 years old. Respondents' agricultural experience was 24 years, that the majority of them (n=65 or 37.10 %) ranged from 18-32 agricultural experience years. Also, finding showed that the average cultivated land by respondents was 7 ha. In addition, the average of respondents' education was 5 years; also 31.4 percent of them were illiterate (Table 1).

Priority of variables associated with non-participation of villagers in the watershed plan

Table (2) shows the mean, standard deviation, coefficient of variation and prioritizing the variables related to non-participation of stakeholders in the watershed plans. Results shows that economic variables such as "lack of financial ability to participate in the project watershed" (CV=0.220) was the main important economic variable in non-participation on the watershed plan and "uncertainty and lack of knowledge about the economic performance of the watershed" (CV=0.230) and "long-term outcome of watershed management plans" (CV=0.245) located in the 2th and 3th important priorities economic variables in non-participation on the watershed plan.

Also, results showed that "none according of watershed management projects with the requirements of farmers" (CV=0.475) and "ignore the social and cultural characteristics of rural areas in watershed projects" (CV=0.490) and "different stakeholder opinions together" (CV=0.526) located in the least important priorities economic variables in non-participation on the watershed plan (Table 2).

Results Identification of factors influencing villagers' Non-Participation

Explanatory Factor Analysis is a generic name for some multivariate statistical procedure whose main purpose is to summarize the data. This method of dealing with large number of variables within the correlation and finally, they are limited in the general category and explaining. Thus, in the study exploratory factor analysis approach was used to summarize the data. The variables were analyzed associated with non-

Table 1: Describe the demographic characteristics of respondents

Variables	Level of variable	Frequency	Percent	Mean	Standard Division	Min.	Max
	28-40	52	29.7	45.82	8.22	28	66
Age (year)	41-53	85	48.6				
	54-66	38	21.7				
	3-17	62	35.4				
Agricultural	18-32	65	37.1	23.65	12.40	3	46
experience	33-66	48	27.4				
(year)							
Land under	2-13	102	58.3	7.12	4.31	2	27
cultivated (ha)	14-25	63	36				
	26-36	10	5.7				
		55	31.4				
	Illiterate	36	20.6				
	Elementary	37	21.1	-	-	-	-
Education	Guidance school	30	17.1				
level	High school	10	5.7				
	Diploma	7	4				
	University degree						

Table 2: Priority variables on non-participation of stakeholders in the watershed projects

	Mean	SD.	CV	Rank
Lack of financial ability to participate in the project watershed	4.03	0.89	0.220	1
uncertainty and lack of knowledge about the economic performance of the Watershed	4.04	0.93	0.230	2
Long-term outcome of watershed management plans	4.04	0.98	0.245	3
Lack of funding for watershed projects	3.93	1.01	0.256	4
Lack of clearly participation of farmers in the watershed plan	3.92	1.04	0.265	5
Illiteracy and illiteracy farmers	3.70	1.00	0.270	6
The government ignored the ownership status of the beneficiaries of watershed management plans	3.75	1.06	0.282	7
Not specify the trustee to keep watershed plan implementation process	3.82	1.12	0.293	8
Neglecting the role of local leaders in informing watershed plan	3.86	1.14	0.295	9
The weak relationship among stakeholders, Experts and advocates of natural resources	3.29	1.00	0.303	10
Lack of educational methods for information resource management plans	3.01	1.03	0.342	11
Inadequate monitoring of the proper implementation of watershed management plans	3.56	1.24	0.348	12
Lack of incentives for property	3.07	1.09	0.355	13
Lack of cooperation between the governmental agencies in the watershed plan	3.36	1.23	0.366	14
Neglecting the role of rural councils in informing watershed plan by government	3.03	1.11	0.366	15
Lack of the trust from stakeholders to watershed management plans	3.44	1.32	0.383	16
Difficult borrowing conditions for participation in watershed projects	3.96	1.53	0.386	17
Failure of other projects at the village level administrative	3.15	1.22	0.387	18
Lack of investment by stakeholder in some operation that their future is unclear	3.37	1.31	0.388	19
Ignorance of the contents of watershed management plans	3.27	1.38	0.422	20
Disagreement elders and adults with watershed management plans	2.94	1.26	0.428	21
Lack of perspective and local knowledge of farmers in the watershed plan	2.88	1.33	0.461	22
Lack of social security in rural areas	2.58	1.19	0.461	23
Non according of watershed management plans with the requirements of farmers	2.90	1.38	0.475	24
Ignore the social and cultural characteristics of rural areas in watershed projects	2.53	1.24	0.490	25
Different stakeholder opinions together	2.79	1.47	0.526	26

participation in the rural watershed projects. In this study, the KMO value was 0.754 obtained, in that order, and higher than the 0.75 it indicates that the data (correlation existing among data) for analysis as well. Bartlett statistic is significant at the 99% level (χ=3542.65 and p=0.000) which shows that the correlation matrix based on the factor analysis are not equal to zero.

The number of extracted factors with specific amounts of each of them, percentage of variance and cumulative percentage variance of each factor are presented in Table 3.

The first factor referred to "economic inhibiters factors" with a principal component of (8.86), which is higher than other factors, explains 45.61% of the total variance (Table 4).

This factor was also identifying in other researches that affective on non-participation of stakeholders in projects (Baghaey *et al.,* 2006; Hematzadeh and Khaleghy, 2006; Mosaey, 2009). The second factor was named weakness of extension-educational activities. This factor according to the specific amount 3.93 could explain 15.15% of total variance (Table 4). This finding was according to Hematzadeh and Khaleghy, 2006; Mosaey, 2009; Baghaey *et al.,* 2006 findings.

Table 3: Extracted factors with Eigen values, percentage of variance and cumulative variance

Factors	Eigen values amount	Percentage of variance	Cumulative variance
1	8.860	45.617	45.617
2	3.939	15.151	60.767
3	2.453	9.436	70.204
4	1.945	7.482	77.686
5	1.614	6.209	83.894

Table 4: Factors and variables with loadings factor on non-participation people on watershed projects

Factor	Variables	Factor loading
Economic barriers	Lack of financial ability to participate in the project watershed	0.78
	Lack of funding for watershed projects	0.71
	Difficult borrowing conditions for participation in watershed projects	0.66
	Long-term outcome of watershed management plans	0.59
	Neglecting the role of rural councils in informing watershed plan by government	0.57
	uncertainty and lack of knowledge about the economic performance of the Watershed	0.59
Weakness of extension-educational activities methods	Lack of educational methods for information resource management plans	0.77
	The weak relationship among stakeholders, Experts and agents of natural resources	0.72
	Ignorance of the contents of watershed management plans	0.70
	Illiteracy and illiteracy farmers	0.68
	Lack of clearly participation of farmers in the watershed plan	0.58
Weakness of government on monitoring the projects	Inadequate monitoring of the proper implementation of watershed management plans	0.77
	Not specify the trustee to keep watershed plan implementation process	0.68
Lack of successful of government in implementation other rural plans	Failure of other projects at the village level administrative	0.79
	Lack of the trust from stakeholders to watershed management plans	0.65
	The government ignored the ownership status of the stakeholders of watershed management plans	0.60
Lees attention of government in use of local individual and local organizations	Neglecting the role of local leaders in informing watershed plan	0.59
	Disagreement elders and adults with watershed management plans	0.55

The third factor was named weakness of government monitoring on project. These factors according to the specific amount 2.45 could explain 9.45 % of total variance. The fourth factor was named Lack of successful of government in implementation other rural plans. This factor according to the specific amount 1.94 could explain 7.48% of total variance (Table 4).

The five factors were named "Lees government attention in use of local individual and local organizations in projects". This factor according to the specific amount 1.61 could explain 6.20% of total variance. Therefore people's local knowledge in the protection of natural resources and watershed management projects were playing an important role in the development and preservation of natural resources (Table 4).

Also, these results showed that the majority of the variables intercommunicated with the external factors in non-participation in watershed management projects. For example the difficulty of obtaining a loan.

CONCLUSION

Studies showed that community participation in watershed management plans.has an importance role. The main goal of this study aimed to identify affecting factors on the non-participation of stakeholders in Mahabad's Dam Catchment in Watershed Management Projects. Descriptive results showed that economic variables include the "lack of financial ability to participate in the project watershed" and "uncertainty and lack of knowledge about the economic performance of the watershed" and "long-term outcome of watershed management plans" located in the important priorities of inhibited economic variables in non-participation people on the watershed projects in Mahabad Township.

In these section authors suggested that government must be supported (by delivery loans) and encouragement rural people for doing watershed projects. Also extension agents must be conducted educational class for rural people for increasing their knowledge about benefits of watershed projects. Also extension agents should

be considering extension visits on other areas that similar these watershed projects has been implemented.

The results of explanatory factor analysis showed that affective factors in non-participation of stakeholders in Mahabad dam watershed projects were classified in five factors. These factors were includes "inhabit economic factors, weakness of extension-educational activities methods, weakness of government on monitoring the projects, lack of successful of government in implementation other rural plans. These factors could explain 84 percent of total variances in affective inhabit factors on non-participation of stakeholders in Mahabad dam watershed projects. Also, finding shows that "lack of financial ability to participate in the project watershed, lack of educational methods for information resource management plans, inadequate monitoring of the proper implementation of watershed management plans, failure of other projects at the village level administrative and neglecting the role of local leaders in informing watershed plan were the main important variables in these factors.

Authors suggested delivery government funds like loans and financial assistance grants, and facilitate bureaucracy to getting loans could solve some economic barriers on non-participation rural people in watershed management projects.

Also one of the important factors effects on non-participation of rural people was educational barriers. Therefore authors suggested that extension agents and broadcasting center Mahabad (Radio and TV programs) could have significance role on increases of rural people about beneficiary of watershed programs. In these programs natural resources experts could delivery educational superstations for stakeholders.

Also natural resource organization and extension agents must invite local leaders and Islamic council in their policymaking and implementation of watershed projects. By invite rural people in projects, the knowledge and awareness of stakeholders about the dangers of soil erosion were increased.

But besides these guidelines government must be points to economic strategies such as facilitate in obtain loan, increase the duration of repayment, low income allocated to loans and attention to pay awards to people who activated in implementation watershed projects. Authors of this article will hope that the results of research could be used in the formulation and implementation of appropriate strategies for land utilization of water and soil by planers.

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