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Governance of Agricultural Water Management: How Does the EPSI Model Explain Iranian Farmers' Satisfaction? An Experience from Northwestern Iran

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ABSTRACT

Farmers' satisfaction with agricultural water management can be used as a measure of the fairness of water distribution and the performance of an irrigation scheme. Therefore, the assessment of farmers' satisfaction in this respect could provide useful insights contributing to the sustainable governance of irrigation water. In this study, the population of interest consisted of residents in district of Lajan using the public irrigation network in Piranshahr Township, Iran. Using Krejcie and Morgan's table and following a simple random sampling method, 110 individuals were selected as the research sample. Questionnaire [based on the European Performance Satisfaction Index (EPSI)] was the main tool for data gathering. The validity of the questionnaire was verified by a panel of experts. To assess its reliability, Cronbach's Alpha coefficient was calculated for the main scales of the questionnaire (α= 0.74 to 0.86). According to the obtained data, the main factors influencing farmers' satisfaction included the perceived image of irrigation governance, expectations of farmers from irrigation governance, and the perceived quality and value of irrigation. According to the results, farmers believed that irrigation management by the government was a solution for reducing local conflicts in relation to agricultural water use and justice in the distribution of irrigation water. However, they were not satisfied with the irrigation scheme governance.

Keywords: Commitment, EPSI, Irrigation Governance, Piranshahr Township.

INTRODUCTION

Climate change is expected to cause large damages to food security, the environment, and water resources over the next decades (Amadou *et al*., 2018; Cachorro *et al*., 2018). The effects of climate change-induced water scarcity on agriculture and the livelihood of farmers are complex (Rustinsyah, 2019). Meanwhile, the world is facing major socio-economic changes, especially consumption increases, industrial developments, and demands for water will increase by an increase in populations, leading to an increased global demand for water (Lungarska and Chakir, 2018). In many countries and regions of the world, water problems mainly result from ineffective governance, as well as the uneven distribution of freshwater resources (Playán *et al*., 2018; Bijani and Hayati, 2015). The study of governance generally refers to the interaction between the government, the private sector, and civil society (Lopus *et al*., 2018). Lautze *et al*. (2011) argued that governance is a more inclusive concept than government, emphasizing the need to involve non-

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governmental organizations, the private sector, and citizens (Rhodes, 1996). Thus, water governance includes non-governmental actors, and participation at all levels forms the basis for effective water governance (Aydogdu, 2015).

In developing countries (Bjornlund, 2014), including Iran (Ghorbani *et al*., 2021), agricultural water management has been the responsibility of governments (top-down approach) in previous decades, and efforts to reform its allocation and management have achieved very little. However, the progress of societal perception and irrigation governance has constructed consecutive waves of reforms over the past four decades (Playán *et al*., 2018). The effects of global climate change are likely to further increase the pressure on already strained water resources in the coming decades. Therefore, it is critical to develop human resources for irrigation management (Ghorbani *et al*., 2021). Among them is the use of expert consultants' comments, irrigation management transfer, private partnerships, mobilizing social resources (Rogers and Hall, 2003), and broader participation by civil society, private enterprises, and the media (Bijani and Hayati, 2015). Therefore, irrigation governance started seeking new agricultural water management models after the 1980s (Playán *et al*., 2018) so that the transfer process and private partnerships were implemented to involve water users in irrigation governance (Rezadoost and Allahyari, 2013). Bosselmann *et al*. (2008) believed that exercising one organizational structure to understand complex interactions is necessary for water management. This is because the real needs of farmers can be identified in the irrigation management transfer processes, resulting in their satisfaction. Farmers' satisfaction is considered a major index of sustainability in forming the landscape, harnessing environmental resources, and interactions of people with the biophysical environment, which has become the main purpose of research and policy agenda (Flores and Sarandon, 2004). In Iran, agriculture and industrial sectors use 92 and 2% of water resources, respectively. The remaining 6% was used for drinking. However, in developed countries, these numbers are 60, 30, and 10% for agriculture, industry, and beverages, respectively (Rezadoost and Allahyari, 2013; Gholamrezai and Sepahvand, 2017). However, Mohammadzadeh *et al*. (2021) believe that irrigated agriculture increased by 79.43% over the last 30 years in Iran, which will have a negative impact on the environment and agricultural water management. Eventually, this will increase farmers' dissatisfaction.

Moreover, farmers' satisfaction with irrigation governance is considered an important indicator of water sustainability (Lopus *et al*., 2018). The concept of satisfaction has often been studied from an economic perspective (Frey and Stutzer, 2002). A frequently cited definition of satisfaction is a person's feeling of pleasure or despair from comparing the perceived result of a product and service with his/her expectations (Lungarska and Chakir, 2018). According to James *et al*. (2012), individual satisfaction is defined as the result of a cognitive and affective assessment, where some norms or standards are compared to the perceived performance. Hence, governance of irrigation can improve management and enhance satisfaction among farmers about managing water resources. Omid *et al*. (2012) indicated that common problems in six areas include the dissatisfaction of farmers, network ineffectiveness, inequitable distribution of water, lack of trust towards managers, lack of government support, and the incoherence of the group. In another study, Aydogdu *et al*. (2015) reported the existence of a relationship between satisfaction and education levels, knowledge level about water user associations, and status of ownership, land area, age, farming experiences, income, and the quality of service provided by water user associations. These factors significantly explained farmers' satisfaction. According to another

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study by Bijani and Hayati (2015), the Iranian farmers' satisfaction toward irrigation governance was found to be low, and the important reasons were water management, water scarcity, and drought. In developing countries, including Iran, the central government is the controller and owner of water, and farmers and other water stakeholders have a negligible role in water management. Therefore, farmer satisfaction with agricultural water management is contingent upon human resource management and the participation of indigenous people in planning processes (Li, 2018).

There are various methods for measuring customer satisfaction (Eskildsen and Kristensen, 2007). In this study, the European Performance Satisfaction Index (EPSI) model was used to explain Iranian farmers' satisfaction with agricultural water management. The EPSI model is used to measure customer satisfaction in European countries (Sutoova and Solc, 2009). The model was first developed in 1999 to collect, analyze, and disseminate information about what customers expect from their intended products and/or services in terms of quality, value, and the like (Ghanian *et al*., 2014). In terms of a causal relationship, this model ties the collection of latent variables to a measure of satisfaction (Vilares and Coelho, 2003). Thus, EPSI can be used as an effective tool to improve performance. It is noteworthy that the EPSI model was expanded based on the American customer satisfaction index model. The EPSI model is a structural equation template for expressing six latent variables such as customer expectation, perceived value, perceived quality, image, satisfaction, and commitment (Eskildsen and Kristensen, 2007). Using the ECSI model, Kaveh *et al* (2012) showed that perceived value most influenced by image, technical dimension, functional dimension, and price. Beside, this study shows that customer satisfaction was mostly influenced by perceived value. Also, customer satisfaction has an effect on trust and repurchases intention. Ghanian *et al* (2014) used the EPSI model for application of European Performance Satisfaction Index towards rural tourism. Their results showed that chain of factors influencing commitment towards tourism among those known in the community to have experience in current tourism offerings and upon whom future tourism development would likely depend. The causal connections between the components are shown in Figure 1. Without farmers' satisfaction, service provision cannot be successful in the long term (Vilares and Coelho, 2003). For irrigation, this implies that irrigation governance should match local conditions and the interactions among different actors, including governmental organizations, NGOs, and farmers (Bijani and Hayati, 2011). Therefore, a comprehensive approach is needed focusing on social, economic, cultural, and educational aspects, along with technical issues (Allahyari *et al*., 2013). Due to the importance of growing concern in the agricultural sector and farmers satisfaction with agricultural water management, the investigation of farmers' satisfaction in this respect could provide useful insights contributing to the sustainable governance of irrigation water. Building on the earlier applications of the EPSI model, this study applies the model to evaluate farmers' satisfaction with irrigation governance in northwestern Iran. (Figure1).

The included variables in the EPSI model are explained below with a focus on the empirical case of farmer's satisfaction with irrigation governance:

- **Image:** It implies the credibility of the organization, customer orientation, innovation, and forward-looking and represents how brand perceptions are visualized in customers' minds. This aspect has cognitive (e.g., beliefs) and affective (e.g., feelings) components (Palacio *et al*., 2002; Sutoova and Solc, 2009). To accomplish the data of image effects in irrigation management among the farmers, investing in plans related to the attributes influencing the affective and

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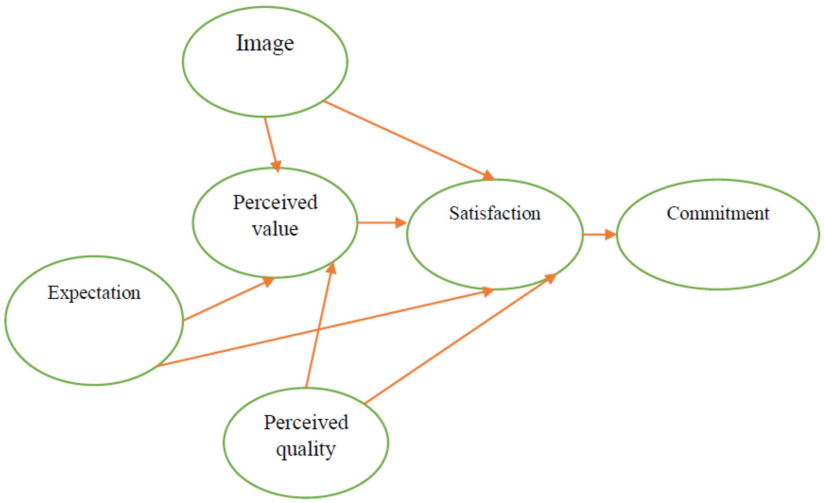

Figure 1. The EPSI Model. Source: (Eskildsen and Kristensen, 2007).

the overall image of irrigation governance is of necessity (Lopus *et al*., 2018).

- **Expectation:** Attributes of expectations include the expectation about product quality, the quality of service delivery, and flexibility (Yi, 1990; Appleton-Knapp and Krentler, 2006). Farmers' expectations about irrigation governance affect their satisfaction. The effect of expectations on farmers' satisfaction depends on the time of assessment. Thus, recall of expectation can be shaped by the levels of farmers' satisfaction.
- **Perceived Quality:** Zeithaml *et al*. (1990) reported the comparison of customers' expectations with their perceptions of actual performance findings in perceived quality. Therefore, farmers' perceived quality is considered as an antecedent to farmers' satisfaction. One important issue in irrigation governance is the fluctuation of service quality perceptions over time. Farmers' experiences are continuous and varied by the passing of time, which emphasizes the relevance of the theme when measuring perceived quality.
- **Perceived Value:** From farmers' perspectives, the perceived value is the overall assessment of utilizing the service according to their perception. For irrigation governance, this value is based upon a comparison between benefits and sacrifices. In other words, perceived value is influenced by the objective the farmers seek to attain through obtaining farm-level irrigation services. Satisfaction discloses the level of farmers' fulfilment with irrigation governance while the value specifies which direction the irrigation governance should take to achieve this satisfaction (Lopus *et al*., 2018).
- **Satisfaction:** This occurs when perceived performance meets or transgresses expectations (Elliott and Shin, 2002). Satisfaction components include the comparison of organization with ideal organization, level of expectation, and overall satisfaction (Sutoova and Solc, 2009). Farmers' satisfaction with irrigation governance mainly relies on their short-term goals (Lopus *et al*., 2018). Thus, to measure farmers' satisfaction, items such as monitoring, evaluation, and general satisfaction were examined in this study.
- **Commitment:** This indicates that the customer returns to the organization to receive the service or product again (Sutoova and Solc, 2009). Accordingly, having farmers that are satisfied with irrigation governance will lead to a commitment to irrigation, which is indicated by positive word of mouth, endorsement of irrigation management in

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the wider community, and a request for services. Farmers' opinions about water pricing, agricultural spending, and responding to needs with a free choice were the chosen factors in this study for measuring farmers' commitment.

Given that the EPSI model has not previously been applied to farmers' attitudes toward irrigation governance, a literature review was conducted to operationalize and customize the key factors of the model for the case of irrigation governance. Then, the customized model was applied for measuring farmers' satisfaction with irrigation governance in Iran. In this study, it provided a basis for testing a causal chain of associations, leading to the following hypotheses:

H1. Image of irrigation has a direct impact on perceived value of irrigation governance among the farmers.

H2. Image of irrigation has a direct impact on farmers' overall satisfaction with existing irrigation governance.

H3. Perception of irrigation governance quality has a direct impact on perceived value of irrigation governance among the farmers.

H4. Perception of irrigation governance quality has a direct impact on farmers' overall satisfaction with existing irrigation governance.

H5. Expectation of farmers toward irrigation governance has a direct impact on perceived value of irrigation governance among the farmers.

H6. Expectation of farmers toward irrigation governance has a direct impact on farmers' overall satisfaction with existing irrigation governance.

H7. Perceived value of irrigation has a direct impact on farmers' overall satisfaction with existing irrigation governance.

H8. Overall satisfaction of irrigation has a direct impact on farmers' commitment to irrigation governance.

MATERIALS AND METHODS

The study was conducted in the rural district of Lajan in Piranshahr, which is located in West Azerbaijan Province of Iran. Piranshahr is one of the leading regions of Iran in agricultural production, although it has recently confronted water scarcity. Figure 2 shows the map of Iran and the location of the study area. West Azerbaijan Province is located in the border areas between Iran and Iraq. This county has an area of 2,259 km^2 and includes 10 rural

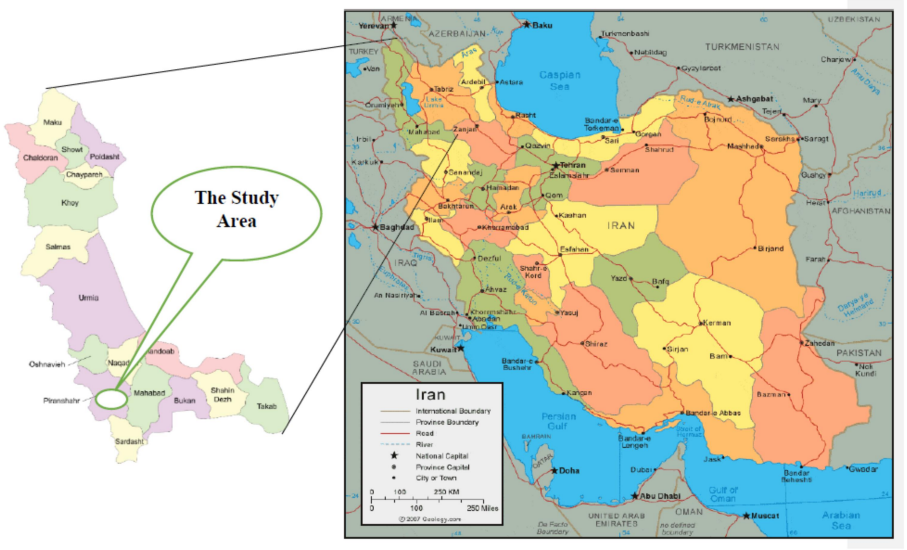

Figure 2. Map of Iran illustrating the location of the study area (Kamali and Youneszadeh Jalili, 2015).

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districts that are subdivided into 147 villages. It further has the highest rural population (210,000 people), of all the counties of West Azerbaijan Province (Statistical Center of Iran, 2018). Traditionally, agricultural water management in the area of study has been the sole responsibility of the government following a centralized top-down approach. Local people are not considered in the management and planning of water consumption in the agricultural sector. Therefore, it is managed in a completely centralized system (Rezadoost and Allahyari, 2013). Figure 2 displays the map of Iran and the location of the study area.

In this study, we adopted a correlational survey to test the conceptual framework of the study and to determine the farmers' satisfaction with agricultural water management. Data collection used a researcher-made questionnaire that was tested for validity prior to the launching of the study. Specifically, the questionnaire was reviewed by subject experts (faculty members of rural developments, agricultural water specialists and agricultural extension), who evaluated the interpretation of the questions, the length of the questionnaire, easiness of the questions, and clarity. The research instrument consisted of two main parts. The first part contained demographic characteristics of the respondents, including age, gender, agricultural experience, marital status, and education. Six components were constructed in the second part of the questionnaire i.e. image (8 items), expectation (5 items), perceived quality (8 items), perceived value (9 items), satisfaction (3 items) and commitment (4 items) assessed by five points Likert scales. Data collection took place between October 2020 and January 2021. The population of interest consisted of some residents in district of Lajan using the public irrigation network in Piranshahr Township, Iran (N= 170). Using Krejcie and Morgan's table and following a simple random sampling method, 110 individuals were selected as the research sample. Next, in order to assess the reliability of the questionnaire, a pilot study was conducted among the farmers of Sardasht Township. After collecting 30 pilot questionnaires, to assess reliability, Cronbach's Alpha coefficients were calculated for the main scales of the questionnaire (α= 0.74 to 0.86). Data were analyzed using AMOS software.

RESULTS

Table 1 summarizes descriptive statistics. Based on the findings, the majority of participated farmers were aged 45 years or above. With a sample mean of 18.5 years of experience in agricultural activities, our respondents were unequally distributed in this regard (40.9, 24.5, and 34.6% with 15 years or fewer, 15-25, and 25 years or above, respectively). While 62.7% of farmers had primary and high school education, the rest of them had academic literacy. As shown in Table 1, 50.0% of the respondents were the owners of the land that they were farming whereas the other half were either tenants or both tenants and owners. Data about the total area of the applied agricultural land, water source, and irrigation method by the respondents are presented in Table 1.

Responses to the 37 statements used to operationalize the study variables produced average scores between 1.47 and 2.81, often with wide deviations. The items and their average scores are summarized in Table 2. The obtained data indicate the ranking of statements within each component according to the average mean. For instance, among the eight statements inquiring about the image component, the statement *"Reducing local conflicts in relation to agricultural water use"* ranked the first, followed by the statement *"Farmers' participation in the planning of irrigation"* whereas the statement *"Financial support and facilities for farmers"* ranked the last.

A correlation matrix was produced to examine the relationships among the constructs of the EPSI model (Table 3).

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Table 1. Personal characteristics of respondents (n= 110).

Variable	Variable categories	Frequency	Percentage
Age (Years)	< 35	24	21.8
	35-45	28	25.5
	> 45	58	52.7
Work experience (Years)	< 15	45	40.9
	15-25	27	24.5
	> 25	38	34.6
Level of education	Secondary school or lower	69	62.7
	High school	22	20.0
	University	19	17.3
Type of land ownership	Owner	55	50.0
	Tenant	33	30.0
	Both	22	20.0
Total agricultural land (Hectares)	< 2	24	21.8
	2-5	29	26.4
	5-10	43	39.1
	> 10	14	12.7
Water source	Groundwater	41	37.3
	Surface water	37	33.6
	Both	32	29.1
Irrigation method	Furrow irrigation	58	52.7
	Sprinkler irrigation	52	47.3

Based on the findings, there are significant correlations between the constructs of the model (P≤ .01%), and the path analysis of these constructs could be tested accordingly.

To examine the general fit of the proposed model (Figure 1) with the collected data, SPSS AMOS software was used for the path analysis. In the template, commitment is the endogenous construct, while perceived quality, expectation, and image are exogenous constructs. Further, the perceived value and satisfaction are the moderating variables. As depicted in Figure 3, three constructs (i.e., image, expectation, and perceived quality) explain 0.53 of the variation in the variable of the perceived value. However, these three constructs could only explain 0.08 of the variation in the variable 'satisfaction', and satisfaction could explain 0.18 of the variation in the variable 'commitment' alone.

Table 4 provides the measures of model fit based on criteria from Amin Fanak (2014). The comprehensive goodness-of-fit indices produced a Chi-square of 2.09, where the intended Chi-square threshold is in the range of < 3. Comparative fit index, goodness-of-fit index, and incremental fit index values were 0.98, 0.98, and 0.98, respectively, whereby for these indices a value of ≥ 0.70, ≥ 0.80, and ≥ 0.90 is satisfactory, good, and highly good, respectively. The root means square residual had a value of 0.02, which was also acceptable. In addition, the root means square error of approximation value was 0.07, where an RMSEA threshold in the range of 0.05-0.10 is considered an indication of fair fit. Thus, the findings indicated an acceptable fit of the model.

A confirmatory factor analysis was performed to determine the goodness of fit between the hypothesized model and the obtained data (Table 5). Hypotheses H1, H2, H3, H5, H6, and H8 were accepted at the significance level of 0.05 whereas hypotheses H4 and H7 were not supported based on the findings.

DISCUSSION

The main goal of this research was to study farmers' satisfaction of irrigation governance in the West Azerbaijan Province of Iran. The specific objectives were

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Table 2. Indicators of the EPSI model.

Constructs	Indicators	Mean[a]	SD	CV	Rank
Image	Reducing local conflicts in relation to agricultural water use	1.94	0.93	0.47	1
	Encouraging farmers' participation in the planning of irrigation	1.92	1.03	0.53	2
	Interfering in and solving the disputes between the farmers	1.91	0.97	0.50	3
	Strengthening the interaction between farmers and the government	1.88	0.96	0.51	4
	Promoting cooperative spirit among the farmers	1.80	1.07	0.59	5
	Providing regular reports to farmers	1.70	0.90	0.52	6
	Facilitating adequate coordination between stakeholders	1.62	0.90	0.55	7
	Providing financial support and facilities for farmers	1.57	0.98	0.62	8
Expectation	Appropriately planning water distribution and cultivation patterns	1.90	0.99	0.52	1
	Preventing unauthorized use of water in agriculture	1.90	1.09	0.57	2
	Making the right decisions in terms of the timing of irrigation and the distribution rates	1.75	1.03	0.58	3
	Reflecting farmers' needs and problems to relevant managers and experts	1.63	0.97	0.59	4
	Inspecting the irrigation network by governance officials and experts	1.51	0.93	0.61	5
Perceived quality	Increasing trust in providing water	2.30	1.03	0.44	1
	Creating job opportunities and reducing unemployment	1.85	0.91	0.49	2
	Managing irrigation fee collection	1.71	1.01	0.59	3
	Maintaining irrigation canals and facilities	1.55	0.96	0.61	4
	Assisting in the drainage of farms and disposal of wastewater	1.51	0.88	0.58	5
	Providing technical advice to farmers	1.51	1.00	0.66	6
	Expertizing government employees in managing irrigation water	1.50	0.96	0.64	7
	Repairing irrigation canals and facilities	1.47	0.94	0.63	8
Perceived value	Observing justice in the distribution of irrigation water	2.81	0.93	0.33	1
	Improving justice among the farmers regarding the distribution of water	2.67	0.88	0.32	2
	Rising the price of agricultural lands	2.41	0.95	0.39	3
	Observing increased environmental degradation in the region	2.39	0.86	0.35	4
	Improving the infrastructure in rural areas	2.17	1.03	0.47	5
	Increasing farmers' productivity and income	2.11	1.10	0.52	6
	Reducing water losses in agriculture	2.08	0.93	0.44	7
	Increasing the gap between poor and wealthy farmers	1.59	0.97	0.61	8
	Making positive changes in the social norms of farming in the region	1.46	1.03	0.70	9
Satisfaction	Agreeing with the management of irrigation water by the government	1.97	0.92	0.46	1
	Monitoring the benefits of irrigation	1.90	0.91	0.47	2
	Implementing monitoring and evaluation systems	1.58	1.01	0.63	3
Commitment	Applying adequate water pricing and related services	2.44	0.81	0.33	1
	Increasing agricultural spending by farmers	2.40	0.98	0.40	2
	Increasing public sector focus on rural affairs	1.80	1.03	0.57	3
	Being responsive to the needs of a small group of (wealthy) farmers	1.46	0.97	0.66	4

[a] Ranking is based on the average mean.

Table 3. Correlation matrix of the main research constructs (Pearson correlation).

Constructs	Image	Expectation	Perceived quality	Perceived value	Satisfaction	Commitment
Image	1					
Expectation	0.563**	1				
Perceived quality	0.506**	0.636**	1			
Perceived value	0.520**	0.666**	0.632**	1		
Satisfaction	0.203**	-0.023	0.074	0.100	1	
Commitment	0.224**	0.137*	0.177*	0.122	0.426**	1

** P≤ 0.01.

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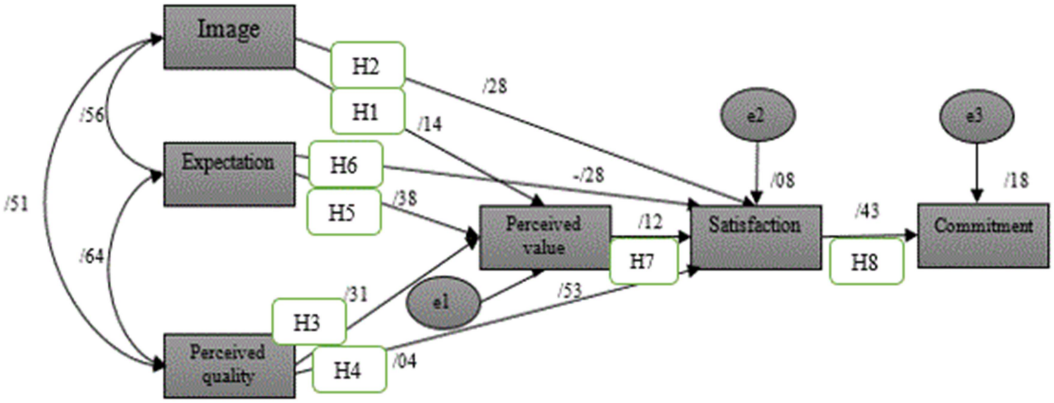

Figure 3. Path diagram results: Constructs influencing the farmers' views on irrigation governance estimated by AMOS ($^{**}P \leq 0.01$).

Table 4. Measures of the research framework model fit.

Indices[a]	Value of the index	Fit criteria[b]
Chi-square	2.09	< 3
CFI	0.98	≥ 0.90
GFI	0.98	≥ 0.90
IFI	0.98	≥ 0.90
RMR	0.02	< 0.08
RMSEA	0.07	< 0.08

[a] CFI: Comparative Fit Index; GFI: Goodness-of-Fit Index; IFI: Incremental Fit Index; RMR: Root Mean square Residual; RMSEA: Root Means Square Error of Approximation.

[b] Sources: Fanak, A. (2014).

Table 5. Summary of the hypothesis testing results (Confirmatory factor analysis).[a]

Hypothesis	Unstandardized	Standard error	Standard factor	Critical ratio	Sig	Testing result
H1. Image of irrigation _ Perceived value	0.240	0.072	0.144	3.34	0.000	Supported
H2. Image of irrigation _ Overall satisfaction	0.155	0.064	0.282	2.42	0.016	Supported
H3. Irrigation governance quality _ Perceived value	0.333	0.068	0.315	4.93	0.000	Supported
H4. Irrigation governance quality _ Overall satisfaction	0.031	0.079	0.037	0.390	0.697	Not supported
H5. Expectation of farmer _ Perceived value	0.324	0.056	0.384	5.76	0.000	Supported
H6. Expectation of farmer _ Overall satisfaction	-0.190	0.067	-0.285	-2.83	0.005	Supported
H7. Perceived value of irrigation _ Overall satisfaction	0.094	0.077	0.119	1.22	0.222	Not supported
H8. Overall satisfaction _ Commitment	0.379	0.059	0.426	6.74	0.000	Supported

[a] All path parameters were significant at α= 0.0° level (t-Value> 1.96).

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twofold: (1) To determine farmers' satisfaction with irrigation governance in the study area, and (2) To test a causal chain of associations based on the EPSI causal model. Based on the findings, half of the respondents (52.7%) were over 45 years. Approximately 87% of the respondents owned less than 10 ha of agricultural lands, implying that the majority of the farmers were smallholders. This finding is also consistent with that of Aghasizadeh (2007), indicating that a large majority (80.7%) of agriculture in Iran is based on subsistence farming. Farmers' literacy levels were low, given that only 3% of them had higher education. With regard to irrigation methods, more than half of the respondents (52.7 %) used furrow irrigation on their farms. This study supports evidence from previous observations (e.g. Allahyari *et al.,* 2008; Mohammadzadeh *et al*., 2021). According to Aghasizadeh (2007), the majority (80.7%) of the Iranian farmers are smallholder and subsistence farmers. Thus, this makes water governance in irrigated agriculture more difficult for planners and managers. Considering that the livelihood of farmers depends on agriculture, the lack of proper supervision and plans in agricultural water management will cause irreparable damage to their livelihood.

The second part of the survey assessed respondents' viewpoints about the multiple constructs of farmers' satisfaction with irrigation governance. Based on the EPSI model, the constructs were categorized into six components, namely, image, expectation, perceived quality, perceived value, satisfaction, and commitment. Our findings showed that the model of farmers' satisfaction of irrigation governance has a good fit and, therefore, has the capacity to predict farmers' satisfaction. Farmers' image of irrigation has a significant effect on the perceived value of irrigation governance, which supports H1. Moreover, farmers' image of irrigation has a significantly positive effect on their satisfaction toward irrigation governance, supporting H2. It should be noted that the policies and main strategies related to irrigation management in agriculture are determined by the government and local and private authorities do not have a role in this field. The perceived quality had a significant effect on the perceived value, confirming H3. Based on the obtained data, farmers are not satisfied with irrigation governance since it is controlled by the government. However, they believe that irrigation management by the government is a solution for reducing local conflicts in relation to agricultural water use and justice in the distribution of irrigation water. On the other hand, farmers lack the capacity for self-management and prefer management by the government even if they are not satisfied with the overall governance structure. This could be due to underdevelopment, poor monitoring of relevant institutions, failure to observe the rules, and the lack of farmers' education. Bijani and Hayati (2015) confirm that engaging people in planning is essential in order for farmers' satisfaction with the governance of agricultural water, because participation in planning agricultural water management will produce favorable results for farmers (subsistence farmers). These findings reject H4, confirming that irrigation governance quality had no effect on the farmers' overall satisfaction with irrigation governance. This finding contradicts results of Kaveh *et al*. (2012), but is consistent with the findings of studies done by Ghanian *et al*. (2014) and Gholamrezai and Sepahvand (2017), who conclude that the quality of services provided has a positive impact on the overall satisfaction of farmers with irrigation governance. The higher expectations of farmers from irrigation governance led to a higher perceived value toward agricultural water management, supporting both H5 and H6. However, the perceived value of irrigation exerted no significant effect on the overall satisfaction of residents, rejecting H7 and suggesting that irrigation governance in the region is so weak that farmers' perceived values of irrigation had no relationship with their overall satisfaction with the current status of

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irrigation governance. However, the overall satisfaction had a significant effect on the commitment of the farmers to irrigation governance, yielding support for H8. Li (2018) found that for overall satisfaction with the continuation of the existing irrigation governance, the conventional management format needs to change by efficient mechanisms and institutions, enabling and involving members of civil society in planning in such a way that social and environmental outcomes are secured.

CONCLUSIONS

Findings of this study show that, although the farmers are not satisfied with water management in the study area, they are willing to continue the existing structure, which is the governance of irrigation by central government. Because they feel that only then can justice in the distribution of water be possible. Framed in the EPSI model, the results indicated that overall satisfaction with the continuation of the existing irrigation governance and the perception of irrigation governance quality were the two most important constructs that influenced farmers' commitment to irrigation governance. Based on the observations made by the authors and the feedback from farmers, they are satisfied with the central government's management of agricultural water. As shown in the research results, the hypothesis of 8 studies is supported and the overall satisfaction had a significant effect on the commitment of the farmers to irrigation governance, because they trust the central government. Otherwise, it is abused by a group of (wealthy) farmers. As a result, conflicts will increase and poorer and smallholder farmers become weaker. Since this is a kind of forced satisfaction, farmers have to choose between "bad" and "very bad" governance options. In other words, smallholder and low-income farmers prefer public administration and the top-down approach to water management by wealthy and large-scale farmers farmers. Because they feel that the great−owner farmers behave unfairly. It is estimated that reasons for this situation can be due to the lack of awareness of the people regarding their basic rights, uneducated farmers, and the low level of expectations and potential.

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حاکمیت مدیریت آب کشاورزی؛ چگونه مدل EPSI رضایت کشاورزان ایرانی را توضیح می دهد؟ تجربه ای از شمال غرب ایران

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چکیده

رضایت کشاورزان از مدیریت آب کشاورزی می تواند به عنوان معیاری برای عادلانه بودن توزیع آب و عملکرد یک طرح آبیاری مورد استفاده قرار گیرد. بنابراین، ارزیابی رضایت کشاورزان در این زمینه می تواند منجر به ارائه بینش مفیدی شود که به حکمرانی پایدار آب آبیاری کمک می کند. جامعه آماری این پژوهش، ساکنان بخش لجان که بهره برداران شبکه عمومی آبیاری در شهرستان پیرانشهر در ایران بودند. با استفاده از جدول کرجسی و مورگان و با استفاده از روش نمونه گیری تصادفی ساده، ۱۱۰ نفر به عنوان نمونه پژوهش انتخاب شدند. پرسشنامه [بر اساس شاخص رضایت از عملکرد اروپا (EPSI)] ابزار اصلی برای جمع آوری داده ها بود. روایی پرسشنامه توسط گروهی از خبرگان تایید شد. برای سنجش پایایی آن، ضریب آلفای

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کرونباخ برای مولفه های اصلی پرسشنامه (α=۰/۷٤ تا ۰/۸٦) به دست آمد. بر اساس تجزیه و تحلیل داده ها، عوامل اصلی مؤثر بر رضایت کشاورزان شامل "تصویر درک شده از حکمرانی آبیاری"، "انتظارات کشاورزان از حکمرانی آبیاری" و "کیفیت و ارزش درک شده آبیاری" بود. با توجه به نتایج به دست آمده، کشاورزان معتقد بودند که مدیریت آبیاری توسط دولت راه حلی برای کاهش تعارضات محلی در رابطه با مصرف آب کشاورزی و عدالت در توزیع آب آبیاری است. با این حال، آنها از نحوه حکمرانی آبیاری راضی نبودند.

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