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Original Article

Analysis of the Impact of Environmental Unsustainability on Social Unsustainability in Iran: Tensions and Social Damages Caused by Drought in Rural Areas

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Abstract

Purpose- Social sustainability, especially in rural areas, is one of the most important goals of policymakers, planners and managers. However, social sustainability in local communities, such as villages, can be challenged through environmental instabilities. Accordingly, the purpose of this study is to analyze the tensions and social dangers in rural areas of Neyshabur, one of the provinces of Iran.

Design/methodology/approach- In order to measure the relationship between the independent variable of drought and the dependent variable of social tension, 24 variables were identified in the context of drought, existing tensions and social damage caused by water scarcity in the study area. The required information was collected from documentary studies and also through interviews and questionnaires. One-sample t-test, Pearson correlation, single-variable regression, and VIKOR model were used to analyze the data .

Findings- The results show that there is a relationship between water deficit deduced from drought and 22 social unsustainability variables. Based on the results of the regression test and the amount of obtained beta, respectively, the greatest effects of water shortages deduced from drought was on intensifying rural poverty (0.932), increasing living expenses (0.931), and the destruction of small crop and small cultivation (0.924). Also, the results of the VIKOR model showed that there is a difference between the studied villages in terms of the severity of social tensions.

Originality/value- This study has been promising to focus on the effects of drought and water scarcity as an environmental unsustainability in shaping and exacerbating tensions and social injuries. Therefore, the results of this study can be effective in recognizing the social impacts of environmental changes in geographical areas and countries facing environmental changes .

Keywords- Environmental Crisis, Environmental Changes, Social Unsustainability, Social Stress, Drought, Rural Communities

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1. Introduction

Environmental unsustainability and climate change have become a major issue today (Hoekstra and Wiedmann, 2014). There are various forms of environmental unsustainability, based on geographical location and environmental conditions, where drought is one of the most important. Drought is a dangerous natural hazard that causes complex effects in societies; these effects are not only damaging in one country, but also the effects of drought on the globe can also be spread (Wilhite, et al., 2007). This phenomenon is also one of the climatic anomalies that has adverse effects on plants, animals and ecological environments, and ultimately on human populations (Wilhit and Wood, 2001). The damages and effects of drought are so much that some of them are wider and more persistent than other natural disasters, such as floods and earthquakes (Wilhit, 2000), as if decreasing agricultural production deduced from drought is the costliest natural disaster (Fontain et al., 2009). In fact, drought as a global issue is a serious threat for food production and security (Jalleel et al., 2009); This crisis is one of the main factors limiting the development of countries (Ceccarelli and Grando, 2004). It can be said that drought-induced vulnerability is a complex concept that includes both environmental and socio-economic impacts (Brooks et al., 2005; Adger, 2006; Fussel 2007; O'Brien et al., 2007). Droughts therefore have many negative economic effects on farmers and local economies. These effects have been highlighted in numerous sources (Diersen et al., 2002, Horridge et al., 2005, Edwards et al., 2009). But social impacts of drought have been less widely considered (Fritze et al., 2008). The social effects of drought are visible on several forms; For example, indirect economic effects such as suffering and stress caused by productivity reductions, population declines, social disruption as a consequence of the negative economic effects of agricultural drought and psychological damage caused by livestock losses, destruction of soil and native vegetation are examples of this. (Berry et al., 2008). But it should be noted that the degree of drought effects on societies and human groups is different. So that the inhabitants of the rural areas have the most impact from the drought in different aspects because of their greater connection with the environment and economic activities related to the environment (agriculture and animal husbandry). Drought in rural environments has significant social effects in addition to economic and environmental impacts (Armenski et al., 2014). Drought, for example, leads to the migration of villagers. Most villages experience dwindling population or loss during the drought years (UNESCO, 2015). On the other hand, it can be said that another social impact of drought on rural farmers is psychological harm, resulting in a decrease in crop production (Edwards et al., 2009). Because the occurrence of drought has a very serious impact on the reduction of water resources in rural areas and, on the other hand, because most of the villagers are dependent on water, so the reduction of water has many negative effects, one of these effects is the conflict between farmers over water (Gleick, 2014). Based on the discussed issues, it can be admitted that droughts and water resources decrease through intensification of poverty, the creation of conflict and struggle among villagers, migration, mental harm in farmers, and reducing the quality of life has led to social unsustainability and the weakening of social cohesion in Villages (Malik, 2018). Objective examples of social unsustainability due to drought and water scarcity in Iran can be seen. For example, water conflicts between two farmers from the village of Chalsara, located in Ilam, were mentioned, which resulted in the murder of one of the farmers (http://jamejamonline.ir). Also, the disagreement between the villagers of Ahar for agricultural water can be noted. In this conflict, four villagers were killed (https://www.yjc.ir). In the past 40 years, 27 different drought phenomena have occurred in Iran; Accordingly, droughts should be regarded as a common phenomenon in Iran (Hatef et al., 2009). In general, Khorasan Razavi province in Iran, especially its northern part, which Neyshabur is located in it, is part of the arid and semi-arid regions of Iran (Mesgaran & Azadi, 2018). The water crisis in Neyshabur is a serious crisis. It can be said that in the last year 150 cases of water disagreements have been reported among the villagers of the city. So far, 80 percent of the Qanats and fountains in the city have been dried or severely damaged. So that the current process of harvesting water from underground resources put 700 villages in the city under drought siege and, of course, the agricultural and livestock

production and related products will not be immune from drought and its damages. (https://www.mehrnews.com). Since the number of villages in this city is high and the activity of most villagers is depended on agriculture and its products, Therefore, the effects and damages caused by drought in most cases are noticeable for rural farmers. Among the damages in the social dimension we can mention immigration, conflicts and internal conflicts over water. In the long term, these conditions can lead to unsustainability and the loss of social cohesion in villages. Accordingly, the present study is aimed to analyze the effects of water shortages deduced from drought on social tensions and social damages in rural areas of Neyshabur. Because the results can help rural planners and managers to create a practical management of drought crisis and also to understand its social impacts among villagers. So the basic question of the research is: What is the relationship between social tension and water shortages caused by drought? And the greatest impact of the water shortage deduced from drought in the region is on the formation of which social unsustainability?

2. Research Theoretical Literature

In general, there is no coherent definition of social unsustainability (Ahman, 2013). Even Grieller and Littig acknowledge that choosing sustainability indices does not have a definite theory (Griessler and Littig, 2005). Nonetheless, social unsustainability can be lead to a situation in which the employment, level of life and welfare in a community will be difficult. Several factors influence the formation of social instabilities (Moench, 2002), one of the most important items is environmental instabilities. Environmental unsustainability occurs as a result of natural disasters such as drought, flood, climate change. These instabilities can have many economic, social and environmental impacts on human societies. It can also disrupt the lives and activities of the inhabitants of these societies. (Mawle, 2010). Particularly in rural areas, because rural activities are more dependent on environment and natural resources, it can create many challenges.

Environmental unsustainability and social unsustainability

There are complex interactions between global and local environmental changes, which are strongly associated with the possible occurrence of natural disasters affecting communities, their interactions, human activities, and land use changes (Arias et al., 2016). In many cases, the effects of environmental changes are on communities and humans (FAO, 2000). Therefore, it can be said that environmental changes can lead to catastrophic events and challenges for societies. These changes can create multiple social crises in different areas. Especially in rural and poor areas, which are highly dependent on the environment and environmental resources (Huppert, Sparks, 2006; Mertz et al., 2009). Therefore, environmental changes are important because of their impacts on society. If such changes impede the access of societies to basic needs such as livelihood, access to water, food and energy, it will lead to social crises in different areas. Therefore, environmental changes are one of the important factors that have main rule in social crises (Tresman, 2004). Environmental changes in some regions, such as South American countries and countries around the Caribbean Sea, have created significant social crises such as social inequality, conflict, population displacement, poverty, and lack of job opportunities (Basher, 2006).

Therefore, social sustainability can be disturbed and became unstable through environmental factors, natural hazards, and climate changes (Eizenberg and Shilon, 2016). As a result, this factor often leads to disagreements and conflicts between villagers, poverty and mental-psychological damage, multiple diseases, and also disruptions in social cohesion. Therefore, the quality of life of people decreases, and after that people leave their homes and migrate to other places. In addition, creating inequalities caused by environmental unsustainability in societies can also exacerbate social unsustainability (Vinthagen, 2013). Therefore, challenges such as class divisions, rising poverty levels, disagreements and conflicts among communities, natural disasters and environmental changes are signs of social unsustainability (Jabareen, 2015).

Due to the importance of natural resources, including water in the economic, social and environmental life of local communities, so far, numerous studies have been done directly and indirectly on droughts and social instabilities. Jülich (2011) has explored the effects of drought on the rural population in the state of India. It has come to the conclusion that as a result of the

drought, many villagers are temporarily migrating from the village. In fact, rural families have left their home and workplace to migrate to other places in order to cope with the effects of drought. Traore & Owiyo, (2013) examines drought-related damages in the north parts of Burkina Faso. The results of the research indicate that this area is very vulnerable to drought. In the aftermath of the drought, the livelihood of the people has been lost, and many residents of this region have lost their jobs. The drought has initially led to a shortage of water, which has disrupted the irrigation of the products and reduced the yields of the products. As a result, access to food for people and animal has also been disturbed. Gleick (2014) has studied the impact of drought on water conflict in Syria. The findings suggest that climate change and drought in the country's villages led to water shortages and inefficient irrigation, resulting in conflict between people on water. All of this has had a huge impact on the movement and migration of people. Vins et al., (2015) investigated the psychological and mental health problems caused by drought on farmers. The results show that attention to the relationship between drought and mental health is very important. Because droughts can affect the mental health of farmers through issues such as reducing or losing family livelihoods, unemployment and reducing social protection. Among these mental health problems, we can point to mood disorders, violence and suicide in the United States. Arias et al. (2016) studied the impact of environmental changes and natural disasters on social crises. The results of this research show that one of the most important social challenges in different societies is the management of natural disaster risk and environmental change. In areas where environmental changes such as droughts and floods have occurred, social cohesion and social sustainability of communities have also encountered problems. katalakute et al. (2016) investigated drought-related injuries in one of the states of India. The results of the study showed that with increasing drought severity, people migrate to urban places and other areas for finding employment facilities. In these areas, drought disrupts agricultural production. So that the balance between supply and demand disappears and leads to higher inflation. Also, after drought, the highest number of suicides has been reported in those states. Muyambo et al., (2017) investigated the social dangers of drought in a state in South Africa. The results of this study indicate that drought can have a significant effect in the formation of stress, mental and psychological illnesses. It also leads to undermining cultural values, changing lifestyles, reducing social dependency, and losing food security. De Silva & Kawasaki (2018) studied the impact of drought and flood on villagers' poverty in Sri Lanka. They conclude that those villagers whose livelihoods are highly dependent on natural resources are more vulnerable to drought. Farmers who have a high dependence on natural resources have suffered from severe poverty, and this has led to a sort of class gap in the rural community.

A total survey of studies has shown that most studies have focused more on socio-economic issues or that only one dimension of social impacts from droughts and water scarcity has been taken into consideration. But in the present study, we try to examine the various dimensions of social unsustainability caused by droughts and water shortages in villages and on villagers' lives. And eventually, tensions and social unsustainability, will be analyzed.

Based on previous studies, natural factors play a decisive role in the social development of societies. So that the dynamics of rural communities are strongly influenced by natural potential and social sustainability of villages which is directly related to natural potentials such as suitable soil, smooth land, desirable climate and running water, which ultimately provides a framework for strengthening social cohesion (Gautam, 2017). In general, environmental capabilities provide a proper basis for social development in societies (Coats et al., 1977). Because natural factors have increasing effects on the livelihoods of villagers and have always directly and indirectly affected the lives of villagers (Barbier, 2010). In some cases, environmental bottlenecks hamper the arena for villagers, create rural immigration and social unsustainability and threaten social cohesion in villages (Zahran et al., 2008). As previously mentioned, one of the most important environmental instabilities affecting the creation of tension, the challenge and unsustainability of local societies, is drought and also the reduction of sources which is one of the biggest results of it. Therefore, migration, distractions, conflict, poverty, and mental health damage (as a verifiable

social unsustainability) can be exacerbated by drought as a natural hazard (Malik, 2018).

Drought and rural migration: In general, immigration is a creeping phenomenon and its effects on villagers are happening step-by-step (Reuveny, 2007). In the first step, droughts reduce the food supplies in village, and with the prolongation of drought years, the effects of it increase and ultimately the last resort for villagers will be immigrant. (Tiscar et al., 2018). During the drought years, the motivation for the migration of the villagers is significantly increased; Indeed, we can say the most important and perhaps most convenient anti-drought response strategy for villagers against drought is immigration (Jülich, 2011). Droughts, through reducing soil fertility and desertification, leading to the migration of rural populations. Thus, during a severe period of drought, a village may lose its entire population. But it should be noted that for villagers who enters the city; At first, living conditions in the city will be encouraging, but over time, the social identity of the villagers and the urban social stability are threatened (UNESCO, 2015).

Drought and Rising Rural Poverty: The effects of drought on the lives of people in different regions, including rural places have various aspects; Because people in some areas have more flexibility than other areas. Usually people who are less capable of adapting to the drought phenomenon may suffer extreme poverty as a result of drought (Fujii, 2016). After drought, families whose livelihoods are more dependent on natural resources (e.g, agriculture, livestock, etc.) often confront several problems and their income will be reduced and also they find it difficult to meet the needs of their families (Barua et al., 2014; Leichenko and Silva, 2014). In this situation, due to water shortages, some agricultural land will be uncultivated, which will result in job losses in the rural places. As a result, poverty is aggravated in rural areas and the number of poor villager's increases (Alam, 2017).

Drought and local conflict: Some analysts claim that drought-related factors, such as water scarcity and failure in agriculture, play an important role in destroying social structures, provoking domestic violence and conflict between villagers (Femia and Werrell 2013; FAO 2012) In particular, when several severe drought periods occur, products and economic returns will be reduced which leading to conflicts and serious problems in rural areas. These factors often help to increase unemployment and economic disturbances and social chaos (Gleick, 2014).

Drought and Health Damages: Drought affects human health in many ways. In fact, drought has a very important impact on human health (Dinkelman, 2015). Droughts all over the world have a major negative impact on human health. These effects are related to nutrition, respiratory diseases caused by suspended ingredients and effects on mental health (Stanke et al., 2013; Vins et al., 2015). One of the most important negative effects that drought can have on human health is the impact on mental health (Edwards et al., 2015). Considering that the negative financial effects of drought have the greatest impact on farmers, (Edwards et al., 2009) Therefore, it can be said that some farmers are losing their jobs as a result of drought. The mental health of this group is most affected by drought. (Edwards et al., 2015). In fact, the drought-induced unemployment stress has a profound negative effect on the mental health of farmers (Petkova et al., 2017). Also, in drought conditions, there is limits in access to freshwater which lead to diseases that endanger the health of individuals (Kim et al., 2014).

Accordingly, social unsustainability caused by droughts and water shortages in the dry and semi-arid parts of the world is becoming a major challenge. Accordingly, identifying the type of tensions and social damages associated with drought and water scarcity as environmental unsustainability is one of the most important issues that we have addressed in this study.

3. Research Methodology

3.1 Geographical Scope of the Research

Based on the purpose of the study and the research questions, in the next step for the operationalization of the study, the sample area was selected in order to analyze and determine the statistical society. Mian Jolge is one of the parts of the city of Neyshabur in Khorasan Razavi province. In almost all villages in the study area, most people's income is from farming, gardening and animal husbandry. As the region has a warm and dry climate, the problem of water scarcity and the increasing need for this life resource in the rural areas of this city become more acute and more sensitive each and every day. Due to the large number of villages in this city and because the

economy of most villages is dependent on water and land; the growing population and rising demand for water, and the recent occurrence of droughts in recent years has expanded the problem of water scarcity in rural areas of this city. Accordingly, the sample population includes farmers and gardeners residing in 9 villages in the Mian Jolge division, which is often confront with the problem of drought. In order to determine the size of the sample population, firstly, the number of reported disagreement among farmers about water supplies was collected according to Table 1. Then, due to the fact that in the Mian Jolge, the number of these differences is more than the other sections, so the villages of this section were selected as the study area.

Table 1. Number of disagreements over water in 2018
Source: Archives of Police in Neyshabur, 2018

Rural section	The number of disagreements
Zebarkhan	40
Sarvelat	25
Markazi	30
Mian jolge	53

To determine the sample size of the villages of the Mian Jolge section according to population, first, according to Table 2, villages were divided into 3 classes, then from each section the place with highest population was selected. In the following, using Cochran method and based on error 0.1, 94 samples were selected for study and distributed among the villages. In villages where the number of samples was less than 10, at least 10 samples were added to increase the power of the extending the results. So, in the whole study, 121 farmers were interviewed. Therefore, for collecting questionnaires, random-stratified sampling method was used (Table 2).

Table 2. Village classification and sample size
Source: Statistics Center of Iran, 2018

Percentage of the total village population	The number of samples	population	The name of village	The number of villages in each class	Classification of villages based on their population
3.37	10	297	Maroos	20	100- 300
3.85	10	260	Eshrat Abad		
3.94	10	254	Dehno		
2.04	10	489	Golshan	20	301-600
1.99	10	503	Samadie		
2.99	10	335	Pirgaz		
1.40	34	2421	Ardame	26	+601
1.36	14	1031	Raeesi		
1.33	13	978	Fath Abad		
1.82	121	6568	9	66	Total

Data collection was done through a researcher made questionnaire with 64 questions in terms of Likert spectrum and based on identified indicators. the questionnaire was designed based on variables and it was pre-tested by several experienced experts and also it was edited according to their corrective comments. In order to reach the reliability of the questionnaire Cronbach's alpha coefficient was used, which is 0.835 for the whole questionnaire. Therefore, the reliability of the questionnaire in this research is high, which indicates its trustiness. In the process of analyzing the data, Shannon's entropy model was used to determine the weight of the indicators (Shannon, 1948) and the VIKOR multi-criteria model was used for ranking the villages (Huang et al, 2009) in terms of social unsustainability. Also, SPSS and single-sample t-tests, correlation and regression were also used for statistical analyzes. It should be noted that in this study, we have encountered some restrictions on the dispersal of samples at the district, like the weakness of information and administrative data about the social disparities and tensions between villagers due to drought and water scarcity.

3.2. Methodology

This study is descriptive-analytic and the purpose of this study is practical. This research seeks to

identify and investigate the drought tensions and social damages in rural areas of Neyshabur. Therefore, based on our research question, we can provide the following hypothesis:

Hypothesis 1: There is a correlation between the social tensions in the studied villages with the problem of water shortages and droughts.

Hypothesis 2: Water shortage and drought affect the creation and exacerbation of tension and social damage in rural environments.

To achieve the purpose and assumptions of this study, data and information were collected from library and field practices methods. The theoretical part of the study was conducted based on library and documentary methods. So, based on review of theoretical literature, and also for studying the problem in the study area, 24 items have been identified to measure the tensions and social damages caused by drought and water scarcity in the studied area (Table 3). Independent variable of the research includes the levels of water loss through drought that the average of size of water loss in each village was obtained from the local management, and dependent variable is tensions and social damages of villagers. Therefore, the independent variable in the whole study was considered as a representation of environmental changes and the dependent variable as social unsustainability. In the analytical section, data was collected through interviews and questionnaires.

Table 3. Variables for assessing tensions and social damages caused by droughts and water scarcity
Sources: Alston & Kent, 2004; Leichenko & Silva, 2014; Gray & Mueller, 2012; Horton et al, 2010; Stain et al, 2011

Indicators	
Decreasing the level of income satisfaction	Increasing the motivation to migrate from rural areas
intensification of contrast and conflicts among villagers	Feeling of inequality in facilities and distribution of supportive loans among the villagers
Reducing the interest of youth in living in the countryside	The attitude and tendency of villagers towards inappropriate and false jobs
Creation and intensification of issues in the family of farmers	Reducing the level of traditional beliefs and trust in society
Reducing interactions and cooperation among villagers	Increasing psychological damages in farmers
increasing poverty in rural areas	Destruction of small cultivation and agricultural activities
Decreasing the feeling of belonging to the place and durability and persistence of villagers	Despair about the future
Reducing the level of health	Reducing social cohesion among villagers
Reduction in the amount of rural producers	Reducing the level of happiness and welfare
Increasing the population who are under the protection of supportive organizations	Public dissatisfaction toward governmental section
Increasing unemployment and reducing job opportunities	Reducing in the level of entertainment and leisure time
Competition for accessing water resources among villagers	Increasing living expenses

4. Research Findings

Descriptive findings show that 40% of respondents aged 41 to 50 years old and 47% have graduate degrees. Also, the annual income of 32% of the respondents is 12-20 million, and 81% of respondents do not have income from horticultural activities. Also, 42% of respondents stated that the average annual income from farming activities was $ 600 to $ 1,200. 35% of the respondents did not have rain fed land and 45.5% of the respondents had 3-5 hectares of lands with water supplies. According to the study cases, due to recent droughts, the amount of rain fed lands has fallen sharply. 99% of respondents also pointed out that over the past 10 years, the level of groundwater used to irrigate their products has fallen around 10 to 30 meters. Also, due to the survey results, the number of water disagreements among the studied samples in the study area showed that 44% of respondents stated that there have been at least 3-5 discords between villagers. Of course, it should be noted that little disagreements about water resources in the village, with the intervention of elders and other rural residents, are solved (Table 4).

Table 4. Descriptive findings of the research

percentage	Frequency	Most responsive	Component
40	48	41-50 years old	Age
47	57	Graduated from high school	Education level
32	39	12-20 million	Average income from agriculture
81	98	Don't have	average income from gardening
42	51	6-12 million	Average income from nonagricultural productions
45.5	55	3-5 hectares	The level of lands with water supplies
35	42	Don't have	The level of rain fed lands
45	54	1-5 people	The amount of people who have migrate
99	120	Between 10-30 meters	the level of reduction in underground water
44	54	3-5 times	The number of disagreements about water
65	78	Don't have	Having legal record

In the following, we investigate 24 social unsustainability instances that can be caused by drought and water scarcity. According to Table 5, the results show that the average of the 22 indexes is higher than the average of whole samples; it means that, all of these 22 cases became exacerbated by the occurrence of drought and can lead to social unsustainability in rural areas in the long periods. It can also be said that drought does not have much effect on reducing the level of health and reducing the rural productive population.

Table 5. Evaluation of the quantity and quality of social unsustainability indicators of drought

indicators	Very low	low	avarage	high	Very high	avarage	Standard deviation
Increasing the motivation to migrate from rural areas	6.6	9.9	43.8	19	20.7	3.37	1.12
Feeling of inequality in facilities and distribution of supportive loans among the villagers	1.7	5.8	26.4	38	28.1	3.85	0.95
The attitude and tendency of villagers towards inappropriate and false jobs	0	19.8	34.7	25.6	19.8	3.45	1.02
Reducing the level of common beliefs and trustiness in society	8.3	15.7	23.1	23.1	29.8	3.50	1.29
Increased psychological damages in farmers	0	4.1	14	50.4	31.4	4.09	0.78
Destruction of small cultivation and small agricultural activity	0	4.1	32.2	21.5	42.1	4.01	0.95
Despair of the future	0	5.8	26.4	33.1	34.7	3.96	0.92
Reducing social cohesion among villagers	5.8	11.6	19.8	41.3	21.5	3.61	1.12
Reducing the level of happiness and welfare	5	9.1	17.4	38	30	3.80	1.12
Public dissatisfaction against governmental sector	0.8	3.3	9.1	55.4	31.4	4.13	0.77
Reducing recreation and leisure time	0	5.8	21.5	21.0	51.2	4.18	0.96
Increasing living expenses	2.5	4.1	39.7	24	29.8	3.74	1.01
Decreasing in income satisfaction	8.3	11.6	28.1	26.4	25.6	3.49	1.22
Exacerbation of conflicts and disagreements among villagers	13.2	18.2	22.3	41.3	6	4.18	0.97
Reducing the interest of youth in living in the rural places	6.6	25.6	33.9	33.9	0	3.95	0.93
Creation and intensification of issues in the family of farmers	14.1	15.7	45.4	12.4	12.4	3.11	1.10
Reducing interactions and cooperation among villagers	0.8	0.8	20.7	43.8	33.9	4.09	0.80
increasing poverty in rural areas	0	4.1	26.4	32.2	37.2	4.02	0.89
Decreasing the feeling of belonging to the place and durability and persistence of villagers	7.4	10.8	43	23.2	15.7	3.57	1.07
Reducing the level of health	45.5	30.6	14.9	8.3	0.8	1.44	0.51

indicators	Very low	low	avarage	high	Very high	avarage	Standard deviation
Reduction in the amount of rural producers	10.7	35.5	22.3	20.7	10.7	2.87	1.18
Increasing the population who are under the protection of supportive organizations	7.4	5.8	19	31.4	36.4	3.83	1.19
Increasing unemployment and reducing job opportunities	1.7	11.5	28.9	47.9	9.9	3.78	0.83
Competition for accessing water resources among villagers	4.1	3.3	22.3	52.9	17.4	3.76	0.92

Also, although the data and information were normal, t-test, which was a theoretical average of 3, was used to compare the gotten averages (Table 6). The results of the test indicate that the significance level of all indices except for the two indicators of reducing the level of health and reducing the population of rural producers is less than 0.05. It can be said that drought and water scarcity affect all indices of research except for reducing the level of health and reducing the rural population. Therefore, it can be said that drought as an agent of environmental unsustainability can affect social unsustainability indices.

Table 6. Single sample t-test for indicators

Indicators	T	Sig.	Mean Difference	95% Confidence Interval of the Difference	
				Lower	Upper
Increasing the motivation to migrate from rural areas	3.656	0.000	0.372	0.171	0.573
Feeling of inequality in facilities and distribution of supportive loans among the villagers	13.461	0.000	1.099	1.260	0.938
The attitude and tendency of villagers towards inappropriate and false jobs	4.880	0.000	0.454	0.270	0.639
Reducing the level of common beliefs and trustiness in society	4.293	0.000	0.504	0.271	0.737
Increasing psychological damages in farmers	15.281	0.000	1.09	0.949	1.232
Destruction of small cultivation and small agricultural activity	11.681	0.000	1.016	0.844	1.189
Despair of the future	11.544	0.000	0.967	0.801	1.133
Reducing social cohesion among villagers	6.002	0.000	0.612	0.410	0.813
Reducing the level of happiness and welfare	7.855	0.000	0.801	0.599	1.003
Increasing Public dissatisfaction against governmental sector	16.092	0.000	1.132	0.992	1.272
Reducing recreation and leisure time	13.456	0.000	1.182	1.007	1.356
Increasing living expenses	8.080	0.000	0.744	0.562	0.926
Decreasing in income satisfaction	4.451	0.000	0.496	0.275	0.717
Exacerbation of conflicts and disagreements among villagers	9.234	0.000	0.818	0.993	0.643
Reducing the interest of youth in living in the rural places	33.148	0.000	0.049	0.217	0.118
Creation and intensification of issues in the family of farmers	12.148	0.000	0.116	0.083	0.315
Reducing interactions and cooperation among villagers	14.884	0.000	1.091	0.946	1.236
increasing poverty in rural areas	12.543	0.000	1.024	0.863	1.187
Decreasing the feeling of belonging to the place and durability and persistence of villagers	5.857	0.000	0.570	0.378	0.763
Reducing the level of health	0.587	0.558	0.533	0.346	0.468
Reduction in the amount of rural producers	1.378	0.171	0.148	0.362	0.065
Increasing the population who are under the protection of supportive organizations	7.654	0.000	0.835	0.619	1.05
Increasing unemployment and reducing job opportunities	10.328	0.000	0.785	0.634	0.936
Competition for accessing water resources among villagers	9.096	0.000	0.760	0.594	0.926

The findings of the study and analyzing correlation between drought-induced water shortage and disagreement between villagers over water show that there is a significant relationship between variables at alpha-0.05 level. Therefore, with decreasing water in rural areas, the conflict and

disagreement over water among villagers has been increased (Table 7).

Table 7. Relationship between drought-induced water deficit and the water deficit index

Indicators	Pearson correlation	Significance level
Disagreement with neighbors about water shortage	0.764*	0.01

*Correlation is significant at the 0.05 level (2-tailed)

In the following, due to the normal distribution of data, Pearson test has been used to investigate the correlation between water scarcity deduced from drought and social unsustainability indexes. The results show that there is a significance level between the groundwater deficit and the indexes of reducing the level of health and reducing the rural population, upper than alpha-0.05. Therefore, the findings indicate that there is a significant relationship between groundwater reduction and other indicators presented in the table. Indeed, with happening groundwater loss as an environmental unsustainability, social unsustainability will happen too. Therefore, the first hypothesis of the research is confirmed (Table 8).

Table 8. The Relationship between Drought Water Deficit and Social Unsustainability Indicators in Villages

Indicators	Pierson correlation	Significance level
Increasing the motivation to migrate from rural areas	0.863	0.003
The attitude and tendency of villagers towards inappropriate and false jobs	0.915	0.001
Reducing the level of common beliefs and trustiness in society	0.754	0.019
Increasing psychological damages in farmers	0.769	0.015
Destruction of small cultivation and small agricultural activity	0.924	0.000
Despair of the future	0.734	0.024
Reducing social cohesion among villagers	0.790	0.011
Reducing the level of happiness and welfare	0.792	0.010
Increasing Public dissatisfaction against governmental sector	0.727	0.027
Increasing living expenses	0.934	0.000
Decreasing in income satisfaction	0.826	0.006
Exacerbation of conflicts and disagreements among villagers	0.707	0.033
Reducing interactions and cooperation among villagers	0.829	0.006
increasing poverty in rural areas	0.932	0.000
Increasing the population who are under the protection of supportive organizations	0.684	0.042
Increasing unemployment and reducing job opportunities	0.753	0.019
Competition for accessing water resources among villagers	0.804	0.009
Feeling of inequality in facilities and distribution of supportive loans among the villagers	0.713	0.030
Reducing the interest of youth in living in the rural places	0.893	0.001
Decreasing the feeling of belonging to the place and durability and persistence of villagers	0.675	0.040
Creation and intensification of issues in the family of farmers	0.906	0.001
Reducing recreation and leisure time	0.890	0.000
Reducing the level of health	0.064	0.871
Reduction in the amount of rural producers	0.187	0.629

4.1. Analysis of the effects of water shortage deduced from drought on social unsustainability in rural places

Single variable regression was used to explain and analyze the effects of drought-induced water shortages on social unsustainability. As shown in Table 9, correlation coefficient and modified coefficient of determination between groundwater reduction as an indicator of environmental unsustainability and social unsustainability indicators presented in the research are higher than 0.50.

Table 9. Correlation coefficient between variables of drought-induced water deficit with rural social unsustainability

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.984	.968	.963	.085

Also, the results of single-variable regression test showed that the significance level was smaller than alpha-0.05. Therefore, it can be said that there is a meaningful linear relationship between the drought-induced water deficit variable and social unsustainability. Therefore, the findings of this study indicate that water shortage and drought have had an impact on the creation and exacerbation of tension and social damage in rural environments and among villagers in the studied area. Therefore, it can be said that the second hypothesis of the research is accepted (Table 10).

Table 10. Significance level of drought-induced water shortage with rural unsustainability

ANOVA[a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	1.505	1	1.505	208.543	.000
	Residual	.051	7	.007		
	Total	1.556	8			

Table 11 also explains the impact of the independent variable (water deficit caused by drought) on social unsustainability. Therefore, considering the obtained beta values, social unsustainability in the studied villages occur more than 60 percent as a result of the occurrence of drought.

Table 11. The Effectiveness of Water Deficit deduced from drought on Social Unsustainability in Villages

Coefficients[a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	.714	.214		3.338	.012
	Social Unsustainability	.923	.064	.984	14.441	.000

In order to rank the villages in terms of social unsustainability, VIKOR multi-factor model was used to determine the difference between the studied villages in terms of social tensions and social instabilities. It should be noted that the weight of the using indicators was also determined by the Shannon entropy method based on the opinions of 17 experts (Table 12).

Table 12. Weight of research indicators

Indicators	**h_i**	**d_i**	**w_i**
Increasing the motivation to migrate from rural areas	0.997	0.003	0.013
The attitude and tendency of villagers towards inappropriate and false jobs	0.992	0.008	0.037
Reducing the level of common beliefs and trustiness in society	0.994	0.006	0.029
Increasing psychological damages in farmers	0.991	0.009	0.038
Destruction of small cultivation and small agricultural activity	0.989	0.011	0.051
Despair of the future	0.991	0.009	0.038
Reducing interactions and cooperation among villagers	0.991	0.009	0.040
Reducing the level of happiness and welfare	0.994	0.006	0.027
Increasing Public dissatisfaction against governmental sector	0.990	0.010	0.045
Increasing living expenses	0.997	0.003	0.013
Decreasing in income satisfaction	0.995	0.005	0.021
Exacerbation of conflicts and disagreements among villagers	0.988	0.012	0.053
Reducing interactions and cooperation among villagers	0.989	0.011	0.047
increasing poverty in rural areas	0.991	0.009	0.041

Indicators	h_i	d_i	w_i
Increasing the population who are under the protection of supportive organizations	0.983	0.017	0.074
Increasing unemployment and reducing job opportunities	0.996	0.004	0.017
Competition for accessing water resources among villagers	0.993	0.007	0.029
Feeling of inequality in facilities and distribution of supportive loans among the villagers	0.994	0.006	0.027
Reducing the interest of youth in living in the rural places	0.994	0.006	0.029
Decreasing the feeling of belonging to the place and durability and persistence of villagers	0.989	0.011	0.050
Creation and intensification of issues in the family of farmers	0.991	0.009	0.040
Reducing the level of happiness and welfare	1.000	0.000	0.002
Reducing the level of health	0.948	0.052	0.232
Reducing the productive population in rural places	0.994	0.006	0.029

Note. h_i: entropy; d_i: degree of diversification; w_i: indicators' standard weight.

The results from the ranking of villages indicate that the village of Maroos and the village of Samadiyah ranked in first and second places in terms of social unsustainability. In fact, it can be concluded that in these two villages, drought as an environmental unsustainability has the greatest impact on social unsustainability and has shaped many tensions and social damage (Table 13).

Table 13. Ranking of studied villages in terms of the severity of social unsustainability caused by droughts

villages	s	R	S-	S+	R-	R+	Q	Rank
Maroos	0.24	0.04	0.00	0.00	0.00	0.00	0.00	1
Eshrat Abad	0.42	0.23	0.27	0.14	0.98	0.49	0.63	5
Dehno	0.45	0.23	0.31	0.16	1.00	0.50	0.66	4
Golshan	0.27	0.08	0.04	0.02	0.25	0.12	0.14	8
Samadiyeh	0.73	0.17	0.75	0.37	0.66	0.33	0.70	2
Pirgaz	0.47	0.23	0.35	0.17	1.00	0.50	0.67	3
Ardame	0.39	0.23	0.23	0.11	0.97	0.49	0.60	6
Raeeisi	0.89	0.20	1.00	0.50	0.85	0.43	0.93	9
Fath Abad	0.42	0.21	0.27	0.13	0.86	0.43	0.56	7

Overall, it can be said that the study of the mentioned issue in the studied area shows that in recent years, due to the occurrence of drought, rural farmers who do not have any share from the water of aqueduct, have been digging deep wells for accessing to water. This has led to a reduction in the water of the aqueducts and has led to a disagreement between the owners of the wells and the shareholders of the rural aqueduct. Also, through recent drought, the relevant government agencies have set a certain amount for each rural farmer to control and manage water collecting from wells by farmers. In case of using more water than the quota Farmers will be fined. In some villages, this causes conflict and struggles between villagers. Because in some cases, farmers who take more than the decisive amount will be introduced by other villagers to the relevant organization. This is another factor in the conflict between the villagers. Another government's strategies for managing water resources and controlling groundwater loss is to sale excess water to farmers. If the villagers need more water to irrigate their fields, they should buy water by paying a large amount of money. This has led to a severe increase in water competition. Also, in certain seasons of the year, using the water of rural wells is prohibited for villagers, which is determined without consultation with them and the lack of attention to the irrigation season of certain products in each village has also led to villagers' dissatisfaction. Considering the problem of water shortages caused by droughts in the area, wells constructed in recent years, compared with the wells created several years ago, have fewer water permits. Therefore, inequalities in groundwater harvesting for agriculture also cause disparities and tensions between villagers. On the other hand, drought has also led to a change in agricultural patterns and time of cultivation

among some farmers. so, some farmers in the villages of the region are trying to save their agricultural water quota in spring and summer and use it for the autumn and winter crop. But during using stored water, irregularities in water quotas happened and it became another factor in the formation of tension and challenge among the villagers.

5. Discussion and Conclusion

Drought is one of the natural hazards that can be seen in different climates and can have many effects. The continuation and intensification of the drought period can affect the level of unemployment and job losses, increasing conflict and struggles over the water, dissatisfaction with government agencies, causing psychological damage such as stress, rural migration and other social problems. Therefore, drought as an environmental unsustainability can have the greatest impact on rural communities whose lives are directly related to environmental resources such as water. Therefore, we analyzed the social stress deduced from drought in rural areas in this study. The results of one-sample t-test indicated that the level of significance of all social unsustainability indicators, except for two indicators of reducing the level of health and reducing rural population, has been less than α-0.05, And so other indicators of social unsustainability have been exacerbated by droughts and the water shortages deduced from that. The two indicators of reducing the level of health and reducing the rural population have not been affected by environmental unsustainability. Because in recent years the health of the villages in Iran has been given special attention and in many villages there is a facilitated home for health care in each village. Therefore, it can be said that the drought has not have any role in the decreasing the level of health in rural places. Also, since villagers are not specialized in other fields except agricultural and animal husbandry, Therefore, even if the conditions are not appropriate, they are forced to do these activities. Another reason to point out in this regard is that crops are usually divided among the children of the family according to the law of inheritance in Iran, which also leads to an increase in the rural producer's quantity. The results of Pearson correlation also showed that the significance level of reducing health level in rural places and decreasing rural population was higher than alpha-0.05. Therefore, these two indicators are not affected by drought unsustainability. However, the significance level of other indicators was less than alpha-0.05, which indicates the relationship between environmental unsustainability aggravation deduced from drought with social unsustainability indices. In Pearson correlation, the indicators of increasing poverty in rural areas (0.932), increasing living expenses (0.931), and the destruction of small cultivation and small agricultural activities (0.924) have the highest correlation coefficient with water shortage due to drought in the studied villages. Also, according to the results of the regression test, it can be said that all 22 social unsustainability indicators affected by water shortages due to drought as an environmental unsustainability. Based on this test, poverty reduction indices in rural areas with a correction coefficient of 0.869, increasing in living expenses with a correction coefficient of 0.867, and the destruction of small crops and agricultural works with a modified coefficient of 0.853 have the most impact from water shortages deduced from drought. Also, the village-based ranking on the basis of the VIKOR model indicates that in the village of Maroos, social unsustainability indicators have had the greatest impact from environmental unsustainability. In fact, in comparison with other villages, this village is the most unstable one in social situation. And Raeisi Village in terms of social status is in more stable conditions than other villages. In general, environmental unsustainability in this village has had less impact on the rise of social unsustainability indicators. Generally, it can be admitted that drought as an environmental unsustainability has a significant negative effect on the social unsustainability of rural communities. Therefore, we can generally say that our research results are consistent with the results of studies conducted by researchers such as Vins et al. (2015) and De Silva & Kawasaki (2018). Generally speaking, due to the results of research in the study area, it can be said that the occurrence of long-term droughts in rural areas can be directly affect the reduction of rural income, rising unemployment, decreasing job opportunities and eventually exacerbating poverty in these areas. In the event of these problems, villagers prefer to migrate to urban areas in order to achieve better living conditions. In general, the aggravation of poverty and its consequences as a result of drought, with the findings obtained in the research of Katalakute et al. (2016) is convergent. Also, according to the results, another major drought effect in rural areas is the increase in living costs. so, the persistence of droughts leads to a reduction in income and unemployment in the villages, which in the long term can be a problem for the villagers in their livelihood costs. These factors, therefore, increase social tensions that lead to multiple

tensions in rural areas, including tensions that can be attributed to increase family issues among farmers as a result of rising living costs. Another result of the drought occurrence in the villages is the disappearance of small crops (especially rain forest lands), whose irrigation is strongly dependent on annual rainfall. Field study indicates that in many studied villages, the decline in groundwater levels and the decrease in access to water resources by villagers has been one of the factors influencing the destruction of small crops. All of this things have great effect on the intensification of competition for access to more water and also in increasing rural dissatisfaction against government agencies. Also, as it has been mentioned through disappearing small crops and the reduction in crop yields due to reduction in rain levels and water loss throughout the year, it can have a great impact on appearing psychological illnesses, including stress, according to the research of Muyambo et al., (2017). As a result, it can be admitted that one of the important effects of exacerbating environmental instabilities, especially droughts in rural environments, is to reduce the quality of life of villagers and increasing dissatisfaction in different fields. Hence, some of the suggestions that can be offered to deal with social instabilities include:

- Provide government facilities and services to reduce the cost of living of villagers and also reduce the pressure of villagers on environmental resources, especially groundwater;
- Facilitate how to receive support loans in the field of agricultural by villagers;
- Avoid digging deep wells that are unlicensed;
- More attention of government agencies to villages that suffer from social and environmental instability more than other villages such as Maroos and Samadiyeh.

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Authors' contributions

The authors equally contributed to the preparation of this article**.**

Conflict of interest

The author declare no conflict of interest.

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Original Article

تحلیل تاثیر ناپایداری محیطی در ناپایداری اجتماعی در ایران: تنش ها و آسیب های اجتماعی ناشی از خشکسالی در مناطق روستایی

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چکیده مبسوط

۱. مقدمه

امروزه ناپایداری های محیطی و تغییرات اقلیمی به یک مساله اساسی تبدیل شده است. براساس موقعیت جغرافیایی و شرایط محیطی، ا شکال مختلفی از ناپایداری های محیطی وجود دارد که خ شک سالی یکی از مهمترین آنها می باشد. خشکسالی یک مخاطره طبیعی خطرناکی است که باعث ایجاد اثرات پیچیده‌ای در جوامع می‌شود؛ این اثرات به گونه‌ای می‌باشد که نه تنها در یک کشور منجر به آسیب می شود بلکه ممکن ا ست اثرات نا شی از خشکسالی در سطح جهانی نیز گسترش یابد. اما باید توجه داشت که میزان اثرگذاری خشکسالی بر روی جوامع و گروه های انسانی متفاوت از یکدیگر می باشد. بطوری که ساکنین نواحی روستایی به دلیل ارتباط بیشتر با محیط و داشتن فعالیت های اقتصادی مرتبط با محیط(کشاورزی و دامپروری) بیشترین تاثیرپذیری را از خ شکسالی در جنبه های مختلف دارند. از این‌رو خشکسالی اثرات اقتصادی منفی بسیاری بر کشاورزان و اقتصاد محلی برجای می گذارد این تاثیرات در منابع متعددی مورد تاکید قرار گرفته است. اما تاثیرات اجتماعی خشکسالی کمتر مورد توجه قرار گرفته است.

۲. مبانی نظری تحقیق

ناپایداری اجتماعی به‌وجود آمدن شرایطی است که در آن زمینه ا شتغال، زندگی و رفاه برای مردم یک اجتماع د شوار می شود. عوامل متعددی بر شکل گیری ناپایداری های اجتماعی تاثیرگذارند که یکی از مهمترین آنها، ناپایداری های محیطی می باشد. ناپایداری های محیطی در نتیجه بلایای طبیعی مانند خشکسالی، سیل، تغییرات اقلیمی رخ می د هد. این نا پا یداری ها می توا ند تاثیرات متعدد اقتصادی، اجتماعی و زیست محیطی بر جوامع انسانی داشته باشد. به گونه ای که زندگی و فعالیت ساکنان این جوامع را دچار اختلال نماید. به خصوص در نواحی روستایی به دلیل اینکه فعالیت روستاییان وابستگی بیشتری به محیط و منابع محیطی دارد، می تواند چالش های متعددی را ایجاد کند. تغییرات محیطی در برخی از مناطق مانند کشورهای آمریکای جنوبی و کشورهای اطراف دریای کارائیب بحران‌های اجتماعی قابل توجهی از قبیل نابرابری اجتماعی، درگیری، جابه‌جایی جمعیت، فقر، فقدان فر صت‌های شغلی ایجاد کرده ا ست. نابراین، بعد پا یداری اجتماعی می توا ند از طریق عوا مل محیطی، مخاطرات طبیعی و تغییرات آب‌وهوایی دچار اختلال شده و ناپایدار شود. در نتیجه این عامل در اغلب موارد منجر به نزاع و درگیری بین روستاییان، فقر و آسیب های روانی- ذهنی و بیماری های متعدد شده و انسجام اجتماعی دچار اختلال می‌شود. لذا کیفیت زندگی مردم کاهش می‌یابد که به دنبال آن مردم محل سکونت خود را ترک کرده و به مکان‌های دیگر مهاجرت می‌کنند.

۳. روش‌شناسی تحقیق

این مطالعه از نظر روش توصیفی–تحلیلی و از نظر هدف، کاربردی است. این پژوهش به‌دنبال شناسایی و بررسی تنش‌ها و آسیب های اجتماعی نا شی از خشکسالی در مناطق رو ستایی شهرستان نیشابور می‌با شد. به منظور سنجش ارتباط بین متغیر مستقل خ شکسالی و

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وابسته تنش های اجتماعی، به شناسایی ۲۴ متغیر در زمینه تنش ها و آ سیب های اجتماعی نا شی از خ شک سالی و کمبود آب در منطقه مورد م طالعه ا قدام گرد ید. اطلا عات مورد ن یاز علاوه بر م طالعات ا سنادی از طریق م صاحبه و پر س شنامه جمع آوری شده ا ست. در تحلیل داده ها نیز از آزمون های تی تک نمو نه ای، همبســتگی پیرسون، رگرسیون تک متغیره و مدل وایکور استفاده شده است.

۴. یافته‌های تحقیق

نتایج به دســت آمده بیانگر وجود ارتباط بین کمبود آب ناشــی از خ شکسالی و ۲۲ متغیر ناپایداری اجتماعی می با شد. نتایج به د ست آمده از همبســتگی پیرســون نیز نشــان داد که ســطح معناداری دو شــاخص کاهش ســطح بهداشــت و کاهش جمعیت تولید کننده روســتایی تحت تاثیر ناپایداری خشــکســالی قرار نگرفته اند. در همبســتگی پیرســون شــاخص های تشــدید فقر در نواحی روســتایی (۰,۹۳۲)، افزایش هزینه‌های زندگی(۰,۹۳۱) و از بین رفتن کشــت و کارهای زراعی کوچک (۰,۹۲۴) دارای بیشترین ضریب همبستگی با کمبود آب نا شی از خشکسالی در رو ستاهای مورد مطالعه می با شد. همچنین با توجه به نتایج آزمون رگرســیون نیز می توان گفت که کمبود آب ناشــی از خشــکســالی شــاخص ناپایداری اجتماعی را در نواحی روستایی مورد مطالعه به شدت تحت تاثیر قرار داده‌است. نتایج مدل وایکور نیز نشان داد بین روستاهای مورد مطالعه به لحاظ شدت تنش های اجتماعی تفاوت وجود دارد. به طورکلی می توان اذ عان نمود که خشــکســالی به عنوان یک ناپایداری محیطی اثرات منفی بسیاری در ناپایداری اجتماعی جوامع روستایی برجای می گذارد.

۵. بحث و نتیجه‌گیری

به طورکلی وقوع خشــکســالی های طولانی مدت در نواحی روســتایی می تواند به طور مســتقیم در کاهش درآمد روســتاییان، افزایش بیکاری، کاهش فرصــت های شــغلی و در نهایت تشــدید فقر در این نواحی تاثیر داشته است. در صورت وقوع این مشکلات، روستاییان به منظور د ستیابی به شرایط زندگی بهتر مهاجرت به نواحی شهری را ترجیح می دهند. یکی دیگر از مهمترین اثرات خ شک سالی در نواحی روســتایی افزایش هزینه های زندگی می باشــد. لذا تداوم وقوع خشکسالی ها منجربه کاهش درآمد و بیکاری در روستاها می شود که همین عامل در بلندمدت می تواند رو ستاییان را در تامین هزینه های معیشت شان دچار م شکل کند. بنابراین افزایش تنش های اجتماعی منجر به تنش های متعدد در نواحی روســتایی می شــود که از جمله این تنش ها می توان به ایجاد و تشــدید مســائل خانوادگی در بین کشاورزان به دلیل افزایش هزینه های زندگی ا شاره کرد. در بسیاری از روســتاهای مورد مطالعه افت ســطح آب های زیرزمینی و کاهش میزان د ستر سی رو ستاییان به منابع آب یکی از عوامل تاثیرگذار در کاهش میزان و از بین رفتن زمین های زراعی کوچک بوده اســت. تمامی این موارد در ت شدید رقابت بر سر آب به منظور د ستر سی به آب بیشتر برای آبیاری مزراع و افزایش نارضایتی روستاییان از سازمان های دولتی تاثیر دارد. لذا می توان اذعان نمود که یکی اثرات مهم تشدید ناپایداری های محیطی به خصوص خشکسالی در محیط های روســتایی، کاهش کیفیت زندگی روســتاییان و افزایش نارضــایتی در زمینه های مختلف می باشد.

کلیدواژه‌ها: بحران محیطی، تغییرات محیطی، ناپایداری اجتماعی، تنش اجتماعی، خشکسالی، جوامع روستایی.

تشکر و قدردانی

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Original Article

A Study of Factors Affecting the Drought Resilience of Farmers in Pakdasht County, Iran

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Abstract

Purpose- The consequences of drought and the damages inflicted on the rural community, which are major challenges confronting rural communities to achieve sustainable development, mirror the poor resilience of farmers against this risk. Therefore, the main issue of the current research is to explore the factors affecting Pakdasht farmers' drought resilience.

Design/Method/Approach: This paper adopts a descriptive-analytical research method. The data collection is based on library study analysis and field surveys. The main data collection instrument is a questionnaire completed by the subjects (n=381 farmers). Data analysis was conducted using SPSS software as well as t-test, regression, analysis of variance, the COCOSO technique and the COPELAND technique.

Finding- The t-test was used to investigate the drought resilience status of villagers. The socio-cultural, psychological, and economic components, except for those related to the extent of damages, environmental factors and institutional performance, and the scale of civil and physical development in the region under study, were in a balanced and favorable condition, but the items of the institutional framework, institutional relations, and technological level and infrastructure were not desirable. The correlation between researches indices in the region is 0.747, meaning that mentioned indices can explain 74% of the variances. The result of the ANOVA test suggested that the villages of Pakdasht County were not significantly different in terms of the psychological index (Sig=0.085) of resilience. Informed by the findings of the COCOSO technique, the farmers of Filestan village are more drought-resistant than the farmers in other villages. Greater participation of people, diversity of economic activities, appropriate physical and civil development, technological advancement and more suitable infrastructure are some of the factors that contribute to the higher resilience of farmers in this village. According to Copeland's method, the variables of education and awareness as well as the diversity of economic activities of the farmer's household ranked high in terms of importance.

Originality/value- The results of this research can help organizations in charge of handling drought in the villages of Pakdasht to gain deeper insights into the existing conditions so that they can enhance the resilience of farmers during drought using the presented solutions. It also allows officials to diversify economic activities and promote complementary businesses as effectively as possible.

Keywords- Resilience, Drought, COCOSO technique, Copeland's method, Pakdasht County.

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1. Introduction

The frequency of natural disasters is on the rise, especially those triggered by climate change (Malkan et al., 1400: 718). Therefore, two of the main challenges facing societies and governments are mitigating the consequences of Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA). Climate change altered the frequency, intensity, spatial expansion, duration and time of extreme events and climatic hazards. Drought is one of the alarming climate events the frequency and intensity of which have escalated significantly in recent years (Zarin and Dadashi Roudbari, 2021: 107). The draught, while influencing various dimensions of economic and social activities of farmers and industries related to agriculture, also has a bearing on non-farming households living in rural areas. Mounting mental pressure and mental illnesses decreased job opportunities, reduced ability to repay agricultural loans, the rising price of staple food, soaring inflation in the society, gradual decrement of water resources, competition for access to water, social costs associated with migration and social disintegration. are other nefarious effects of drought (Sawari and Khosravipour, 2018: 21). In general, the effects of drought in rural areas can be divided into three categories: environmental effects (reduced water flows, low underground water level, soil erosion, salinity and decreased water quality, constrained plant diversity, etc.); economic effects (the rising price of agricultural and livestock products, growing demand for loans with interest rates, the mounting cost of water supply, lower food production, etc.) and social effects (diminished level of health and malnutrition issues, expansion of political-social-management conflicts, decreased quality of life, poverty, etc. (Daman Bagh et al., 2020: 96-97). The scale of damages inflicted on farmers exhibits the low flexibility of villagers' livelihoods against short-term climatic oscillations such as drought, and given the poor ability of the country's rural community to adapt to extreme events like drought, the majority of villagers prefer the strategy of emigration. However, the point that should be noted is that living in a naturally hazardous environment does not necessarily imply harm and vulnerability. Rather, the inflexibility and poor understanding of the resident population about the scale, type and manner of risks are to be blamed (ghasemi et al., 2020: 118). The resilience approach provides huge potentials to be combined with the natural disaster management approach, including drought management. In disaster management, pre-drought (risk management) and post-drought (crisis management) actions are concomitant. By introducing the resilience approach to the measures of the disaster management cycle, a comprehensive approach to drought management can be attained, in which the adverse effects of drought can be largely mitigated by exploiting the capacities of the rural community (Malkan et al., 2021: 720).

Since natural crises are seen as a fundamental challenge to the sustainable development of human societies (Vazirian et al., 2020: 633) and drought is one of the crises confronting these societies, and considering that resilience is deemed one of the primary determinants of sustainability, which build up the capacity of societies to cope with and adapt to changes and reduce public vulnerability in the face of the probable crises in rural areas, the present research was conducted to evaluate factors affecting the resilience of farmers in the face of drought and to present strategies to enhance resilience in the villages of Pakdasht Township. Pakdasht is home to 26,000 hectares of agricultural land, which due to drought and water crisis, have largely transformed into uncultivated lands threatened by unauthorized land use change. This Township requires 1,453 liters of water per second for agricultural water, and the water extracted from 160 wells together with the water right of the Township derived from wastewater treatment only fulfills 920 liters of this demand. As a result of this agricultural water shortage, out of 26,000 hectares of arable land in Pakdasht, only 17,000 hectares are under cultivation with various crops such as wheat and barley, fodder corn and other products are grown in gardens and greenhouses because the remaining lands are fallow. Due to the water crisis and the priority of drinking water supply, from June 5, 2021, the agriculture water right of the Mamlu dam has been waived, thereby rendering agriculture in 15 villages of Pakdasht city, which were heavily dependent on the water of the Mamlu dam, virtually impossible, pushing

9 other villages to the verge of water supply crisis (30 to 70 percent). Land subsidence and landslides, as secondary consequences of drought in Pakdasht, have wreaked havoc on infrastructure facilities and agricultural lands. In recent years, at least 1.5 to 2 cm of soil drift has been documented form the southeast to northeast and west of Pakdasht, and in some areas this drift has been reported to be as great as 8 and 8.5 cm, which can be a source of the concern in these areas. Land subsidence in Varamin-Pakdasht plain is alarmingly evident, so that the severity of subsidence in this plain, with an annual average of 16 cm, has reached a total of 2 m, and in some places, the schisms are as wide as 30 m (Pakdasht Governorate, Agriculture Jihad Department of Pakdasht Township). In this regard, it can be posited that Pakdasht Township is one of the regions of the country vulnerable to the risk of drought due to its climatic conditions and geographical location. Given the impact of drought on the economic, social, institutional, infrastructure and environmental conditions of villages and considering the importance of farmers' resilience approach against drought, all factors influencing farmers' resilience against drought in the region should be identified and analyzed to be accounted for in the planning process of sustainable rural development. Therefore, in this research, an attempt has been made to gain a proper understanding of the condition of farmers and the determinants of their resilience in the villages of Pakdasht to make a proper analysis of the status quo. This analysis offers general insights into the existing conditions for planners and policymakers in the field of rural development in Pakdasht city, helping them in the process of planning to improve the resilience of villagers and farmers against drought and pave the way for desirable conditions. Given the paucity of studies in this field area and the importance of shedding light on the situation of farmers in the villages of Pakdasht Township in terms of drought resilience to formulate a comprehensive strategic plan for drought risk management, the present research aims to find answers to these questions; “What factors affect the resilience of villagers and farmers in the regional villages? What is the status of these indices in the studied villages? What are the optimal strategies to strengthen the resilience of Pakdasht farmers in the drought?

2. Research Theoretical Literature

Among the wide range of risks threatening human societies, drought is one of the devastating natural disasters that wreak tremendous losses on the agriculture sector and water resources (Velai et al., 2020: 858). Drought, a natural part of climate which can appear in the desert or other ecosystems, is considered a serious and destructive peril to life (Kafle, 2017: 2). It can affect a massive spatial area and continue for months, and even years with catastrophic effects on socio-economic conditions, available water and agriculture. Determining the severity and frequency of drought events is of utmost importance, but quantifying drought is difficult due to its vague nature (Bhushan Jha, 2020: 137). This natural disaster not only inflicts environmental and economic effects but also gives way to a plethora of social effects on society. Also, given that it encompasses a broad geographical area than other hazards, it is more complex than other natural disasters and hence influences a greater population. The effects of drought events are reliant on a score of factors, including the type of drought (meteorology, agriculture, water resources), drought characteristics (duration, intensity, frequency), the type of agricultural system exposed to drought (cultivated land, orchards, livestock, scattered or concentrated lands), vulnerability to drought (rainy or irrigated) and the capacity of adaptation of food supply chains (Salmoral et al., 2020: 1). Recurrent droughts can simultaneously destroy natural resources and farmers' income sources (Ranjan, 2014: 105). Therefore, understanding the nature of drought, how it evolves, and how to be prepared to deal with it are key components of drought risk management to alleviate its effects. In the field of planning and policymaking, drought is deemed a "wicked problem", which may strike anytime and anywhere in the world. Drought, often referred to as a "creeping phenomenon", is more gradual than other natural disasters and is difficult to notice until it leaves its effects on a specific location and region (Podˇebradská et al., 2020: 1). Talshi et al. (2016), (Spinoni & et al, 2015: 50), (Xiong & et al, 2020: 14) and (Bhushan Jha, 2020: 137) demonstrated that drought, water shortage and its effects on agricultural production and economic development are one of the major global concerns

which are linked to a host of enormous environmental, economic and social costs. Therefore, recently, in addition to other methods of evaluating and monitoring vulnerability, the concept of resilience has also been introduced as a way of evaluating the system's recovery capacity against natural disasters and adopting countermeasures against possible future accidents and disasters. In this regard, today resilience has received growing attention as a key concept in the response and introduction of countermeasures in drought (Lee & Yoo, 2021: 1). Society's resilience to tackle economic and social losses is crucial and facilitates convenient recovery in the wake of natural disasters, which is the outcome of the advancements in risk management (Norouzi, 2019: 74). The resilience paradigm emerged in light of alteration in management stand from the crisis management approach to the risk management approach (Ahmadi and Manouchehri, 2020: 175; Kuipers and Lime, 2019: 320) and today spatial resilience is recognized as a concept of confrontation with disturbances, surprises and changes (Haji Alizadeh and Rashidi, 2020: 59). Table 1 outlines some definitions mentioned in the literature on resilience:

Table 1. Definitions presented in the literature on resilience

Researcher(s)	Definition
Varmazyari and Imani, 2017	Society resilience is the maintenance, development and intervention of the society's resources by its members to ensure prosperity in an environment characterized by change, uncertainty, unpredictability and unexpected events.
Ghiasvand and Abdulshah, 2015	A resilient system can absorb temporary or permanent risks and adapt to rapidly changing conditions without losing its functionality.
Karimi and Mohammadi, 2017	Resilience or the ability to adapt positively to threats is a psychological concept that has been studied in response to challenging situations.
Heydari Sarban and Majnouni, 2016	Resilience is the ability of a social or ecological system to absorb and cope with disorders or shocks so that it can maintain the basic performance structures, reorganization capacity and adaptation capacity against changes and tensions.
Badzaban et al., 2019	The members of a resilient society have a personal and shared capacity to respond to variations and their impacts to revive society and create new paths for the future.
Kafle, 2017	Resilience is a set of short-term measures that focus on short-term recovery issues rather than the root causes of risk and vulnerability.
Fanok et al, 2020	Enhanced resilience or the ability of a social cognitive system to adapt to stress and change while maintaining its primary functions and features call for a holistic view of these systems.
Mauriz, & et al, 2017	The resilience approach treats livelihood as a system and stresses two characteristics, the ability to cope and adapt to crises, which are known as key components in assessing the resilience of human societies.

The damages incurred by farmers and the repercussions of periodic droughts reflect the weak preparedness and resilience of farmers against this risk and its ramifications, as well as the inefficient crisis management systems in these cases (Sadeghlou and Sojasi Gheidari, 2013: 130 & 131), Thus, the first step to deal with drought and mitigate its adverse consequences is to construe and accurately shed light on the dimensions of people's vulnerability and resistance in order to shore up their tolerance and flexibility threshold, which is often neglected in developing countries, including Iran (Sharifinia, 2020: 50). Considering that resilience is an integral part of life in today's world (Heidari Sarban, 2018: 703), boosting the resilience and flexibility of villagers to drought can protect them against vulnerability and fragility in face of drought. One of the notable features of resilient rural communities against drought is thresholds of change, reorganization of resistance capacity, and adaptation or recovery from shock and stress to learn and adapt (Taleshi et al., 2017: 882). The importance of exploring this issue has been the driver of effective research in diverse fields, though limited in scale. Examples include research by Liaqat et al, 2017, Sawada & Koike, 2016, Salmoral et al, 2020, Khan & Gomes, 2019, Jafari et al., 2020 & Barghi et al. 2018.

Table 2. An overview of research on resilience and drought

Author	Title	Results
Akbarian Ronizi et al., 2019	Analysis of farmers' resilience to drought with an emphasis on economic factors and social capital in rural areas	The results of this research suggested that: 1. Economic factors have a greater role and impact on the resilience of farmers than social capital. 2. Two indicators of the employment status, as well as the income status and savings of farmers, are significantly and directly related to extent of resilience.
Kapucu & et al, 2013	Disaster Preparedness and Resilience for Rural Communities	In this study, data from seven Central Florida areas were used to investigate rural communities and their crisis management practices, focusing on the structure of rural crisis management operations, the implementation of participatory crisis management practices, and community capacity building and the potential impacts of these practices were analyzed. The findings revealed that the challenges of crisis management in rural communities include insufficient funds, limited training opportunities and potential management capacity. The results demonstrate the great value that the statistical community attaches to forging and maintaining partnerships before and after a crisis. This result is important in that inter-agency relationships build up the capacity to tackle crises, enhance partnerships to reinforce access to limited resources and encourage the resilience of rural communities against disasters.
Nowrozi, 2019	Measuring the resilience of rural settlements against environmental hazards (Beldaji district).	Factors affecting the high level of resilience in the studied villages were: access to infrastructure services, and distance from the city centers and the districts. As far as Sibak village is concerned, which exhibited a more appropriate level of social resilience in the region, ethnicity can be regarded as a key factor.
Kamara et al., 2018	Resilience to climate-induced disasters and its overall relationship to well-being in southern Africa: a mixed-methods systematic review	Since droughts are "slow-pace" phenomena, the severity of the consequences of droughts highlights the importance of facilitating drought resilience measures for the sustained well-being and stability of affected communities. Still, the result of the field survey in South Africa showed that: 1. Resilience is poorly understood and often overlooked at times of crisis in South Africa; 2. There is a significant relationship between drought resilience and the well-being of the people in the region.
Mavhura, 2017	Applying a systems-thinking approach to community resilience analysis using rural livelihoods	Mavhura concluded that disasters provoked by natural disasters in Mozarabani region manifest as food insecurity, destruction of crops and damage to critical infrastructure.
Khosravi et al., 2019	Explaining the resilience pattern of rural settlements (Izeh city, Dehdz district) The result of this research indicates that the resilience pattern in rural settlements of Izeh city, Dehdez district	The findings of this study called for greater attention to natural dimensions in connection to resilience patterns in rural settlements of Izeh, Dehdez district. Hence, regional villages display the highest resilience in terms of natural, environmental and spatial-physical dimensions and the least resilience in institutional, management, economic and social contexts. Therefore, its risks and consequences have given rise to environmental damage, massive costs, social unrest, and the breakdown of the physical structures of the settlements.
Hosseini et al., 2021	Management of both surface and underground water resources and enhanced resilience of farmers against water shortage by predicting the price of agriculture and using a genetic algorithm	Given the importance of the agricultural sector in the national economy, for the sustainability of agriculture as a source of income, especially the production and supply of food, it is essential to underscore resources available to the farmer and the factors affecting the decision of resource allocation. This study explored the simultaneous optimization of cultivation patterns and water distribution with price forecasting in the Qazvin irrigation network in order to prevent the depletion of groundwater aquifers while exploiting

Author	Title	Results
		the available resources and paying attention to the livelihood of farmers. The results suggested that optimizing the cultivation model and water distribution can raise revenues by about 10 billion tomans.
Pishwaei et al., 2022	The role of sustainable human capital in the management of climatic drought using fitness indices in the villages of Kermanshah	It is highly important to inform people of the causes and detrimental effects of climatic drought as well as the appropriate methods of optimal water management as people can play an effective role in reducing the vulnerability of society and therefore consciously participate in this process. This is more important in rural areas due to its intimate connection with water and land issues.

The resilience of rural residents and farmers in the face of drought is classified into six main categories, including institutional-structural, social-cultural, psychological, economic, physical and environmental. Informed by resilience components of rural residents and farmers against drought and to offer deeper insights into the components and subjects of the research, the conceptual model of the current research is presented in Figure 1.

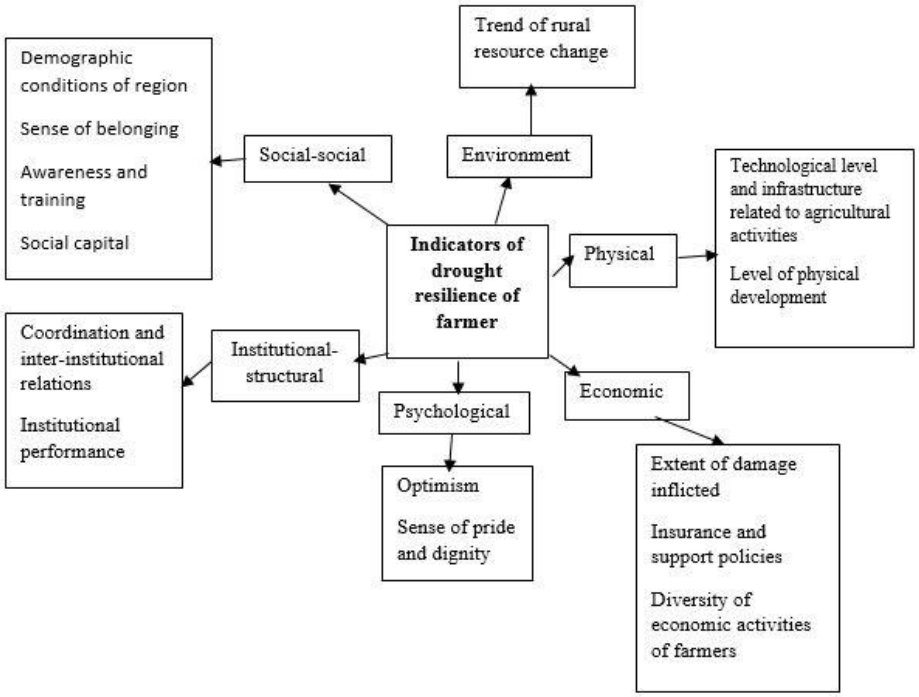

Figure 1. Conceptual model of the research

3. Research Methodology

3.1 Geographical Scope of the Research

Pakdasht County, in an area of 610 square kilometers, accounts for about 2.3% of the area of Tehran province and is located in the alluvial lands to the south of the Alborz Mountain range at an altitude of 1013 m above sea level. It is surrounded by the Alborz mountains in the north, Tehran and Shahr-e Ray in the west, the central part of Varamin and Qarchak in the south, and Ivanki in Tehran province in the east. It consists of rural areas of Ferunabad, Hesaramir, Filestan, Karimabad, and Jamalabad (this district has a population of 29,648 people, of whom 22,990 inhabit in Shahid Namjo complex, which is bereft of any agricultural activities and only has residential purposes) and Sharifabad. Agriculture is the dominant economic activity in the villages

of this city, and the entire region is in the grips of drought. Moreover, the process of land use change has aggravated in these villages in recent years (Pakdasht Governorate, Pakdasht Agricultural Jihad Department). Since one of the fundamental solutions to bolster the sustainability of local communities against environmental crises is to boost the resilience of these communities against the disturbance created in ecological systems, and the disaster management and sustainable development approaches seek to build resilient communities that are resistant to risks (Nowrozi, 2019: 74), the present research was conducted to address this issue in the study area.

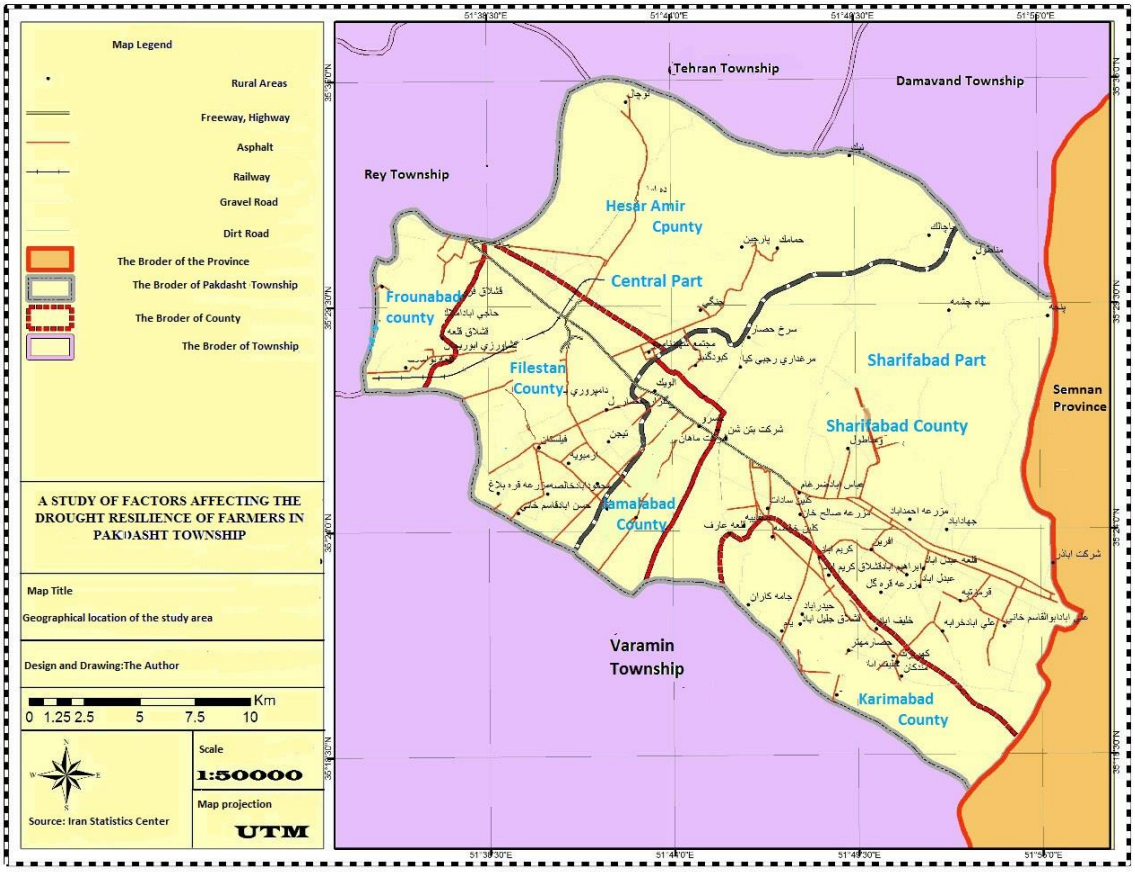

Figure 2. Geographical location of Pakdasht villages

3.2. Methodology

To rank the villages of Pakdasht County in terms of resilience in the face of drought, the COCOSO technique was used. A new multi-criteria decision-making technique, COCOSO compromises a hybrid solution for ranking options. The steps of the COCOSO method are as follows (Akbari, 2020):

3.2. The decision matrix

The normalization of the decision matrix (the first relation is for positive criteria and the second is for negative ones);

$$r_{ij} = \frac{x_{ij} - min_{x_{ij}}}{min_{x_{ij}} - max_{x_{ij}}}$$

$$r_{ij} = \frac{max_{x_{ij}} - x_{ij}}{min_{x_{ij}} - max_{x_{ij}}}$$

Calculation of weighted sum and weighted product;

$$s_i = \sum(w_i r_{ij})$$

$$p_i = \sum (r_{ij})^{w_i}$$

Determining the evaluation score of the items in terms of three strategies (the first strategy denotes the arithmetic mean of the scores of the weighted sum model (WSM) and the weighted product model (WPM), while the second strategy states the relative scores of the WSM and the WPM compared to the best ones. The third strategy is a

compromise between the WSM and WPM. In this relation, λ is determined by the decision maker, but it displays high flexibility for 0.5.);

$$k_a = \frac{p_i + s_i}{\sum(p_i + s_i)}$$

$$k_b = \frac{s_i}{min_{s_i}} + \frac{p_i}{min_{p_i}}$$

$$k_c = \frac{\lambda s_i + (1-\lambda)(p_i)}{\lambda max s_i + (1-\lambda) max p_i}$$

Determining the final score and ranking the options.

$$k_i = (k_a k_b k_c)^{\frac{1}{3}} + \frac{1}{3}(k_a + k_b + k_c)$$

The COPELAND method, used for a broad range of subjects is meant to select the best option through a pairwise comparison. This method, based on a pairwise comparison matrix, calculates not only the number of wins, but also the number of losses for each option.

4. Research Findings

In this research, data collection was conducted over 6 months in the summer and autumn of 2020. The statistical population comprised the villagers in rural areas of Pakdasht County, except for the Shahid Namjoo Complex. According to the Cochran formula with an error rate of 5% and a CI=95%, a sample size of n= 381 was calculated. The number of samples in each village was determined using the proportional stratified sampling method.

Table 3. The number of rural residents in each village and sample size for each village using the stratified sampling method

Source: Statistics Center of Iran (2015)

Village	Rural population	Sample size
Sharifabad	9362	69
Ferunabad	6126	45
Karimabad	7106	52
Filestan	15936	117
Jamalabad	6694	50
Hesaramir	6465	48
Total	51689	381

The main data collection instrument was a questionnaire, which consisted of two parts, demographic and professional characteristics of the respondents. The questionnaire validity was assessed by 12 experts of geography and rural planning and 7 authorities in various fields of agriculture. After applying corrections proposed by the experts, validity was confirmed. To check the reliability of the questionnaire, a pre-test was run and reliability was calculated from Cronbach's alpha. Data analysis was performed using SPSS software, the COCOSO technique and COPELAND technique.

Table 4. Dimensions and factors affecting drought resilience of villagers and farmers

Talshi et al. (2017), Mohammadi and Manouchehri (2018), Eslami and Ebrahimi Dehkordi (2018) and Namjooyan et al., (2017), Khosravi et al. (2020), Rathi (2020).

Dimension	Factor	Item	Cronbach alpha
Social-cultural	Training and awareness	Education level, rural residents' awareness of drought, skills, local knowledge of adaptation to drought, extent and type of advisory services.	0/82
	Demographic conditions of the region	Population sex composition, population age structure, growth rate	0/78
	Sense of belonging	Reluctance to migrate, adaptation to rural life	0/80
	Social capital	Spatial attachment, the ability to return to pre-crisis conditions after the incidents, self-organization, flexibility, social networks, community adaptability, public participation	0/9

Dimension	Factor	Item	Cronbach alpha
Psychological	A sense of pride	Sense of pride for being born in a village, being proud of living in a village	0/78
	Optimism	The household's economic perspective, the psychological conditions of the villagers before and after the disaster, the perspective of agricultural activity	0/85
Economic	The extent of economic damage	The scale of damage inflicted on farms, gardens, etc., the vulnerability of villagers' property	0/81
	Insurance conditions and support policies	The status of insurance coverage, the allocation of financial credits from banks	0.89
	Diversity of economic activities	The diversity of economic activity in businesses such as tourism, the possibility of finding new jobs and sources of income	0/91
Institutional – Structural	Institutional performance	The accountability of local managers to mitigate the effects of the drought crisis	0/83
	Institutional and inter-organizational relations	The relationship of villagers and farmers with local institutions, the extent of cooperation of banks, departments and institutions in delaying the repayment of loans and allocating financial resources to grant credits to those harmed by drought.	0/92
	Institutional context	Support and effectiveness of the institutional system in bank credits and loans	85/0
Physical	The technologies and infrastructure related to agricultural activities	The agricultural and horticultural lands under mechanized cultivation, the development of agricultural mechanization	94/0
	The extent of physical development	The services available in the village, the rural appearance	79/0
Environmental	The process of changes in rural resources	Access to various kinds of water resources, natural resources of the village such as soil and forest	96/0

Of 381 distributed questionnaires, 325 were completed by the participants, and included in the statistical analysis. The analysis of demographic characteristics showed that 39.87% (n=284) of the respondents are men and 12.61% are women. People in the age range of 40-50 years constituted the largest number of respondents. and 47.23% of the respondents had a bachelor's degree. To measure the impact of the factors affecting the drought resilience of villagers and farmers in the villages of Pakdasht County, the t-test was used, as described in Table 5.

Table 5. Factors affecting the resilience of villagers and farmers in the face of drought using t-test

Research indices	Test basis = 3						Mean
	T	df	Significance level	Mean difference	95% CI		
					Lower limit	Upper limit	
Socio-cultural							
Demographic conditions of the region	9.651	324	0.000	0.680	0.541	0.818	3.680
Sense of belonging	7.212	324	0.000	0.529	0.384	0.673	3.529
Training and awareness	2.820	324	0.005	0.209	0.063	0.355	3.209
Social capital	15.457	324	0.000	0.987	0.862	1.114	3.987
Psychological							
Sense of pride and glory	5.360	324	0.000	0.473	0.299	0.647	3.473
Optimism	4.573	324	0.000	0.3847	0.219	0.550	3.384
Economic							
The scale of economic damage	-2.521	324	0.01	-0.228	-0.405	-0.050	2.722

Research indices	Test basis = 3						Mean
	T	df	Significance level	Mean difference	95% CI		
					Lower limit	Upper limit	
Insurance conditions and support policies	5.253	324	0.000	0.480	.0300	0.659	3.480
Diversity of economic activities	010/12	324	0.000	0.926	0.744	1.077	3.926
Institutional-structural							
Coordination and institutional relations	0.661	324	0.509	0.058	-0.115	0.233	3.058
Institutional context	-0.615	324	0.539	-0.055	-0.232	0.121	2.945
Institutional performance	5.252	324	0.000	0.467	0.292	0.642	3.476
Physical							
The level of technologies and infrastructure...	-1.48	324	0.252	-0.110	-0.300	0.079	2.890
The level of physical development	16.976	324	0.000	1.160	1.025	1.290	4.160
Environmental							
The process of changes in rural resources	6.010	324	0.000	0.560	0.376	0.473	3.560

As indicated by the results of the t-test, the items of institutional background and relations, the level of technological advancement and infrastructure are not desirable. It seems that the relationship of villagers and farmers with local institutions, the extent of cooperation of state departments and institutions, public participation, support and effectiveness of the institutional system in terms of bank credits and loans, the area of agricultural and horticultural lands under mechanized cultivation land, development of agricultural mechanization and modern irrigation methods in the villages are far from desirable. Hence, agriculture planners and policymakers in the region should undertake comprehensive plans in these areas. To assess the effectiveness of these indicators, the mean difference and the t-test statistic were also used. The analysis of the mean difference of the variables reveals that the impact of socio-cultural, psychological, and economic components except for items of damages inflicted, environment, institutional performance, as well as civil and physical development in the region are in a balanced and favorable condition. The desirability of these items can be the forte of these villages meaning that optimism, supportive policies, a sense of belonging and dependence, and the diversity of economic activities in times of crisis could be a driver of rural resilience against drought. The results of data analysis suggest that the scale of economic damage incurred by farmers in recent years has aggravated the vulnerability of farmers. Changing the use of agricultural lands, the growth of greenhouses, and farmers' tendency to grow greenhouse crops such as cucumbers, eggplants, flowers, and ornamental plants, as well as tropical plants in greenhouses instead of planting watermelons, cantaloupes, pomegranates, wheat, barley, and corn, mirror a change in the style of farmers.

The correlation coefficient R indicates the linear correlation between the value of the dependent variables and the value predicted by the model. The correlation between the resilience indicators of villagers and farmers in the face of drought in the region is 0.747, denoting a direct correlation. It means that above indicators can explain 74% of variance in research variables and 26% of variance in the subject under study can be explained by other factors.

Table 6. Explaining variation in the dependent variable (drought resilience of villagers and farmers) by affective factors

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0/747	0/558	0/550	0/88351

As depicted by the variance analysis of the regression model, there is a significant relationship between various indicators (social-cultural, economic, psychological, physical, institutional-structural and environmental) at CI= 95%, and each of these indices has a bearing on the resilience status of the studied villages and can influence other factors. The R-square (coefficient of determination) in Table 6 is 0.558, indicating that the model can explain 56% of variance in the dependent variable. Moreover, it suggests a better fit and a more important role in explaining variations in the dependent variable.

Table 7. Regression significance test of the impact model and the importance of the studied indices

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	313.774	6	52296	66.995	0.000
	Residual	248.226	318	0.78		
	Total	562.0000	324			

The social-cultural (0.686, 68%), environmental (0.572 – 57%) and institutional-structural (0.241 – 24%) variables have the greatest standardized coefficient, thereby playing a more effective role in predicting the dependent variable, i.e., the impact of the above variables on the resilience of villagers and farmers. As such, they play a pivotal role in the drought resilience of villagers and farmers in the villages of Pakdasht County.

Table 8. Statistics of regression model coefficients of the independent variable

Model	Non-standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	11/628	1/370		7.892	0.000
Social-cultural	0/697	0/041	0/686	16.936	0.000
psychological	0/074	0/054	0/077	1.387	0.000
Economic	0/375	0/069	0/177	3.141	0.001
Institutional-structural	0/220	0/047	0/241	4.692	0.000
Physical	0/118	0/040	0/137	2.996	0.002
Environmental	0/615	0/110	0/572	7.122	0.003

To explore the significant difference in indices affecting the resilience of villagers and farmers in the studied villages, the ANOVA method was used. Therefore, the ANOVA test and Fisher's F-test were run for all villages to determine whether the rural areas in the question are significantly different in terms of resilience. As shown in Table (10), the alpha errors (Sig) of the variance analysis are less than the acceptable error threshold (0.05). Hence, it can be argued that the villages of Pakdasht County are significantly different in terms of resilience indices, except for the psychological index, where the alpha error rate (Sig) of variance analysis is estimated to be 0.085, which is greater than the acceptable error rate (0.05). Thus, it can be argued that the villages of Pakdasht County are not significantly different in resilience in terms of the psychological index.

Table 9. Significant analysis of the difference between villages in terms of the tourism entrepreneurship ecosystem in the rural environment

Index	Variance	Sum of squares	df	Mean square	F	Sig
Sociocultural	Inter-group	169.332	4	42.33	37.118	0.000
	Intra-group	364. 957	320	1.140		
	Total	534.289	324	***		
Psychological	Inter-group	15.797	4	3.949	2.063	0.085
	Intra-group	612559	320	1.914		
	Total	628.356	324	***		
Economic	Inter-group	94.126	4	23.532	15.027	0.000
	Intra-group	501.117	320	1.566		
	Total	595.243	324	***		
Institutional - structural	Inter-group	48.210	4	12.053	5.442	0.000
	Intra-group	708.713	320	2.215		
	Total	756.923	324	***		
Physical	Inter-group	28.404	4	7.101	3.532	0.008
	Intra-group	643.424	320	2.011		
	Total	671.828	324	***		
Environmental	Inter-group	41.462	4	10.365	5.851	000/0
	Intra-group	56..895	320	1.772		
	Total	6.8.357	324	***		

Informed by the results of the COCOSO technique (Table 10), farmers in Filestan district are more drought resilient than other farmers in Pakdasht County. In the villages of this district, there are several large industrial and modern greenhouses along with companies and workshops specialized in the cultivation of flowers and ornamental plants, so Golzar village is recognized as the flower and plant hub of the country. In the villages of this district, at least 40 flower and ornamental plants exhibitions are permanently open throughout the year. The individuals engaged in this field have necessary expertise, knowledge and skills and thanks to their strong interactions with each other, financial and credit institutions and internal and external sales markets, they are in a better position than other villages. The high participation of the people, the diversity of economic activities, proper physical and urban development, the level of technology and suitable infrastructure are some of factors associated with the greater resilience of farmers in this district.

Table 10. Calculation of ki and ranking of options

District	ka	Rank	kb	Rank	kc	Rank	ki	Rank
Karimabad	0.324	6	0.396	6	0.182	5	0.587	6
Hesaramir	0.341	5	0.452	5	0.110	6	0.972	5
Jamalabad	0.887	4	1.29	4	0.515	4	1.702	4
Ferunabad	1.138	3	1.359	3	0.681	3	2.077	3
Sharifabad	1.529	2	1.711	2	0.895	2	2.707	2
Filestan	1.882	1	2.09	1	1.087	1	3.310	1

To assess the importance of factors affecting the resilience of agricultural operators in Pakdasht County, the COPELAND technique was adopted. The results of the Copeland technique are outlined in Table 11.

Table 11. Ranking of factors influencing the resilience of agricultural operators based on the Copeland method

Criterion	$\sum C$	$\sum R$	$\sum C - \sum R$	Rank
Demographic conditions of the region	7	8	1-	9
Sense of belonging	10	5	5	6
Training and awareness	15	0	15	1
Social capital	14	1	13	2
Sense of pride and dignity	9	6	3	7
Optimism	11	4	7	5
Extent of economic damage	12	3	9	4
Insurance conditions and support policies	12	3	9	4
Diversity of economic activities of farmer households	15	0	15	1
Coordination and institutional and inter-organizational relations	13	2	11	3
Institutional background	8	7	1	8
Institutional performance	8	7	1	8
The technological level and infrastructure	11	4	7	5
The extent of physical development	7	8	1-	9
The process of resource changes in the village	14	1	13	2

According to the Copeland technique, the factors of training and awareness as well as the diversity of economic activities of the farmer's household ranked high in importance. Diversification of farmers' skills, establishment and solidification of technical and counseling centers to boost drought resilience of farmers, teaching new planting and irrigation techniques, planting crops with low water consumption, and selecting the most suitable cultivation pattern in the region and optimal water management are possible when farmers receive the essential training and are cognizant of these issues and the role of indigenous knowledge in tackling drought. Diversification of economic activities among farmers, such as the development of upstream and downstream industries associated with the products cultivated in the region will increase the return on capital, prevent immigration, and raise the income sources of farmers.

5. Discussion and Conclusion

Crises and natural hazards are deemed major challenges and obstacles to the achievement of sustainable development of rural communities. Theorists, planners and policymakers of rural development seek to secure the sustainability of rural development through models and approaches to alleviate vulnerability via crisis management to provide favorable conditions to diminish vulnerability in the socio-economic systems of the village and consequently bolster the resilience of these settlements against environmental and climate crises. One such approach is concerned with the resilience of society against natural disasters. Given that the studied area is prone to drought and a wide spectrum of natural and human factors can influence the onset of drought and the level of farmers' resilience to it, the identification of these factors and their analysis, while proving their inter-relationships in an attempt to expand the drought resilience threshold of rural communities and achieving sustainable development in these communities, is an undeniable necessity. The present research was conducted to explore the determinants of drought resilience of farmers in Pakdasht County and shed light on the nature of these factors. In the stage of library research, 6 factors (social-cultural, economic, physical, institutional, environmental, and psychological) were identified as determinants of the drought resilience of farmers. The results of the single t-test revealed that institutional background, institutional relations and the level of technology and infrastructure are

far from desirable. As suggested by the findings of decision-makers need to first identify regional bottlenecks when amplifying resilience components. The result of the t-test demonstrated that planners and policymakers in the field of rural development in Pakdasht County should allocate special attention to the interactions of villagers and farmers with local institutions, the cooperation of state organizations and institutions, public participation, support and effectiveness of the institutional system in bank credits and loans, and accountability of local managers. Also, according to the results findings of Kapcho et al. (2013), inter-organizational relationships reinforce the capacity to cope with crises, promote partnerships to expand access to limited resources and encourage the resilience of rural communities against disasters. Therefore, given that institutional background and institutional and inter-organizational connections in the region are not promising, the following are suggested to strengthen these two items in a bid to build up the capacity to tackle crises.

Focus on the local management of villages, fair distribution of government facilities, improvement of conditions for granting loans to farmers, and the ongoing communication of institutions and organizations with local communities through social facilitators to develop the resilience of rural society with high adaptability and public and private sector investment to create jobs and revenues.

Moreover, to strengthen infrastructure and technological level, the following measures could be taken: developing infrastructure, providing support services to farmers in the region by building water storage tanks, granting low-interest loans from banks and credit institutions to expand modern irrigation methods in agricultural lands, promoting and expanding crops with drought-resistant cultivars.

As reported by Nowrozi (2018), rural resilience is the capacity of a rural area to adapt to external changes to maintain a satisfactory level of life. Hence, if planning and policymaking in all the villages of this County are geared toward nurturing the five dimensions of livelihood capital and diversifying economic activities, then aside from improving the quality of rural life by fostering resilience, the level of their consent with rural life and hope for future will also increase. In this research, an attempt was made to gain more profound insights into the condition of villagers and farmers and the determinants of their resilience in the villages of Pakdasht County. To do so, the drought resilience of villagers and farmers was analyzed and evaluated in six institutional-structural, social-cultural, psychological, economic, physical and environmental domains. As indicated by the results of the COCOSO technique, the villages of Filestan district are more resilient. This means that resilience, by providing conditions that are conducive to creativity, revival and diversity of economic activities, triggers sustainable development. This is aligned with the findings reported by Akbarian Ronizie et al., (2018). The villages of Filestan district, thanks to the high quality of infrastructure, diversity of economic activity, development of greenhouse and hydroponic cultivation, development of modern irrigation methods, high education level of farmers, especially flower growers in Golzar village, and strong local management together with proper and solid connections with institutions/organizations and financial institutions and banks are more resilient and stable than other villages in Pakdasht County.

According to the findings of this research and to formulate appropriate strategies to tackle drought, the following suggestions are presented:

1) Strengthening the participation of villagers and farmers and fostering social capital in villages, including trust and social cohesion, in order to promote the adoption of modern cultivation and irrigation methods, especially in villages that chiefly focus on greenhouse cultivation, such as Golzar, Jitoo, Filestan, Aluak, Aramboye and Afrain;

2) Diversifying the economic activities of the village, including agricultural and non-agricultural activities, in order to obtain a sustainable livelihood relative to the natural and human potential of the villages in the region and the proximity to the capital, such as the development of one-day rural tourism in Golzar, Tochal, Khojir, Ghermez Tappe, etc.; paying further attention to the upstream and downstream industries related to greenhouse cultivation including ornamental plants and flowers and crops such as cucumber, tomato, papaya, pepper, etc.

3) Revising the existing laws and organizational structures for risk management and paying greater attention to the performance and interactions of powerful institutions and credit and banking institutions, especially in terms of granting

facilities for the development of modern greenhouses, the expansion of flower exhibitions and ornamental shrubs, entrepreneurial companies and conversion industries such as plant tissue cultivation, rose water distillation, herbal medicines, industries related to flower packaging for export, seeds and fertilizers, production of tomato paste, pickles and packaging of greenhouse products for supply to domestic markets;

4) Developing a comprehensive plan for drought within the framework of an information management, monitoring and evaluation system in the study area considering the falling precipitation and the lowering of the underground water level and providing strategic plans to optimally exploit surface water resources such as Jajrud river, underground water and Mamlu Dam;

5) Regular evaluation and monitoring of drought risk and water resources in the region and incorporating the obtained information in the process of local development planning;

6) Organizing training and promotion courses to introduce new methods of agriculture and irrigation as well as complementary economic activities in the villages of this County in keeping with the current status of tourism, rural industries and workshop about the cultivation of flowers and ornamental plants as well as small and complementary industries linked to greenhouse products such as tomatoes, cucumbers, peppers, papaya, etc.;

7) Developing a regional model for drought resilience indicators of rural communities in Pakdasht County.

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Authors' contributions

The authors equally contributed to the preparation of this article**.**

Conflict of interest

The author declare no conflict of interest.

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مطالعه عوامل مؤثر بر تاب‌آوری کشاورزان در برابر خشکسالی در شهرستان پاکدشت، ایران

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چکیده مبسوط

۱. مقدمه

خشکسالی ازجمله رویدادهای فرین اقلیمی نگران‌کننده‌ای است که فراوانی و شدت آن به‌طور قابل‌توجهی در مهروموم‌های اخیر افزایش‌یافته است. با توجه به اینکه تاب‌آوری یکی از مهم‌ترین عوامل تحقق پایداری در نظر گرفته می‌شود که سبب ارتقای ظرفیتِ جوامع برای مقابله و تطبیق با تغییرات گسترده و کاهش میزان آسیب‌پذیری افراد در مواجهه با بحران‌های پیش رو در فضاهای روستایی می‌باشد، لذا پژوهش حاضر با هدفِ ارزیابیِ و مطالعه عوامل مؤثر بر تاب‌آوری کشاورزان در مواجهه با خشکسالی و ارائه راهبردهای ارتقای تاب‌آوری در روستاهای شهرستان پاکدشت انجام‌شده است. شهرستان پاکدشت دارای ۲۶ هزار هکتار اراضی کشاورزی است که به دلیل خشکسالی و بحران آب بخش عمده‌ای از این زمین‌ها بدون کشت رهاشده و در خطر تغییر کاربری غیرمجاز قرار دارد. با توجه به اهمیت شناخت وضعیت کشاورزان روستاهای شهرستان پاکدشت از منظر تاب‌آوری در برابر خشکسالی جهت تدوین برنامه جامع راهبردی در زمینه مدیریت مخاطره خشکسالی لذا در پژوهش حاضر، نگارنده به دنبال یافتن پاسخ برای این سؤالات است؛ چه عواملی بر تاب‌آوری روستائیان و کشاورزان در روستاهای منطقه تأثیر می‌گذارد؟ وضعیت این شاخص‌ها در روستاهای موردمطالعه چگونه است؟ راهبردهای مطلوب به‌منظور تقویت تاب‌آوری کشاورزان شهرستان پاکدشت در شرایط خشکسالی چیست؟

۲. مبانی نظری تحقیق

از میان دامنه گسترده‌ای از مخاطرات که جوامع انسانی درمعرض آن قرار دارد، خشکسالی از مهم‌ترین بلایای طبیعی است که زیان‌های بسیاری را بربخش کشاورزی و منابع آبی وارد می‌کند. تأثیراتِ رخداد خشکسالی به عوامل زیادی بستگی دارد ازجمله نوع خشکسالی (هواشناسی،کشاورزی، منابع آب)، ویژگی‌های خشکسالی (مدت‌زمان، شدت، فراوانی)، نوع سیستم کشاورزی درمعرض خشکسالی (زمین مزروعی، باغات، دامداری، اراضی پراکنده یا متمرکز)، حساسیت آن به خشکی (دیم یا آبیاری شده) و ظرفیت سازگاریِ زنجیره‌های تأمین غذا. اخیراً علاوه بر سایرِ روش‌های ارزیابی و پایش آسیب‌پذیری، مفهوم تاب‌آوری نیز برای ارزیابی ظرفیتِ بازیابی سیستم در برابر بلایای طبیعی و ایجاد اقدامات متقابل در برابر حوادث و بلایای احتمالی در آینده معرفی‌شده است. در این راستا، امروزه تاب‌آوری به یک مفهوم مهم در واکنش و ایجاد اقدامات متقابل در خشکسالی تبدیل‌شده است. آسیب‌های وارده بر کشاورزان و پیامدهای وقوع خشکسالی‌های دوره‌ای خود بیانگر عدم آمادگی و تاب‌آوری کشاورزان در برابر این مخاطره و پیامدهای آن و همچنین ناکارآمدی سیستم‌های مدیریت بحران در این موارد است. با توجه به اینکه تاب‌آوری از ضروریات زندگی در دنیای کنونی می‌باشد لذا ارتقای زمینه‌های تاب‌آوری و انعطاف‌پذیری روستاییان نسبت به خشکسالی می‌تواند از آسیب‌پذیری و شکننده بودن آن‌ها در مواجهه باخشکسالی جلوگیری کند.

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از ویژگی‌های اصلی جوامع تاب آور روستایی در مقابل خشکسالی می‌توان به آستانه‌های تغییر، سازمان‌دهی دوباره ظرفیت مقاومت، کنار آمدن یا بهبود پس از شوک و تنش واردشده برای یادگیری و تطبیق با آن اشاره کرد.

۳. روش‌شناسی تحقیق

پژوهش حاضر ازنظر روش؛ توصیفی- تحلیلی است. روش جمع‌آوری داده‌ها ترکیبی اسنادی – میدانی است. ابزار اصلی جمع‌آوری داده، پرسشنامه بوده که توسط جامعه آماری (۳۸۱ نفر از کشاورزان) تکمیل‌شده است. تجزیه‌وتحلیل داده‌ها با استفاده از نرم‌افزار spss و روش‌های آماری آزمون تی، رگرسیون و تحلیل واریانس، تکنیک COCOSO و تکنیک COPELAND انجام‌شده است.

۴. یافته‌های تحقیق

به‌منظور بررسیِ وضعیت موجودِ تاب‌آوری روستائیان در مواجهه با خشکسالی از آزمونT استفاده شد. گویه‌های مؤلفه‌های اجتماعی- فرهنگی، روان‌شناختی، اقتصادی به جز گویه میزان خسارت‌های وارده، محیطی و گویه عملکرد نهادی و گویه سطح توسعه عمرانی و کالبدی در منطقه موردبررسی متعادل و مطلوب است و گویه‌های بستر نهادی، روابط نهادی و سطح فناوری و زیرساخت‌ها در شرایط مطلوب قرار ندارند. میزان همبستگی بین شاخصه‌ای تحقیق در منطقه برابر ۰/۷۴۷می‌باشد که بدان معناست؛ شاخص‌های ذکرشده توانِ تبیین ۷۴ درصد از تغییرات را دارا هستند. نتیجه آزمون تحلیل واریانس نشان داد میان روستاهای شهرستان پاکدشت ازنظر شاخص روان‌شناختی (Sig=0.085) در تاب‌آوری تفاوت معناداری وجود ندارد. بر اساس یافته‌های حاصل از تکنیکCOCOSO، کشاورزان دهستان فیلستان نسبت به کشاورزان سایر دهستان‌ها ازنظر خشکسالی تاب آورتر هستند. مشارکت بالای مردم، تنوع فعالیت‌های اقتصادی، توسعه کالبدی و عمرانی مناسب، سطح فناوری و داشتن زیرساخت‌های مناسب‌تر نسبت به سایر دهستان‌ها از عواملی هستند که سبب شده تا کشاورزان این دهستان تاب آورتر باشند. بر اساس تکنیک کپلند عامل آموزش و آگاهی و عامل تنوع فعالیت‌های اقتصادی خانوار کشاورز در رتبه اول اهمیت قرار گرفتند.

۵. بحث و نتیجه‌گیری

تحقیق حاضر باهدف شناخت عوامل مؤثر بر تاب‌آوری کشاورزان شهرستان پاکدشت در مواجهه باخشکسالی و ارزیابی و تحلیل این عوامل انجام پذیرفت. در مرحله مطالعات کتابخانه‌ای ۶ عامل (اجتماعی – فرهنگی، اقتصادی، فیزیکی – کالبدی، نهادی، محیطی، روان‌شناختی) به‌عنوان عوامل مؤثر بر میزان تاب‌آوری کشاورزان در مواجهه با خشکسالی شناسایی شدند که نتیجه آزمون تی تک نمونه‌ای نشان داد که گویه های بستر نهادی و روابط نهادی و سطح فناوری و زیرساخت‌ها در شرایط مطلوب قرار ندارند. بر اساس یافته‌های تکنیک کوکوسو روستاهای دهستان فیلستان تاب آورتر هستند و این بدان معناست که تاب‌آوری با ایجاد شرایطی که منطبق بر خلاقیت، بازیابی و تنوع فعالیت‌های اقتصادی است سبب شکل‌گیری توسعه پایدار می‌شود. روستاهای دهستان فیلستان به دلیل؛ کیفیت مناسب زیرساخت‌ها، تنوع فعالیت اقتصادی، توسعه کشت گلخانه‌ای و روش کشت هیدروپونیک، توسعه روش‌های نوین آبیاری، بالا بودن سطح تحصیلات کشاورزان به‌ویژه گلکاران در روستای گلزار و مدیریت محلی قدرتمند با دارا بودن ارتباط مناسب و قوی با نهادها و سازمان‌های دولتی و مؤسسات مالی و بانک‌ها نسبت به سایر دهستان‌های شهرستان پاکدشت تاب‌آورتر و پایدارتر هستند.

کلیدواژه‌ها: تاب‌آوری، خشکسالی، تکنیک کوکوسو، تکنیک آراس، شهرستان پاکدشت.

تشکر و قدرانی

پژوهش حاضر حامی مالی نداشته و حاصل فعالیت علمی نویسندگان است.

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Original Article

Analyzing the International Studies in the Field of Rural-local Marketing

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Abstract

Purpose- Rural-Local Marketing is a significant knowledge that has been associated with agricultural marketing, so the purpose of this concept is to separate the marketing of agricultural products and its lexical depth with a concept beyond the value chain in agriculture. Therefore, the event of rural-local marketing is not involved in production and supply and seeks to discover the dominant spatial patterns on distribution of rural products.

Design/Method/Approach- According to this approach, 230 scientific sources (as a sample society) have been examined from the English language sources continuously and focusing on rural-local marketing. From the evaluation of the obtained research sources, a description of the literature in the field of rural-local marketing was presented, and then the communication between rural settlements among these societies with the suburbs and the center with the periphery was explored. Among the set of sources, 22 scientific concepts with the highest frequency were obtained, which were extracted and categorized by the statistical method of confirmatory factor analysis, including: rural marketing, local marketing, spatial model, network model, and integration. In the next steps, the content of all 230 scientific sources was measured with five factors, which tells the distribution learner of time periods and their spatial distribution.

Findings- In abstracting the extracted concepts from the research, the details of ten-year and annual time periods, their spatial distribution on the scale of continents and countries have been dealt with in detail and can be identified by drawing the indicator spectrum on the world map, then the mentioned concepts which extracted from scientific sources were criticized and interpreted. In this regard, the leading countries in the field of rural-local marketing include India, the United States, England, and China, and in the next stage, Iran. One of the emphasis of this common study was the Integrated Marketing Communication (IMC) .

Keywords- Rural marketing, Local marketing, Spatial distribution, International studies.

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1. Introduction

Rural producers have accepted that their similar products occupy the commercial space and market from thousands of kilometers away in the country. In this context, one solution is to rely on diversifying local products and introducing them to consumers. Another issue in rural production is identifying the local market, quality products and services at the villages level, which should be looked at on a local scale and it‘s considered important. This issue has been raised in Ray's studies under the title (Cultural Economies) (Qadiri Masoom & Azmi, 2008). For this reason, the distribution system needs more support such as advertising and marketing, it can be said that this action can be done with a relatively reasonable cost from the capital of native and local people. The development of the range of rural products is important as a process in the life of families of this stratum, and various examples of these activities play a role in improving living standards with social support capabilities (Ellis, 1998). Thus, researching the attitudes and perceptions of retailers is not difficult and often depends on customer preference and local market conditions (Black & Farley, 1977). Policymakers have high expectations for the Rural Non-Farm Economy (RNFE). In this regard, capital requirements, whose limitation is often an obstacle to growth, aggravate the problems of rural deprivation. However, the available evidence shows that the non-farm growth of the villagers does not occur clearly. Policymakers and planners should stimulate the rural economies by developing indirect income and not just agricultural employment, and remove the disadvantaged people from isolation by providing access to various markets as a bridge to achievement diverse resources (Hoggblade et al., 2010). The production process and producing arenas are valuable when there are restrictions. A product can always be evaluated according to the amount of activity in the final product. This product includes direct work in the production process along with raw materials and part of it, however, both raw materials and equipment are a product of previous costs of labor and tools (Gudeman, 2013). Rural regions have a relative advantage in primary activities based on natural resources, geographical conditions and related activities with it. However, there are significant differences between the city, suburbs and peripheral regions such as villages. In some regions, economic growth, urban expansion, and improving transportation and communication create new urban opportunities for rural services and activities. But rural regions are still deprived and have many problems, which generally requires the creation of a platform to be aware of their existing potentials (Wiggins & Proctor, 2001).

On the other side, the problem of traditional exchange of agricultural products is a mechanism with a prevailing misunderstanding of the spatial marketing of some products. For example, due to the supervision of the trade union of urban wholesalers and to some extent due to the remaining conditions from its traditions, part of the produced products in a city like Karaj reaches the customers in this city through the wholesale market of Tehran. The double costs of transportation in over 40 kilometers as well as the percentage of added value of the wholesaler, which ultimately goes to the urban brokers. The study of Stuber (1978) in this context shows that the marketing method of rural and nomadic products in the Kerman region has shown similar results (Ehlers, 2021). In this regard, changing the direction of economic activity is defined as a process (Bryceson, 1996: p. 110). Regional Economic Information System (REIS) is another source of information on private self-sufficiency. This trend helps the income of rural farmers and rural products. Usually, ownership data in this field is collected mainly through income tax information. With the information obtained, the tax offices estimate the level of justice in rural relations, for example, this trend has been implemented in the American states (Henderson, 2002). There are problems related to market information deficiencies, especially in the field of credit in some African villages, due to the unfavorable system of organization of institutions. On the other hand, timely detection of the use of free flow of information in rural societies regarding credit transactions leads to improvement of conditions. Asymmetry of information and inconsistency in facilities are institutional consequences in the use of deeds and mutual contracts, and these credits play a direct role in integration and justice among rural households (Udry, 1990).

Also, the structural incompatibility and free market policies in the past years have caused a decrease in

the demand to receive for rural products in sub-Saharan African countries. In order to produce food products in rural regions, farmers have to endure long distances and deal with unfavorable geographical conditions in order to reach roads and markets outside these regions, so their non-farm income diversification needs an alternative (Bryceson, 2002). There is also a need for a fundamental change at the level of related theory. The modernist paradigm that once dominated the politics of practice and theory should be replaced by a new rural development paradigm. Rural development as a multi-level, multi-actor and multi-faceted process is rooted in historical traditions, a wide range of rural products and services lead to rural growth, therefore, rural development mainly faces an independent and self-directed process in the future distribution of these products (Van der Ploeg et al., 2000). Today, rural small production, which are often organic, are neglected according to the mass and industrial production of agricultural products and increasing needs of the societies as well as the diversity of the household consumption basket (from all kinds of foodstuffs to handicrafts and native arts). Therefore, the solutions involving the use of rural products are integrated and network marketing methods. Currently, the acceptance of farm stores that supply rural products is expanding in the world, and the rules related to this type of business are defined for them. Strengthening investment in the rural sector and monitoring the suburbs and farm stores in rural regions and local projects will create more attractiveness in these areas, this action will complement the value chain for small and medium-scale farms, and on the other hand, support young and new growth farmers (Momeni et al., 2021). According to the mentioned examples and the main issues of rural-local marketing, the main goal of the current research is to analyze the focus of international studies in the field of rural and local marketing and evaluate the spatial distribution and distribution of countries in this relevant.

2. Research Theoretical Literature

Labor market literature rarely focuses on studies of rural family income diversity (Reardon, 1997). The hybrid development approach, the society-based social development theory, and the first hypothesis of Brian's theory on exploitation of social and cultural capital, are widely supported by empirical evidence from case studies. In general, economic development theories are related to high capacities of local actors and strong internal and external networks with regard to access to labor and capital (Terluin, 2003). Therefore, at the beginning, the definition of the rural space has been taken, so the villagers, especially in the developing countries, are usually considered as homogeneous societies that have the following characteristics:

- Economically: they have a low level of income, production, technology and standard of living.
- Socially and cultural-normative point of view: high emotional-social solidarity, resistance to change, traditionalism and conservative people (Asayesh, 2011: p. 49). And also
- Environmentally: the values of the rural environment are formed by relying on natural elements in order to settle the village, paying attention to the landscape and open spaces around its tissue (Taghvaei, 2013).

Relying on this knowledge, in general, the reduction of income inequalities of villagers can be considered effective in eliminating income heterogeneity, in addition to regional differences, the effects of neighboring provinces. Different regions of Iran have very different agricultural potential. These differences in many development plans are not taken into account and agricultural development plans do not differ significantly from each other in most regions of Iran (Aghapour sabaghi, 2020). If we are careful about this, we will see that the spatial distribution of rural settlements along the rivers, valleys and roads of the mountainous regions around the river delta depends on the spatial orientation of the counties density and its effect on the rural settlements. The transportation network connected between cities and villages is important for the transformation of these regions because the all-round increase in production and service capacity of the county is the key to optimizing the city-rural system (Yang et al., 2019). In this regard, Maier (2010) points out that the choice of access for certain remote regions, scattered suburbs, poor and disadvantaged people and the elderly, tells the changes towards the spatial pattern. A feature that may cause deeper changes. The relative size and speed of regions and societies are exposed to different challenges and pressures. Therefore, the capacity to absorb resources is in different conditions. Some of the

spatial effects of social polarization follow the pattern of urban regions, on the other hand the World Bank (2010) acknowledges that population growth is not only in large cities. The number of small and medium centers is also increasing. They also play an important role as links in the marketing system. These market towns and administrative centers are of vital importance in facilitating exchanges between rural and urban regions. The rural population depends on these services, including access to merchants and markets to dispose of agricultural products and access to retail stores and other facilities located in urban and local centers. Intermediate centers provide employment opportunities for the rural population and in some cases help reduce the pressure of migration to larger urban centers. Policies increasingly establish the importance of marketing for the commercialization of rural production and the expansion of productivity. The relationship between producers and consumers is usually improved through the development of marketing and physical infrastructure, including rural and local markets. Improper policies have led to the inequality of income distribution in rural regions of Iran. The climatic differences in the western and eastern regions of Iran are quite significant. But there is no significant difference in the cultivation patterns in these regions. For example, even though Sistan and Baluchistan is one of the driest regions in the Middle East, in recent years plans for growing horticultural crops were approved by the government. This shows that the development of the agricultural sector in these regions is dependent on other solutions such as the development of food industries (Aghapour sabaghi, 2020). Identifying major production regions for key products and their handling characteristics, transportation methods, examining past growth and potential for increased production. In the next step, the network facilities in the link, including communication, intermediate markets and other facilitating links, the flow of production to the local-regional markets is done to meet the demand from urban regions and it is evaluated on the market links. The main concern of planning and marketing specialists in agriculture ministries and departments is one of the main factors to address the improvement of rural roads and transportation systems in order to promote activities in production regions and develop the suitable development packages for production, after harvesting and marketing. Local experts in the parts of planning, commerce and marketing in urban regions pay attention to providing healthy food at reasonable prices for consumers and identifying new wholesale and retail facilities to meet these needs. Local authorities, societies, farmer groups and voluntary organizations are concerned about marketing constraints and ensuring better access to markets for rural producers (World Bank, 2010).

Problems, poverty, unemployment and migration in rural regions have intensified. Considering that agriculture is the main source of income in rural regions, the most important reason for the uneven distribution of income in these regions is related to incorrect management decisions regarding rural development programs regardless of spatial planning of territory. There is evidence of center-out patterns in different years. This incident shows that the use of spatial clustering in relation to rural income in the country can provide the possibility of designing coordinated regional development policies to improve the income distribution in Iran. Therefore, the same measures for rural development in all regions can deepen inequalities (Aghapour sabbaghi, 2020). Height and slope are two basic and effective factors on the distribution, scale and shape of rural settlements. In this regard, the features of geography are the first elements in optimizing the layout of the village and spatial reconstruction planning. In the current era, the market network systems are connected with the global market system through the Internet, and it takes over the circle of rural services, including production, life and ecology, and socio-cultural heritage and protection. It also provides the possibility of exploring the evolution of rural settlements, rural spatial production, rural- social networks, group behavior, social independence, and cultural contexts, which will be the focus in the background of globalization (Yang et al., 2019: p. 219). Therefore, it is necessary to develop the planning towards an inward-oriented development policy instead of a liberalization approach. The internalization of service costs, including tax collection, should be provided based on the development and improvements of the relevant infrastructure, implementing residential design standards and preventing physical fragmentation of the environment as a prerequisite for other measures. Also, the formation of relatively

homogeneous fine-grained units that cause the development of "market" interests by developers, communities and local politicians, gives the possibility to rural settlements to deal with energy and economic challenges. However, the relationships between housing, services, facilities and jobs should be extended to supply goods and products (urban agriculture, local/regional markets). Therefore, a model of residential relations in the city of Prague and its surrounding regions is placed below (Maier, 2010).

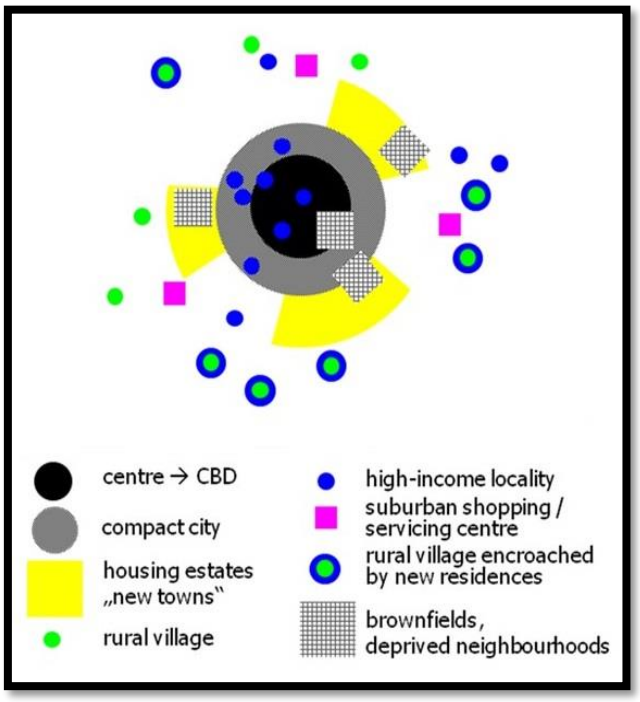

Figure 1. Model of residential divisions from the center to the periphery.
Source: Maier, 2010

Since costs are the key to competition, marketing costs include bringing the product from the farm to the end consumer. The analysis of marketing channels can also provide sufficient reasoning for the use of the margins of different stages. Marketing costs and margins have fundamental effects on the spatial distribution of production regions and are strongly influenced by transportation costs. In summary, the costs that make up marketing margins are as follows:

- The costs of sorting, washing, grading and packing of products. Types of transportation. Trader overhead and profit. Conventional marketing intermediaries;
- wholesalers and semi-wholesalers located in independent markets or facilities that may also operate as retailers;
- Retailers who buy directly from farmers, traders or wholesale markets and sell products to consumers through retail stores.

Village markets usually form part of a local trade network and are usually organized periodically and on specific days of the week. They are usually organized in a central location in a village or district center or along the access road of a village. In some cases, provincial level markets also do this (World Bank, 2010). The model of Christaller has formed appropriate relationships about settlement hierarchy.

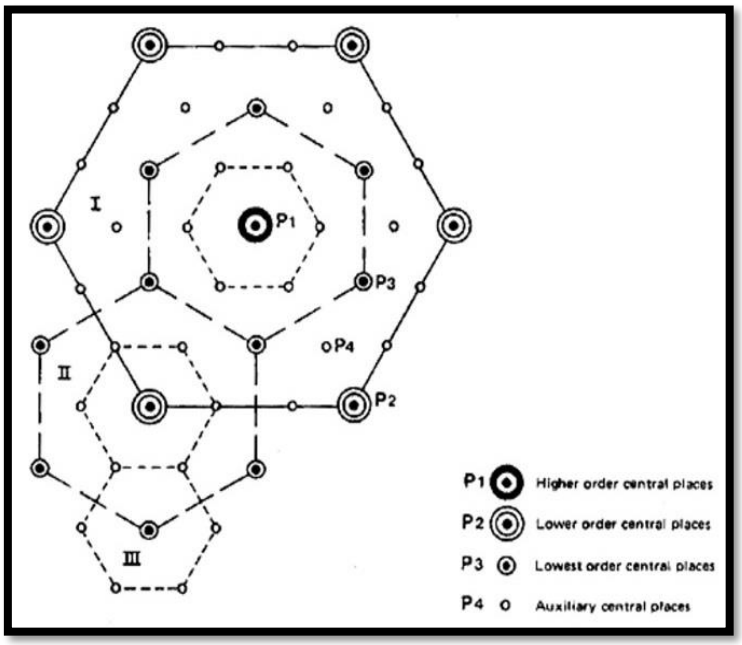

Figure 2. Hierarchy pattern of settlements.
Source: adapted from Christaller quoted by: World Bank (2010)

Market linkages include some general principles to provide a basis for understanding food marketing systems in a developmental framework. It is necessary to define the types of marketing channels, their links and functions to carry out any effective intervention in a marketing system. This term is often mentioned in rural development literature. It clearly implies a physical connection between the producer and the final consumer. Links also include financial transactions, sales and purchases of goods. In general, they can be defined in four different ways: through the form of financial transactions or intermediary type, through transaction channels and the type of using facilities, the way they are connected by transportation and communication networks and the spatial redistribution of transactions, the place of their occurrence and the formation of a pattern. Obviously, there is a close interaction between these definitions, but it is useful to separate them in order to create a clearer understanding of the marketing system (World Bank, 2010). The concept of network has been widely used in social and economic studies of economic life. Understanding the various forms of network is useful in rural development. Investigating whether networks provide a new paradigm of rural development is a new form in the field of rural planning, so vertical networks mean networks that link rural spaces to the agriculture and food sector, and horizontal networks mean the form distributed networks that argue rural spaces in general and non-farm processes from economic changes. In this way, rural development strategy can benefit from network forms in both areas and reformulate rural policies in network conditions (Murdoch, 2000). The regional network paradigm in planning refers to seven key aspects of the regional economy to create or consolidate the desired cycle of development:

a) Marketing of products: Marketing of products requires analysis of markets and market network for major products and services in the region, as well as measures to expand sales, increase the value of local products, and improve how to access markets for producers in remote areas.

b) Services related to providing information: Information services are for informing local producers about the current situation of distant markets and providing explanations that are more effective in planning and accessing consumer markets.

c) Distribution of inputs: Distribution of inputs is necessary to increase efficiency and improve production quality. In this context, it is necessary to take measures for easier access to suppliers and providing support, promotional and technical services.

d) Capital marketing: It is necessary to provide loans for farmers, petty traders and owners of small business workshops and to create facilities to facilitate the provision of credit through commercial banks.

e) **Marketing of the human resources market:** Labor markets usually fluctuate in different seasons,

which is necessary to compensate for existing deficiencies while identifying its characteristics.

f) Physical infrastructures: Regarding physical infrastructures such as electricity, telecommunication and the like, it is necessary to pay enough attention and precision.

g) Transportation services: In the field of transportation, the analysis of affecting factors in regional differences of transportation costs is of fundamental importance which may lead to the inability of rural producers to effectively compete with urban markets (Azizpour & Mohsenzadeh, 2010).

3. Research Methodology

According to the obtained concepts, 22 concepts were extracted from 230 sources (sample society) and they are included in the sub-set of economic, social and environmental dimensions, which are considered the primary categories of concepts. According to the scope of the subject, these concepts are classified in the form of factors and evaluated and categorized into a maximum of five subject sections based on the spatial pattern of the integrated local marketing network in rural areas. Thus, the method of Confirmatory Factor Analysis has been used. The basic assumption in this method is that each factor is related to a specific subgroup, and in this way, there is a definite classification regarding the number of research factors. Momeni and Faal Qayyumi (2012) state that the researcher knows the number of factors in this field. Based on the path determined using Likert's five-option spectrum, the intensity of the relationship between concepts and factors will be divided into five categories, and the selected concepts (final factors) which are intensively determined and lead to the reproduction of new concepts, will cause the 230 English sources to be analyzed and evaluated completely with these factors and in line with it.

Table 1. Operationalization of concepts to reach the factors.

Category / Row	Concepts		
	Economic	**Social**	**Environmental**
1	Equipping the farm store	Paying attention to local and native identity	Environmental Stabilization
2	The efficiency of facilitator funds	The consolidation of agricultural relations with production companies	Determining the location and time of the marketing route
3	Investments from outside	Expanding the range of integrated marketing	Regional Development
4	Development of competitive advantages	ICT infrastructures	Targeting and Positioning
5	Local Economy	Local buyers and government supervision	Storage (space) in transportation
6	Mass production and variety of products	Management of Cooperation	Geographical Conditions
7	Organized rural retailing	Attitude, beliefs, lifestyle, norms and culture	Infrastructural and Physical Adaptation
8		Conduction of ownership at different levels	

As mentioned, the scientific sources of the research were obtained from researches related to rural and local English-speaking marketing randomly, following the principles of thematic communication and emphasizing the originality of the research. Therefore, the geography of rural and local marketing research has presented an international level. Therefore, the highest degree of connection in the concepts for acquiring new (reproduced) factors is with the specific five categories as described in the table below, which will be explained further.

Table 2. Concepts with categories of extracted factors with the highest degree of correlation.

Concepts / Factors	Range of Concepts				
	1	2	3	4	5
Rural marketing	0.847	0.066	-0.043	0.521	-0.75
Local marketing	0.883	0.104	0.224	-0.152	0.369
Spatial pattern	-0.489	.0274	0.814	0.153	0.000
Network model	-0.730	0.452	-0.366	0.229	0.275
Integrity	-0.353	-0.896	0.087	0.183	0.176

In this regard, the rural marketing factor is receptive to five concepts with the most connections, the local marketing factor also has five factors with the largest volume, the spatial pattern factor has the largest number of concepts, and six concepts have created a wider relationship with this factor, the factors of network model and integration also had the least concepts with three concepts respectively, also in very limited cases there was no relationship between some concepts and factors, according to the following diagram:

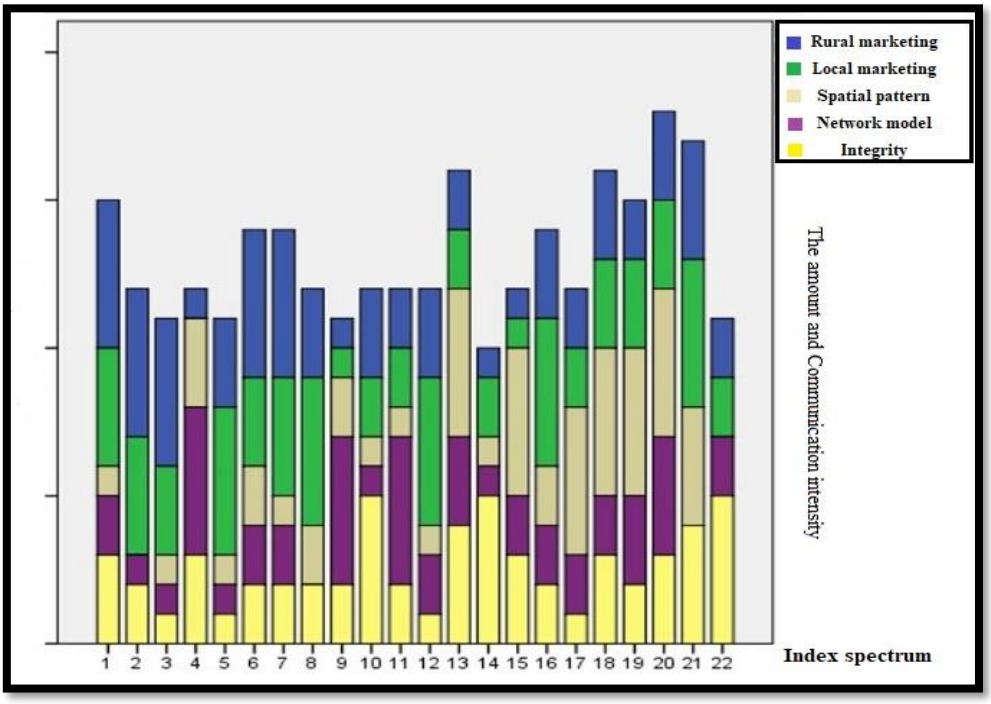

Figure 3. The diagram of relevance degree of concepts.

4. Research findings

International rural studies are important from two aspects: first, these studies in a modern form and relying on the theories and literature of geography and new planning, especially in comparison with urban studies, do not have much history in Iran. Second, until now, there has not been much opinion and tendency to benchmark and measure the content of rural studies in depth and also the characteristics of researchers who have many publications and researches, especially in the field of writing research articles (Bashiri & Khorasani, 2016). In general, for this purpose, the title: "**The spatial model of the integrated network of local marketing in rural areas**" has been categorized thematically (based on the previously mentioned research method) in the assessment of rural marketing in order to adapt the research path and discover different global insights in relation to the topic of rural and local marketing, so according to that five thematic sections have been obtained which include: the topic of rural marketing, local (regional) marketing, spatial model, network (chain) model and integration. Therefore, there was

a need to recognize the process in international developments, therefore, in order to enrich the research and reach to the appropriate level, 230 English-language research sources were explored and evaluated based on the stated categories. Reliable science such as: Elsevier Scientific Databases, Scientific Instruction, E-Library, Mendeley, PlumX metrics, JSTOR, Google Scholar, Springer, National Geography, Smart Insights and other scientific sources have been obtained, which is the time trend of collecting the bases, returning the content, summarizing, specialized amassment and finally primary processing have been included and as much as possible, sources have been tried to have a geographical appearance.

4.1. Thematic Focus

The abundance coefficient of the resources obtained after the sorting operation is available in a completely detailed manner. These details have been extracted in the spatial (continent, country), time (historical) and scientific classes, considering a maximum of two percent standard human error or limited missing values. In the local sorting section, the topic of rural marketing, integration, spatial pattern, local (regional) marketing and network (chain) model have the highest number to the lowest, and the lowest is the network model, which is described in Table (3) and is stated below. One of the reasons for this can be the centrality of rural marketing in this activity, which other related factors have also been directed towards.

Table 3. Classification of thematic resources in the field of rural marketing and related to it

Subject / Part	Rural marketing	Integration	Spatial Model	Local Marketing	Network Model
Number of sources	72	53	51	43	11
Total	230				

4.2. Distribution and Dispersion

In the second part, the separation of the continents was done, according to the survey of rural marketing, it is necessary to obtain sufficient knowledge of the information of the research conducted in this regard and its distribution at the world level. The divisions of the continents in the world are different, some imagine the earth as 7 continents, some think it has 6 continents, and some consider it to have 5 continents, but the most known of these divisions are the five continents of Asia, Europe, Africa, America and Oceania, but in table (4) with respect all thoughts on the separation of North and South America and Oceania with Antarctica are addressed separately and collectively, also the Russian Federation is considered as one of the Asian countries.

Table 4. Separation of resources in the field of rural marketing and related to it based on the geography of the planet's continents.

Continent / Part	Asia	Europe			Africa	America		Oceania (Antarctica)
		East	Central	North		North	South	
Number of Sources	98	3	46	22	18	37	4	2
Sum of Resources		71				41		
Total Set	230							

As it is clear in the above table, the continent of Asia has the largest number of resources, this result can be one of the reasons for the existence of a large rural population in this continent, but such a result cannot be obtained with certainty from the resources obtained because the rural population in the African continent is relatively higher than in other parts of the world, on the other hand, the basic assumption has been that the continents that benefit from the existence of industrialized and developed countries and have a low rural population rate, have a limited number of scientific resources in this field. But the results of total resources are different in different continents and the share of continents such as Africa, Oceania and the southern parts of the American continent and Eastern Europe which

have developing countries is less. This incident is not unrelated to the scientific concern and the existence of research and development facilities in the research centers of industrialized countries. The participating countries in this research and the biosphere of the earth, which were referred to as continents, are a total of 49 countries with wide distribution and coverage all over the world. India, the United States, the United Kingdom, and China have contributed the most to this event, followed by Iran, and in the next stage, the countries of France, Indonesia, Austria, Nigeria, Kenya, Spain, and Canada have played a role, and then in the next levels, countries such as Pakistan, Holland, Brazil, Japan and Poland, which can be seen separately in Table (5).

Table 5. Classification of resources in the field of rural marketing and related to it by country.

Subject / Part	Countries with more from 10 sources	Countries with 5 to 10 sources	Countries with 3 to 4 sources	Countries with 2 sources	Countries with 1 source
Name of the Country	India United States England China	Iran Canada Spain Nigeria Austria/Norway France Indonesia Kenya	Bangladesh Poland Ukraine Romania Pakistan Netherlands Italy Japan Brazil	Australia Russia South Africa Malaysia Saudi Arabia Czech Republic Ethiopia	Sweden Iceland Uganda Germany Turkey Columbia Macedonia Lithuania Jordan Kosovo Slovenia Serbia Ghana South Korea Singapore Mexico Tanzania Latvia Armenia Thailand Finland
Number of Countries	4	8	9	7	21
Sources of Each Column	113	50	32	14	21
Total Resources	230				

In this way, the global geography of the subject of the spatial model of the integrated local marketing network in rural areas in the Scandinavian, Northern European or Baltic regions, such as Sweden, Norway, Denmark, Finland, Lithuania and Latvia, has a suitable place for the subject of rural marketing. In the region of West Asia and parts of the Middle East, the Caucasus and the Arabic language, this issue has not received much attention except to some extent in Iran. Rural marketing is extremely important in South and Southeast Asia, especially in India and China, and Pakistan, Indonesia, Bangladesh, and Malaysia have addressed it to some extent. Among the countries of Central Asia and major parts of North, Central and West Africa, the issues discussed have been the least important, and they have not been addressed in the Caribbean region. In the settlement areas of English speakers or Anglo-Saxons, the topic and axes related to rural marketing are of high value and are mentioned and referred to, which can be clearly drawn and visible on the world map.

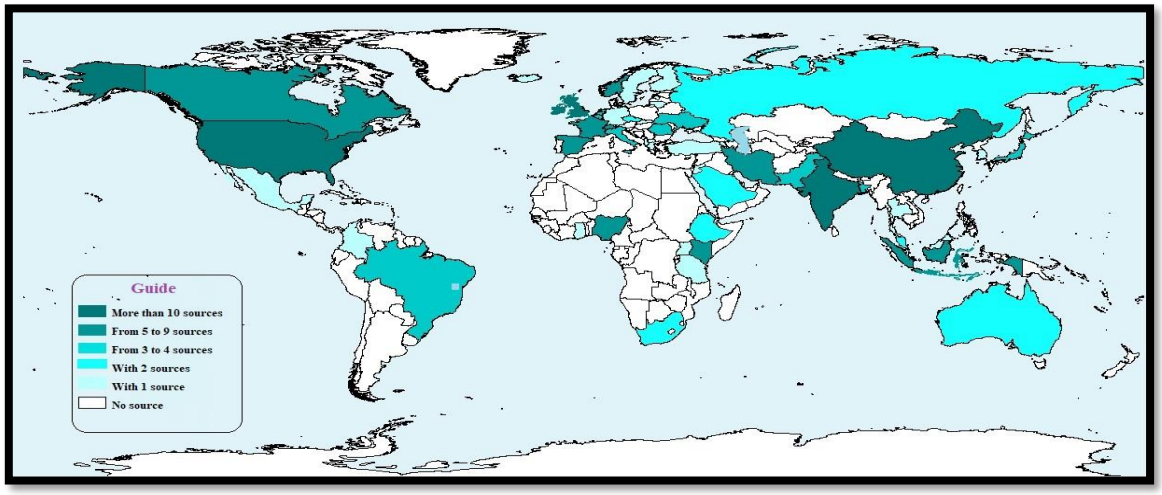

Figure 4. Classification map of the countries of the world based on the amount of scientific resources in the field of rural marketing and related to it.

Then the time periods of the sources have been discussed, one of the valuable metrics of academic research is to benefit from new and up-to-date sources, although some sources have not lost their credibility through time and it can't be, like Ibn Sina's books, so as much as possible in this research was made use of modern sources, the largest share of which was for the last decade and their number has gradually decreased overtime. On this basis, the time periods of the sources have been divided into six parts, from 2011 to 2021, the second period from 2001 to 2010, the third period from 1991 to 2000, the fourth period from 1981 to 1990, the fifth period from 1971 to 1980, and finally from 1970 and before, as described in the following table:

Table 6. Time periods of resources in the field of rural marketing and related to it by decade.

Period / Section	2011-2021	2001-2010	1991-2000	1981-1990	1971-1980	1970 and before
Number of Resources	173	43	9	3	1	1
Total	230					

In the following, the frequency of the years in which the research sources were prepared will be read and carefully examined, based on the results obtained from the time periods in the last six decades, the years 2020, 2018 and 2017 are at the beginning with 23 sources and 2021 with 19 and 2016 with 16 sources are in the next ranks. The details of the years with the number of their sources are stated in table (7).

Table 7. Classification of resources in the field of rural marketing and related to it by years.

Period / Section	The years with more than 15 sources	The years with 10 to 14 sources	The years with 5 to 9 sources	The years with 3 to 4 sources	The years with 1 to 2 sources
Time Separation base on year	2021 2020 2018 2017 2016 2015	2019 2014 2013 2012	2011 2010 2009 2008 2005	2006 2004 2002 1999	2007 2003 2001 2000 1993 1992 1985 1983 1982 1968
Number of year	6	4	5	4	10

Period / Section	The years with more than 15 sources	The years with 10 to 14 sources	The years with 5 to 9 sources	The years with 3 to 4 sources	The years with 1 to 2 sources
Sources in column	120	47	34	14	15
Total of Resources	230				

In total, the analysis of the content of international studies based on the time and place periods of the sources, has the largest volume and distribution in the five countries of India, United States, England, China and then Iran, respectively. Therefore, it is necessary to determine in which of these categories the scope of their research in each of these countries based on thematic divisions including: the topic of rural marketing, local (regional) marketing, spatial model, network (chain) model and integration. The subject of the research is included:
- India has conducted the most research on rural marketing in 2020, 2016 and 2012 respectively;
- The United States has the largest share in the category of spatial patterns, which range in abundance in 2020 and 2005;
- England has focused the most on integration, which will have a larger volume in 2021;
- China has also shown great interest in spatial patterns, which are spread in 2021 and 2020;
- And Iran has equally mentioned the discussion of rural marketing and spatial pattern and at the next level to integration, which has the greatest extent in the years 2020 and 2018. The notable point is that the subject part of the network chain) model has been too underworked and only 11 sources out of a total of 230 sources have been dedicated to it. In the view of the five leading countries in this matter, only the United States and Iran have one source each. They play a role in it. Of course, from the point of view of these countries, local (regional) marketing is also placed in our position, but it is not restricted as much as the topic of the network model. As it is known, the nature of networks is different and they can be called social network or spatial (geographical) networks, which in the literature of this research is based on the geographical point of view, the emphasis is on spatial networks. Based on international studies, in general, the extract of the content of the research in the mentioned countries is as follows, the country of India considers rural marketing to be more focused on agricultural products in the post-production stage and starts to evaluate the presentation of products to the consumer market, the United States and China have analyzed the categories of distribution of rural and local products due to the income and the way it is supplied, which is a non-agricultural perception, and the studies of England also report the forms of distribution of rural products in the stage after the acquisition of intermediary agencies, and it analyzes most of the arrangement of these points in geographical areas, of course, these studies show that Iran has more or less followed the approaches of the mentioned countries.

5. Discussion and Conclusion

In this section, the description and interpretation of some of the achievements of the thematic sources have been discussed. Therefore, in the discussion of rural marketing, the emphasis on transportation for the market and non-face-to-face transactions (DTC) has been useful for metropolitan farms in terms of time, rural production faces the challenges of remote access to customers. Also, a contribution of Vertical Marketing Systems (VMS) over Conventional Marketing Channels (CMC) has been made in encouraging small farms to Adopt Sustainable Agricultural Practices (ASAP). The need for policies to improve the access of small farmers to markets and institutions and to support the establishment of processing factories, cooperatives and other institutions has also been investigated, and the concept of Integrated Marketing Communications (IMC) has also been accepted, which has strategic value for current organizations. However, its actual implementation by the consumer market is still being researched and is somewhat of a mysterious black box. The four scenarios in this regard were: strategic integration, strategic paradox, paradox of unintentional implementation, and non-face-to-face integrated marketing communications, each of which is at a different level of plans. In terms of local marketing, it is about discovering the current social media methods of a local business and finally determining the best way to reach the most customers. Undoubtedly, social media and programs that enable communication between people play an important role in marketing strategies. Research and academic centers in line

with the estimation of the productive needs of the villagers, including high-yielding types and accompanying technology packages (such as the idea of the Rockefeller Foundation), have caused the triple neoliberal interests in terms of budget, research and development, and corporate social responsibility, and have penetrated the territories and creates a lot of resources.

In explaining the spatial pattern, the global use of Geographic Information Systems (GIS) and location analysis is expected to double by 2023. Business data that contains geographic information increases insight into business decisions and business success. The value chain with location information is involved in a wide range of business functions, and spatial models somehow draw connections and observations of trade relations and market tendencies. The analysis of data through spatial statistics is relatively new in marketing research, the space that statistics provide in describing segments of markets, consumers, or other business units is very effective, and spatial points (such as geographic, social, or characteristic arrangements) such addresses are formed to place the statistical structure, spatial modeling with time series analysis. The models which built by using spatial statistical tools allow cross-sectional and longitudinal correlations between responses with entities to be clearly defined with map. Spatial models by generalizing the map concept, including demographics and psychometrics, etc., can show all types of effects (spatial hot spots, spatial self-correlation, and location change) that affect the decision maker's behavior. Collaborative cooperation processes focus on hierarchy and control farmer relationships to better understand the potential of social food networks to contribute the resilient local food systems. Cooperative food systems based on cooperation and participation have connected local regions, which is realized by the practice of environmental sustainability. In this regard, a new economic framework for the strategy of how to strengthen the Collaborative Food Systems has been presented, in which cooperation between cooperatives for the sustainability of the network, together with the training of unions, is the criterion of action, and finally, the extension of integration with cooperation and collective participation is formed for better living conditions and responding to the needs, hope of the villagers and beyond the market economy.

So: (1) Community dynamics lead to movement and interaction based on daily practices of access to justice; (2) forms of social production and reproduction foster independence, solidarity, cooperation, and democratic participation; and (3) different occurrences of cooperation that allow the norms, dominant practices change in daily and incompatible life.

Therefore, the local market is used as an alternative production or marketing with added value for villagers with small and medium family ownership, and the organic or family customization of rural products leads to the creation of an integrated chain of appropriate distribution of rural products, which is brings the most benefits for the rural-local market within a predictable framework and will cause the relative satisfaction of the villagers and the preservation of these societies.

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Authors' contributions

The authors equally contributed to the preparation of this article**.**

Conflict of interest

The author declare no conflict of interest.

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Original Article

واکاوی مطالعات بین المللی در حوزه بازاریابی روستایی- محلی

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چکیده مبسوط

۱. مقدمه

بازاریابی روستایی- محلی دانشی قابل‌توجه که پیش‌تر با بازاریابی کشاورزی عجین و شناخته‌شده است، بنابراین هدف از طرح این مفهوم تفکیک بازاریابی محصولات کشاورزی و ژرفای لغوی آن با مفهومی فراتر از صرف زنجیره ارزش در کشاورزی است. بر این اساس رویداد بازاریابی روستایی- محلی دخالتی در تولید، تأمین ندارد و به دنبال کشف الگوهای فضایی حاکم بر توزیع تولیدات روستایی است. تولیدکنندگان روستایی پذیرفته‌اند که تولیدات مشابه آنان از هزاران کیلومتر دورتر فضای تجاری و بازار را در کشور تصرف می‌کنند. در این زمینه یک راه‌حل تکیه‌بر تنوع سازی محصولات محلی و شناساندن آن به مصرف‌کنندگان است. شناسایی بازار محلی، تولیدات و خدمات با کیفیت در سطوح رو ستاها باید در مقیاس محلی نگریست، این مسئله تحت عنوان اقتصادهای فرهنگی نیز مطرح می‌شود. به این دلیل سیستم توزیع به حمایت‌های بیشتری همچون اقدام به تبلیغات و بازاریابی نیاز دارد، توسعه دامنه تولیدات رو ستایی به‌عنوان فرآیندی در زیست خانواده‌های این قشر اهمیت دارد و نمونه های گوناگون از این فعالیت ها باقابلیت های حمایت اجتماعی در بهبود استانداردهای زندگی نقش‌آفرین‌اند. بدین سان تحقیق در مورد نگرش‌ها و ادراکات خرده‌فرو شان د شوار نیست و اغلب به ترجیح مشتری و شرایط بازار محلی وابستگی دارد.

۲. مبانی نظری تحقیق

به‌طورکلی می‌توان کاهش نابرابری‌های درآمدی روستاییان را علاوه بر تفاوت‌های منطقه‌ای، اثرات هم‌جواری ا ستان‌ها، در رفع ناهمگونی درآمد موثر دانست. در بسیاری از برنامه‌های توسعه، این تفاوت‌ها در نظر گرفته نمی‌شود بنابراین لازم است برنامه‌ریزی به سمت سیاست توسعه درون‌گرا توسعه یابد. داخلی سازی هزینه‌های خدمات شامل جمع‌آوری مالیات بر ا ساس گسترش و پیشرفت‌های زیر ساخت‌های مربوطه فراهم گردد. اجرای استانداردهای طراحی مسکونی و جلوگیری از تکه‌تکه شدن کالبدی محیط به‌عنوان پیش شرط سایر اقدامات. به تشکیل واحدهای ریزدانه نسبتاً همگن که موجب توسعه منافع "بازار" به نمایندگی سیاست‌گذاران محلی می‌شود کمک کرده و با چالش انرژی و اقتصاد در سکونتگاه‌های روستایی مقابله می‌کند. بااین‌حال باید روابط بین مسکن، خدمات، تسهیلات و مشاغل به تأمین کالاها و محصولات (کشاورزی شهری، بازارهای محلی/ منطقه‌ای) گسترش یابد. ازاین‌رو مفهوم شبکه در مطالعات اجتماعی و اقتصادی به‌طور گسترده‌ای مورداستفاده قرار می‌گیرد. فهم اشکال متنوع شبکه در توسعه روستایی مفید است و شکل جدیدی در عرصه برنامه‌ریزی روستایی ایجاد می‌کند، لذا شبکه‌های عمودی یعنی شبکه‌هایی که فضاهای رو ستایی را به بخش کشاورزی و غذا پیوند می‌دهند و شبکه‌های افقی یعنی فرم‌های شبکه توزیع‌شده که فضاهای روستایی را به‌طورکلی و فرآیندهای غیر کشاورزی از تغییرات اقتصادی استدلال می‌کنند، در این زمینه دخیل‌اند.

۳. روش‌شناسی تحقیق

بر این اساس با مراجعه به منابع انگلیسی‌زبان در پیوستگی و با محوریت بازاریابی روستایی- محلی، ۲۳۰ منبع علمی (به‌عنوان جامعه نمونه) موردبررسی قرار گرفت. از ارزیابی منابع یا پژوهش‌های به‌دست‌آمده، شرحی از ادبیات حوزه بازاریابی رو ستایی- محلی ارائه شد و سپس ارتباطات داد و ستد سکونتگاهای روستایی در بین این

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جوامع با حومه و مرکز با پیرامون مورد کنکاش قرار گرفت. بدین‌سان از روش تحلیل عامل تأییدی استفاده شده است. پیش‌فرض اساسی در این روش آن است که هر عامل با زیرمجموعه خاصی دارای ارتباط است و از این طریق در مورد تعداد عامل های پژوهش، دسته‌بندی معینی وجود دارد. در این بررسی به‌طورکلی الگوی فضایی شبکه یکپارچه بازاریابی محلی در نواحی روستایی، دسته‌بندی موضوعی شد و مفاهیم استخراج شدند.

۴. یافته‌های تحقیق

از بین مجموعه منابع، ۲۲ مفهوم علمی با بیشترین فراوانی، با روش آماری تحلیل عاملی تأییدی، پنج مفهوم یا عامل اصلی شامل: بازاریابی روستایی، بازاریابی محلی، الگوی فضایی، مدل شبکه‌ای و یکپارچگی استخراج و مورد دسته‌بندی قرار گرفت. در مراحل بعد محتوای کلیه ۲۳۰ منبع علمی با پنج عامل مورد سنجش قرار گرفت که فراگیرنده پراکنش دوره‌های زمانی و توزیع مکانی آن‌هاست. دراین‌ارتباط عامل بازاریابی روستایی پذیرای پنج مفهوم با بیشترین ارتباط است، عامل بازاریابی محلی نیز همانند عامل قبلی پنج عامل را با بیشترین حجم به خود اختصاص داده، عامل الگوی فضایی بیشترین تعداد مفاهیم را داراست و شش مفهوم ارتباط گسترده‌تری با این عامل ایجاد نموده‌اند، عامل‌های مدل شبکه‌ای و یکپارچگی نیز به ترتیب هرکدام با سه مفهوم کمترین مفاهیم را دارا بودند، همچنین در مواردی بسیار محدود بین برخی از مفاهیم با عوامل هیچ ارتباطی وجود نداشت. در این تفکیک، به جزئیات دوره‌های زمانی ده‌ساله و سالیانه جز به جز مبادرت شد و توزیع پراکنش فضایی آنان در مقیاس قاره‌ها و سپس کشورها به جز اشاره‌شده است که با طیف‌بندی بر روی نقشه جهان ترسیم گشت و درنهایت مفاهیم مورداشاره مستخرج از منابع علمی موردنقد و تفسیر قرار گرفت.

۵. بحث و نتیجه‌گیری

تحلیل محتوای مطالعات بین‌المللی بر اساس دوره‌های زمانی و مکانی منابع، بیشترین حجم و توزیع را به ترتیب نزد پنج کشور هند، ایالات‌متحده، انگلستان، چین و سپس ایران داشته است. برداشت عصاره محتوای پژوهش در کشورهای مطرح، ازاین‌قرار است، کشور هند بازاریابی روستایی را بیشتر متوجه امر تولیدات زراعی در مرحله پس از تولید دانسته و به ارزیابی ارائه محصولات به بازار مصرف مبادرت می‌ورزد، کشورهای ایالات‌متحده و چین مقوله‌های توزیع محصولات روستایی و محلی را به سبب درآمد و نحوه عرضه آن واکاوی نموده‌اند که برداشتی غیر کشاورزی است و مطالعات کشور انگلستان نیز بازگوکننده اشکال پخش تولیدات روستایی در مرحله پس از دست‌یابی کارگزاری‌های واسطه‌ای است و بیشتر امور چیدمان این نقاط را در پهنه‌های جغرافیایی تجزیه‌وتحلیل می‌نماید، البته این مطالعات نشان می‌دهد که کشور ایران نیز کم‌وبیش به رویکردهای کشورهای موردبحث مبادرت داشته است.

کلیدواژه‌ها: بازاریابی روستایی، بازاریابی محلی، توزیع فضایی، مطالعات بین‌المللی.

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Original Article

Explaining Rural Creativity and its Realization in Iranian Rural Areas (Case Study: Nair County)

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Abstract

Purpose- the present study was conducted with the aim of evaluating and measuring the realization of creative village indicators in Nair County, to provide grounds for creative class of rural community, audience and consumers of creative products outside the village environment by relying on ecological lifestyle processes.

Design/methodology/approach- the present theoretical study is conducted with applied purposes using the descriptive-analytical method. The statistical population of the study is 33 villages in Nair County with more than 50 households, having a total of 2937 households. The sample size was estimated to be 340 people based on Cochran's formula. Distribution of the number of samples in the villages is determined in ratio with their population. In order to examine the subject in six dimensions of flexibility, innovation, promotion, risk taking, leadership and participation, 43 indexers were used in a combined manner, based on the studies of other researchers. The face validity of the questionnaire was confirmed by the panel of experts and specialists in this field and the reliability coefficient was calculated for the questionnaire at 0.723. Also, the opinions of 30 experts and specialists were used to give weight to indicators and indexers of the creative village through Swara weighting technique during two stages. The results show that, the average indices of creative village are not in a favorable situation .

Findings- the results of single sample t-test indicated that, the total average of the creative village indicator was 2.993 and rural creativity in the study area is at a weak level and is vulnerable. The results of CODAS technique from the leveling of 33 villages showed that, 2 villages are at the optimal level and 17 villages are at the weak level. Among them, the villages of Golestan and Saqqechi were in the highest level and the villages of Qare Tape and Meymand were in the lowest level of creativity .

Originality/value- In the present study, the rural creativity was examined from the viewpoints of both local community and experts using various techniques. And through several referring to experts and specialists, the importance of each index and their prioritization were checked and their accuracy was ensured. Also, most of the conducted studies have examined rural creativity in the field of tourism, while the present study has investigated rural creativity and its realization in general and in all fields.

Keywords- Creative Village, Sustainable Rural Development, the Indicators of Creative Village, Swara and Codas Techniques, Nair County.

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1. Introduction

Review of sources shows that, rural development programs have a long history and have been accelerated since the beginning of 21st century in most developed and developing countries (Roknodin Eftekhari et al., 2020), but still one of the main problems of developing countries is the decline and destruction of villages. During many centuries, village has played an effective role as a place for life and production, while in the present time due to lifestyle changes and government intervention, many villages are in the transition period from productionism, and instead of enjoying the sustainable development content, they are losing their population due to migration and face the phenomenon of population evacuation and physical destruction (Kalantari et al., 2013). On the other hand the population of rural areas grow old faster than urban areas' population. The long term migration paradigm still exists in many rural areas and the young population leave rural areas for the educational and employment centers in the cities (Townsend et al., 2013). Given that, the economy of a country is dependent on the villages (Pourqayoumi et al., 2021), in order to achieve more dynamism and competition in rural areas, the creativity which is a vital tool for survival, new thoughts and innovative ideas is needed and it helps the villages to survive and maintain rural areas in today's changing world (Piran et al, 2012); since the rural areas have a high potential in localizing the creative sectors and even the rural managers are capable of attracting creative class to villages. The creative village seeks for creating a dynamic economy by using cultural and spatial features; first, the spatial features including cultural and historical capabilities, economic potentials and human resources should be identified and then these potentials should be used to dynamize the economy. In the creative village, manpower should have a high participation in the plans since part of folk culture of the people, artists and residents' arts are considered as the village's cultural potentials; traditional rituals, local food and clothes, and food industry along with nature and simple architecture are the driving forces of the creative village (Kalami & Hoseini, 2017). The existence of creativity in rural areas provides the basis for socio-economic development (Souca, 2020) and as with cities, creative villages provide many stated special conditions including good environment, cultural and social facilities which attract creative class (Jahantigh et al., 2021); since the rural development which is based on creativity, entrepreneurship and art, is able to strengthen interactive networks; this leads to civil interference, creative entrepreneurship and transformation and arousal of community feeling. Art training, and hall of local arts and festivals provide opportunities to create common interactions and enhance creation capacity in the society (Balfour et al., 2018). On the other hand, the creativity in the village, can potentially help the social and economic survival of rural areas (Townsend et al., 2017).

Considering the comparison of census results during different periods and increase in uninhabited villages in Nair County and the beginning of the process of migration from rural areas, the field for the growth and development of the villagers has been limited. Therefore, providing a ground for creative and knowledgeable rural people who can act in the direction of informing the villagers, and building creativity in rural environments with the potential to change the attitude of local people, will reduce the migration process from the village to the city; it will also prevent the problems that arise after migration in urban areas. The villages of Nair County, like many other rural areas in the country, are seeking to develop creativity in these areas; but this goal and capability will be realized only when it is well managed and the abilities and potentials of rural areas are identified and appropriate and optimal measures are taken in order to realize them as much as possible. Since the rural areas of Nair County have a high capacity to realize a creative village due to their environmental, cultural and human capabilities and many other things, conditions should be provided so that the managers of rural areas can act thoughtfully and with planning based on the development opportunities. Now, according to what was mentioned, the present research seeks to find out that, to what extent the creative village indicators have been realized in the rural areas of Nair County. Therefore, in order to get the answer to this question, first of all, the assessment of the views of specialists and officials of rural affairs and villagers was done, and then the indicators of the creative village were examined and evaluated in each village.

2. Research Theoretical Literature

The first person who raised the issue of creative zones was Richard Florida, followed by Alan Scott in 2007 using Richard Florida's literature to discuss issues related to creative zones (Nazmfar et al., 2016). Creative development includes media, advertising, publication, software, museums, and music, etc. and many scholars have used the creative ecosystem to pay attention to the coexistence of these different sectors and have connected larger networks such as restaurants, hotel, and entertainment centers (Montoya & Stasiewics, 2020). The existence of a creative environment is necessary to create innovation and development and due to this necessity, different areas such as the city and the village have focused on diversity and providing different services (Duxbury & Richards, 2019). If creativity and innovation are fully and comprehensively taken into consideration in thought and action, the ground for growth and flourishing of individual talents, personal, professional and social successes, increase in quantity and quality in products and services, reduction of costs and many other benefits (Amiri et al., 2021). Westlund defines creativity as combining the ideas in a unique way or making connections between them (Westlund et al., 2013). Creativity can be evaluated from different aspects such as daily creativity, rational creativity, and artistic creativity. Building a creative village is one of the dimensions of creativity. Creative village is a new concept for which a single definition has not been provided at the international level, yet a brief definition of its concept is as follows: The creative village is a space which provides grounds for creative class of rural community, audience and consumers of creative products outside the village environment by relying on ecological lifestyle processes, desired facilities to attract creative class in non-high technology industries, clean environment and culture and art sector (Rast Ghalam et al., 2016). The rural features which attract creative class include cultural and natural facilities, landscape, weather, outdoor amenities, and high level of social and cultural interaction (Keller & Velibeyoglu, 2021) which causes a lot of diversity in rural creativity and encompasses a wide range of tourism, folk dances, handicraft workshops, art activities, industries, etc. (Remoaldo et al., 2020). The relation between creativity and dynamism results from the fact that, creative industries play a significant role in areas' attraction and dynamism, and their attraction increases more among companies, new residents and villagers (Boes et al., 2015). On this basis Florida believes that, the creativity that leads to economic compatibility and growth is the result of the existence of talented people; and the most important aspect of this process is attracting talented and creative people. In general, Florida's theory has two essential parts which include, the role of creative human capital in the regional growth and drawing creativity geography based on the distribution of creative people (Fotouhi Mehrabani et al., 2016). In the form of a set of studies of general perspectives of rural development policies in Europe, UN has investigated the role of rural creativity in general policies of rural development, issues facing rural areas in development and responsive policies and innovations in rural development; the methods of improving agricultural products in rural environment, how to prioritize policies and how to distribute funds for rural development have been examined and inclusive policies for sustainable development in all European regions were listed (Hajarian, 2021). According to Keyghobadi, creativity can be examined from three aspects; the first aspect is art and is entailed by imagination and ability to create innovative ideas, second is the practical aspect which expresses the curiosity and thirst to analyze and establish new relationship and the third one is the economic aspect which is a dynamic process that deals with innovation in technology, etc. (Meshkini et al., 2020). The main components of creativity may include diversity, tolerance, vitality, access, comfort, and safety (Pamir, 2019; Bahreini, 2014), on the other hand, Sharpley focuses on the culture in the field of creativity (Hartley et al., 2012). From the point of view of Geslin and Roton the most important variables affecting creation of the creative class are wealth, economic growth, talent, innovation, and knowledge-focused services (Gossling& Rutten, 2007). From the perspective of Hartley et al, the subject of the creative village has ten major indicators including: 1. General and political framework, 2. Diversity, vitality, exhilaration, 3. Livability and welfare, 4. Extent, access, resilience, 5. Entrepreneurship, innovation and exploration, 6. Connections, communication and networking, 7. Strategic management, 8. Industrialization and

influence, 9. Vision and aptitude for learning and 10. Place and construction of place (Salaripour et al., 2021). According to Okley and Marsden the most important elements of the creative village include various local and native belongings, availability, entrepreneurship, participation, leadership, communication and connection of networks; and the availability of these resources increase their value (Yasouri & Sojoudi, 2017).

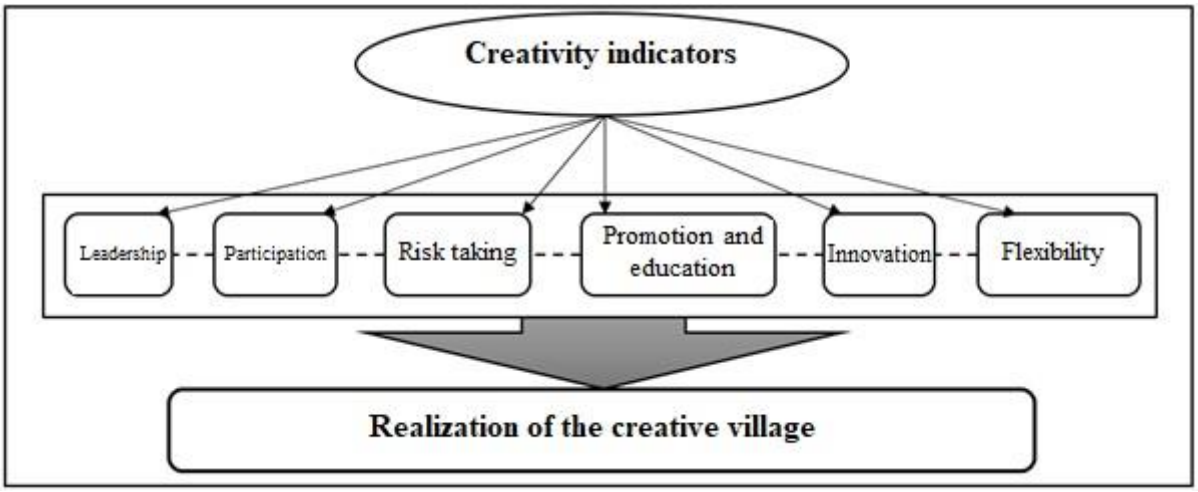

Figure 1. conceptual model of the research

Review of the conducted studies and investigations indicate the importance of the topic of creative village, in such a way that, researchers have examined it in different ways. Considering the importance of the topic and reviewing the conducted researches, the present study has investigated the realization of the indicators of creative village in Nair County.

In a study on the creative village, Rast ghalam et al (2016) determined the key drivers of creative village approach and concluded that, the key drivers with the greatest direct impact were vision, risk taking, rural space, participation and rural link. Anabestani & Javanshiri (2017) examined the role of human capital on the formation of creative economy and rural entrepreneurship in Binaloud County; the results of their study showed that, there was a direct and significant relationship between human capital and rural creative economy and the indicator of the development of mutual communication between the village and outside has the highest impact on the formation of rural creative economy. In another study. Abrishami et al., (2019) investigated the feasibility of sustainable rural development through the development of rural creative industries and found out that, 7 out of 50 studied villages, did not achieve sustainable development through the development of handicrafts and the value of the sustainable development indicator of one village was zero. Sadeghian Boroujeni et al., (2020), examined the factors influencing the creative tourism and its impact on the stability of behavior from the perspective of tourists in rural regions of Boroujen County. The ranking results showed that, information and advertising indicator had the highest factor load. Also, the components of cultural stability, economic stability, and environmental stability explained the stability of tourists' behavior, respectively. Jahantigh et al. (2021) analyzed the impact of the indicators of creative village on the sustainability of rural settlements in Sistan region and concluded that, the social, economic, and physical components had the highest impact on sustainability respectively, and the components of promotion and education, flexibility and innovation had the greatest impact on creativity, respectively. Salaripour et al. (2022) in a study on development capacities of rural creative businesses through tourism concluded that, taking advantage of the potential of the village and combining it with activities such as local food festivals, holding fishing tours, etc. will lead to the development of agricultural tourism, entrepreneurship and rural business boom.

Tan et al., (2014) conducted a study on creative tourism in Taiwan and found out that, the creative tourism market includes five categories of new seekers, learners of knowledge and skills, those who care about the growth of travel, those who care about environmental issues, and those who care about

recreation and peace of mind. Dani et al. (2016) examined the factors affecting the development of rural creative industries in Fotor Village in Mojokerto; the results of their study showed that, the factors that cause the development of the shoe industry in this village as a creative industry are tourism attraction, the basic need for creative industry, product development and accessibility. Can & Ngo· (2017) investigated the development of creative rural tourism in the ancient area of Dung Lam and concluded that, this area has great potential for creative tourism and it is necessary to develop different types of rural tourism and ecotourism in this region. Chen & Chon (2019) in a research aimed at investigating the antecedents and perceived consequences for generation y in the field of creative tourism, provided a model for creative tourism in which three variables of identity, attraction, and uniqueness of the tourism destination were considered as factors of the emergence of the creative city; these factors have a direct impact on pleasant perception of the tourist. Keler & Velibeyoglu (2021) investigated the rise and fall of the rural creative class and found out that creative tourism can be used as a tool for potential development in rural environments, however, the lack of comprehensive strategies of development based on creativity may lead to the fall of the rural creative class.

A review of the conducted studies show that, the subject of creative village has received more attention from the angle of creative tourism and each of the studies have examined few dimensions of creative village; they have examined the issue either from the view point of the rural community or from the point of view of experts. But the present study has considered the rural creativity and its realization from various dimensions and at the same time, it has benefited from the opinions and views of experts as well as the local community.

3. Research Methodology

3.1. Geographical Scope of the Research

Nair city covers 33.8% of the entire province with an area of 1495.4 square kilometers and is located at 47 degree and 59 minute eastern longitude and 38 degree and 2 minutes northern latitude. The height of this city is 1450 meters above sea level. This city is bordered by Sarab on the west side, Mianeh on the south side, and Sabalan mountains on the north side and is located 32 kilometers southwest of Ardabil. Nair city occupies 7% of the area of the province. According to 2016 census, the population of this city is 20864 people, from which 32% live in urban areas and 68% reside in rural areas. Based on the latest national divisions Nair city has two parts, Kouraim and central. The central part includes the two districts of Dorsunkhajeh and Rezaqoli Qishlaq and Kouraim has three districts of Mehmandost, Eastern Yurtchi and Western Yurtchi.

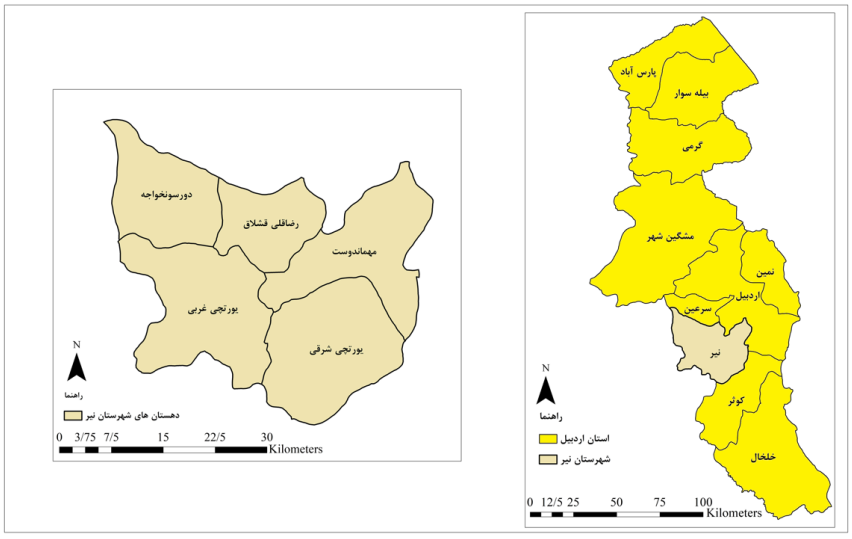

Figure 2. The study area

3.2. Methodology

The present theoretical research was conducted with applied purposes using descriptive-analytical method. The statistical population of this study is the villages with more than fifty households in Nair County, which has 2937 households 9433 people. Surveys indicated that, 33 villages of this city have a population more than 50 households. The sample size was estimated to be 340 people based on Cochran's formula. The distribution of the number

of samples in the villages is stratified and based their population ratio (table 1).

Table 1. Statistical population and sample size

Village	Population	Household	Sample	Village	Population	Household	Sample
Piranq	166	6	50	Mehmandost Olya	8	67	241
Diman	353	11	96	Busgen	17	143	524
Kamal Abad	253	9	78	Khanqishlaqi	7	57	163
Ali Abad	250	9	78	Khaneshir	8	68	230
Islam Abad	417	15	129	Totonsz	6	54	199
Kandovan	296	11	94	Qurtulmush	11	99	406
Meymand	176	7	58	Taze Qishlaq	11	99	340
Iernji	288	11	98	Sayin	6	53	193
Sorkhab	188	8	69	Vli asr	11	97	286
Lai	149	6	56	Majidabad	9	82	286
Qare Tape	146	7	60	Abazar	6	51	137
Versq	827	31	265	Saqqechi	9	77	244
Rezaqli Qashlaqi	211	7	58	Qare Shiran	18	159	491
Jorab	305	10	83	Dushanlo	6	50	139
Yamchi Olya	221	8	69	Korabaslu	19	168	464
Tajraq	230	9	76	Mushtaqin	8	70	213
Golestan	417	15	126	Number of villages: 33	Total: 9433	Total: 2937	Total: 340

In the present study, the data has been collected using a documentary survey method. The tool used in a survey method is a questionnaire. The studies of other researches were used combiningly to operationalize the subject and select the indicators (Table 2).

Table 2. the investigated indicators and indexers

Indicator	Indexer	Reliability
Flexibility	a1-the desire to have people from different cultures in the village, a2- the ability to adapt to environmental changes, a3- people's hope for desirable future, a4- acceptance of new values and beliefs, a5- compatibility of the new texture with the historical texture, a6- trust in educated people and local elite, a7- providing grounds for educated people to stay in the village	0/631
Innovation	a8- development of ecotourism, a9- willingness for celebrations and religious ceremonies, a10- people's willingness to use new ideas, a11- using new methods to sell products, a13- applying innovative solutions to solve village problems, a14- holding art and culture exhibition to reinforce creative ideas	0/655
Promotion & Education	a15- educating and increasing motivation among entrepreneurs, a16- access to communication tools and networks, a16- organizing workshops for training, a19- prioritizing programs based on new and creative knowledge and technology, a20- applying new methods to increase capabilities of villagers, a21- supporting entrepreneurship plans	0/804
Risk Taking	a22- willingness to start new activities, a23- laying groundwork for training people for self-employment, a24- reverse migration and village investment, a25- the spirit of ambition and perseverance in starting new activities in the village, a26- accepting the consequences of failure in individual activities, a27- lack of liquidity and financial resources to start a business	0/795
Leadership	a28- rural managers' actions to attract services, a29- development of communication and transportation infrastructure, a30- facilitating legal and institutional processes for artistic activities and products, a31- attention of rural managers to villagers' creativity, a32- increasing people's awareness in the field of creative activities by managers, a33- providing facilities for the entry of modern agricultural knowledge and technology, a34- the cooperation of local managers and government in the field of marketing	0/809

Indicator	Indexer	Reliability
Participation	a35- increasing team spirit, a36- empathy and unity of the village people, a37- people's participation in preservation of cultural heritage, a38- social trust among people, a39- people's participation in tourist attracting activities, a40- people's participation in environmental protection, a41- women's participation in rural affair	0/645

The face validity of the questionnaire was confirmed by the panel of experts and pundits in the field. In order to determine the reliability of the questionnaire, thirty questionnaires were distributed in the region and the reliability coefficient for the flexibility indicator was 0.631, the innovation indicator was 0.655, the promotion and education indicator was 0.804, risk taking indicator was 0.795, leadership indicator was 0.809, and it was 0.645 for participation indicator. Analysis of the findings obtained from the questionnaire was done using SPSS 26 and arc GIS software was used to draw maps. Swara and CODAS techniques were used to rank the villages in terms of creativity. The SPSS software was used to determine Cronbach's alpha, Kolmogorov Smirnov test and one sample t-test were used to obtain the average indicators of the creative village from the point of view of the household heads. Swara weighting technique was used to weight each of the studied indexers; after listing the indexers, they were given to specialists to be ranked based on the number of indexers. For the second time, experts were consulted to calculate the relative importance of indicators and indexers. Then, the final weight of each indexer was calculated and CODAS technique was used to examine the state of creativity of each village. This technique means he evaluation based on the combined distance and is one of the multi-criteria decision-making methods, the purpose of which is to rank the items based on the number of the indicators. CODAS technique determines the item desirability based on two methods; the first method is Euclidean distance calculation of items from the ideal negative and Taxi calculation distance of items from the ideal negative (Taxicab distance). Supposedly we have m indicators and n items, then this method's steps are as follows:

- Formation of the decision matrix;
- Normalization of the decision matrix;
- Formation of weighted normal matrix;
- Calculation of Euclidean (Euclidean distance) and Taxi (Taxicab distances) distance from ideal negative;

$$\sqrt{\sum_{j=i}^{m}\left(r_{ij}-ns_j\right)^2}$$

$$T_i=\sum_{j=i}^{m}\left|r_{ij}-ns_j\right|$$

Calculation of the relative evaluation matrix; in this equation, φ indicates a threshold function to detect Euclidean distance of both items.

$$h_{ik}=(E_i-E_k)+\left(\varphi(E_i-E_k)\times(T_i-T_K)\right)$$

In the sum of h_{ik} value of the items, after ranking, the larger the Hi value, the better the item is ranked.

4. Research findings

The results obtained from the descriptive findings of the study show that, 281 (82.6%) of the heads of the households responding to the distributed questionnaires were men and 59 (17.4%) of them were women. Among the 14 age groups considered, the largest number of respondents with 136 people (40%) were in the age group over 46 years old and the lowest number of respondents with 28 people (8.2%) were in the age group of 15-25. Regarding the level of education of the respondents, 126 people (37.1%) had education below diploma, 60 people (26.5) had post-diploma degree, 76 people (22.4%) had bachelor degree and above, and finally 48 people (14.1%) had elementary education or were illiterate. Also, 30 experts and specialists responding to the questionnaires (67%) were men. Regarding the specialty, among these experts, 13 people were university professors and were active in the fields of rural development and planning; 9 people were village governors, 5 people worked in governorate and 3 people in the rural municipality. Regarding the level of education, most of the panel members with 14 people had doctorate degree.

The results of single sample t-test which measured the average indicators of creative village, show reveal that, six dimensions of creativity are below the average level in the villages of Nair city; the average of indicators of flexibility, innovation, promotion, and education and leadership is less than 3, which is the optimal level (3 equals to 6% of the respondents), on the other hand, the t values of these 4 indicators were

estimated to be negative and the values of only two indicators of risk taking and participation are more than 3 and their t values were estimated to be positive. The total average of the indicators of creative village was 2.993, and it can be stated that, the rural creativity in the study area is in a weak level and is vulnerable (table3); from the point of view of rural household heads, participation and risk taking are in a more favorable state than other indicators, while the indicators of flexibility, innovation, leadership, and promotion and education are not in the desired level. Therefore in order to increase creativity among villagers and realize the access to the indicators of creative village, the following actions must be enhanced: education and increasing motivation, communication equipment and new technologies, supporting entrepreneurs, etc. in this way, the innovation of the villagers will be strengthened; achieving this important matter requires the presence of capable and knowledgeable rural governors and council.

Table 3. Results of single sample t-test

Indicator	t value	Average	Significance Level	Confidence level	
				Upper Limit	Lower Limit
Flexibility	-1/869	2/631	0/000	-0/325	-0/411
Innovation	-3/123	2/785	0/000	-0/155	-0/274
Promotion & Education	1/754	2/949	0/080	0/016	0/007
Risk Taking	3/506	3/150	0/000	0/234	0/066
Leadership	1/151	2/993	0/000	0/075	-0/088
Participation	10/852	3/452	0/000	0/535	0/370
Total	2/0451	2/993	0/01	0/063	-0/054

In the present study the CODAS technique was used to evaluate the villages in terms of the creative village, but since the importance of indicators is not equal in decision making techniques, by weighting each indicator as a necessity, its relative importance compared to other indicators is determined and it makes reaching the goal easier. Hence, the indexers were given weight by using Swara technique and referring to experts and specialists and applying their views. As it is shown in table 4, in this technique each of the indexers with a determined code, have different weights; and their sum is equal to the number one. It can be found out that, the indexers of trust in local educated people and elite, the acceptance of the consequences of failure in creating individual activities, willingness to have people with different cultures in the village, and increasing team spirit had the greatest weights and values, respectively. On the other hand, from the specialists and experts' views the indexers of the spirit of ambition and perseverance in starting a new activity in the village, and people's hope for the desired future had a lower weight.

Table 4. the weight of the studied indexers based on Swara technique

Indexer	W_j	Indexer	W_j	Indexer	Indexer	Indexer	W_j
A1	0/0091	A12	0/1436	A22	0/0193	A32	0/0374
A2	0/0140	A13	0/0118	A23	0/0213	A33	0/0176
A3	0/0176	A14	0/0185	A24	0/0197	A34	0/0245
A4	0/0224	A15	0/0195	A25	0/0304	A35	0/0273
A5	0/0194	A16	0/0264	A26	0/0217	A36	0/0282
A6	0/0195	A17	0/0188	A27	0/0234	A37	0/0303
A7	0/0187	A18	0/0298	A28	0/0213	A38	0/0203
A8	0/0182	A19	0/0227	A29	0/0209	A39	0/0231
A9	0/0209	A20	0/0155	A30	0/0193	A40	0/0200
A10	0/0234	A21	0/0187	A31	0/0195	A41	0/0194
A11	0/0270	Sum of indexers: 41			Total weight: 1		

After forming the data matrix and weighting all 43 indexers based on experts and specialists' views, and after calculating the final value and ranking each item, its h_{ik} value was calculated; to do this, the Euclidean and Taxi (Manhattan) (T) distances from ideal negative were calculated and the results were mentioned in table

Table 5. calculation of Euclidean and Manhattan distances from ideal negative

Village	Manhattan Distance T_i (Taxi)	Euclidean Distance E_i	Village	Manhattan Distance T_i (Taxi)	Euclidean Distance E_i	Village	Manhattan Distance T_i (Taxi)	Euclidean Distance E_i
Piranq	0/0714	0/2922	Versq	0/0603	0/2830	Qurtulmush	0/0738	0/2969
Diman	0/0597	0/2692	Rezaqli Qashlaqi	0/0776	0/3090	Taze Qishlaq	0/0571	0/2413
Kamal Abad	0/0721	0/3058	Jorab	0/0575	0/2521	Sayin	0/0382	0/1947
Ali Abad	0/0601	0/2895	Yamchi Olya	0/0928	0/4005	Vli asr	0/0325	0/1683
Islam Abad	0/0708	0/3417	Tajraq	0/0808	0/3606	Majidabad	0/0409	0/2053
Kandovan	0/0797	0/3890	Golestan	0/0213	0/0844	Abazar	0/0460	0/2461
Meymand	0/1046	0/4183	Mehmandost Olya	0/0650	0/2887	Saqqechi	0/0292	0/1250
Iernji	0/0704	0/3150	Busgen	0/0484	0/2117	QareShiran	0/0453	0/2156
Sorkhab	0/0708	0/3577	Khanqishlaqi	0/0456	0/2057	Dushanlo	0/0575	0/2227
Lai	0/0687	0/3258	Khaneshir	0/0777	0/3537	Korabaslu	0/0370	0/1999
QareTape	0/0865	0/4248	Totonsz	0/0523	0/2759	Mushtaqin	0/0433	0/2192

According to the results of the previous step table, in the last stage, the final value which is equal to H_{ik} values, was determined for each village. The H_{ik} value indicates the status of each village; the higher the amount, the better. The results show that, among 33 villages of Nair city, the villages of Golestan with a value of 1.3397 and Saqqechi with a value of 1.0989 are at the highest level of creativity. While 17 villages with negative values are at the lowest level of rural creativity. Other villages such as Vali asr, Korabaslu, Sayin, Majidabad, Mushtaqin, Qare Shiran, Khanqishlaqi, Abazar, and Busgen, were at the medium level (table 6). It can be said that, there is a lot of imbalance among 33 studied villages in terms of the indicators of creative village which has made the realization of this issue difficult; these inequalities can be resolved through proper planning to allocate resources to infrastructure and technology, building the spirit of cooperation and participation, the presence of knowledgeable leaders and managers and allocation of appropriate funds for the emergence of creativity in villages.

Table 6. final ranking of the villages of Nair County based on CODAS technique

Village	H_{ik}	Village	H_{ik}	Village	H_{ik}
Golestan	1/3397	Kamal Abad	0/3786	Lai	-0/3029
Saqqechi	1/0989	Totonsz	0/2200	Iernji	-0/3413
Vli asr	0/9519	Dushanlo	0/1785	Islam Abad	-0/4042
Korabaslu	0/7670	Taze Qishlaq	0/1546	Qurtulmush	-0/4046
Sayin	0/7454	Jorab	0/1184	Sorkhab	-0/4356
Majidabad	0/6637	Versq	-0/0101	Rezaqli Qashlaqi	-0/5313
Mushtaqin	0/5714	Ali Abad	-0/0203	Khaneshir	-0/6060

Village	H_{ik}	Village	H_{ik}	Village	H_{ik}
Qare Shiran	0/5213	Diman	0/0286	Tajraq	-0/6957
Khanqishlaqi	0/5283	Yamchi Olya	-0/0935	Kandovan	-0/7188
Abazar	0/4985	Mehmandost Olya	-0/1572	QareTape	-0/9552
Busgen	0/4239	Piranq	-0/2396	Meymand	-1/4570

According to the findings of CODAS technique, the villages were leveled based on the indicators of creative village. As shown in Table 6 and figure 2, out of 33 villages in 5 rural districts of Nair County, two villages were at a very good level in terms of the realization of the creative village and only the village of Meymand was at a very poor level. The rest of the villages were in good, average and poor levels. All the villages of western Yourtchi district were at a higher level compared to other districts; 4 villages were at a good level, one village was at a very good level and one village was at the average level (figure 2).

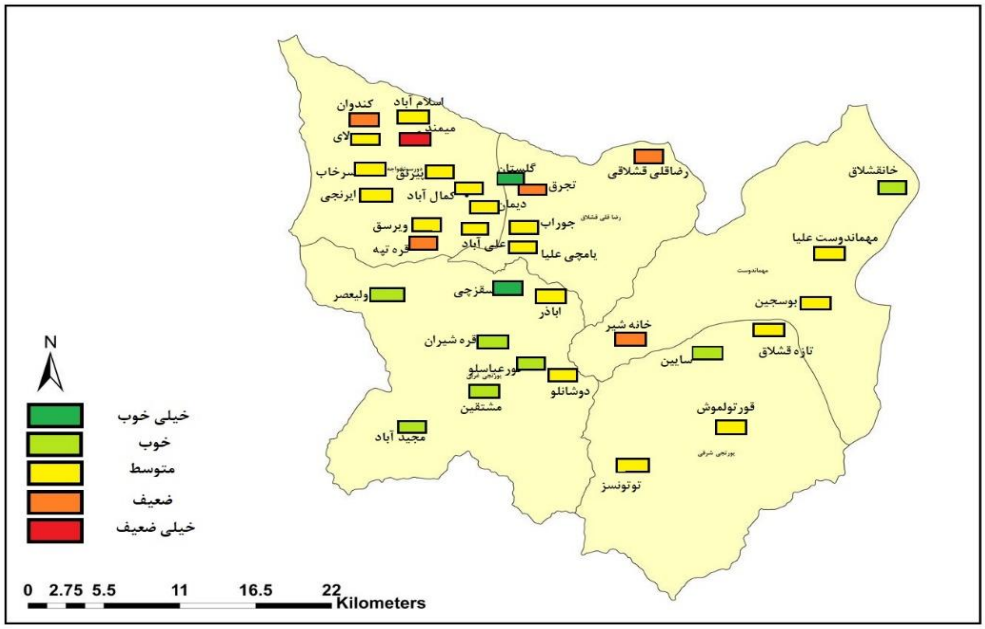

Figure 2. Spatial distribution of the realization of the creative village

5. Discussion and Conclusion

As stated in the introductory part and the research findings, the purpose of the present study is to evaluate and measure the indicators of creative village and their distribution in the villages of Nair County. In order to achieve this goal, first, based on the review of previous studies, a set of indicators of creative village were selected and categorized; then they were given to the related experts and specialists to be evaluated and weighted and then, CODAS technique was used to evaluate each of the studied indicators and indexers of creative village in the area. The results showed that, the studied villages have significant difference in terms of creativity indicators and despite the fact that, the components of creative village exist in all villages, but this amount was not the same and 33 villages were at different levels; the villages of Golestan and Saqqechi were at the highest level following by Vali asr and Korabaslu villages at the next levels and had more creativity than other villages. The reason can be explained by the high flexibility and innovation of these villages; villages such as Golestan, Saqqechi, Vali asr, and Korabaslu are tourist destinations and receive a lot of tourists. Therefore, the grounds for development of ecotourism and people's willingness to accept new ideas have been increased. This has caused these villages to make optimal use of apace and place to increase income generation and influence economic growth, and to use new methods to sell

products and strengthen creative ideas by holding numerous exhibitions. On the other hand, promotion and education have also been significant in these areas; publications and brochures and the development of science and technology and proper communication routes, have provided grounds to make educated people stay in the villages and villagers' trust in these people has increased. Along with the favorable condition of these villages, 17 villages were in a negative level in terms of the indicators of creative village; the distance of these villages from communication routes and main roads, and also their distance to urban centers are the reasons for the unfavorable conditions of these villages. Also the rural managers performed poorly in attracting services and facilitating legal and institutional processes. Thus, in order to increase the development and improve the indicators of creative village in these villages, rural managers should increase villagers' knowledge in the field of creative activities through providing facilities for the entry of technology and cooperating with the government in marketing, to improve team spirit among villagers and expand the entrepreneurship plans and creating a spirit of ambition and perseverance through building training workshops and prioritizing business startups in the villages.

In this study, single sample t-test was used to examine the indicators of creative village and the results showed that, from the studied indicators, four indicators of flexibility, innovation, leadership and promotion and education were below the desired level and only two indicators of risk taking and participation had an average above three. Also, the total average of creative village was estimated to be 2.933 which indicated that, 33 villages under study are a little far from the ideal average and the studied villages have the desired potential for the creativity indicators; these villages need changes in the style of leadership and rural management, paying attention to the category of innovation and creativity, promotion and education, so that by using the available resources, talents, lifestyle, experience and special cultures in each village, the fields of revitalization and creativity among the community living in the village should be provided. Life in the village should flow through the creation of employment and business and the development of indigenous industries. The results of the present study are in line with the studies of Rast Ghalam (2016) on identification of the drivers of creative village. Also, these results are aligned with the findings of Sadeghian Boroujeni (2020) which emphasized on the role of advertising and information in creative tourism. The study of Jahantigh et al. 2021 on investigating the effects of creative village indicators on the sustainability of rural residents, is in accordance with the present study.

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Authors' contributions

The authors equally contributed to the preparation of this article**.**

Conflict of interest

The author declare no conflict of interest.

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Original Article

تبیین خلاقیت روستایی و میزان تحقق‌پذیری آن در مناطق روستایی ایران (مطالعه موردی: شهرستان نیر)

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چکیده مبسوط

۱. مقدمه

ایجاد بحث خلاقیت در محیط‌های روستایی با پتانسیلی که در راستای تغییر نگرش افراد محلی می‌تواند از روند مهاجرت روستا به شهر کاسته و در پی آن از مشکلاتی که در پی این مهاجرت در محیط‌های شهری ایجاد می‌شود، جلوگیری خواهد نمود. ازآنجاکه مناطق روستایی شهرستان نیر با توجه به قابلیت‌های محیطی، فرهنگی و انسانی و بسیاری و موارد دیگر ظرفیت بالایی جهت تحقق روستای خلاق دارند، لذا باید شرایط فراهم شود تا مردم روستایی بتوانند بر اساس فرصت‌های توسعه، با فکر و برنامه‌ریزی عمل کنند. حال با توجه به آنچه ذکر گردید، پژوهش حاضر در پی آن است که دریابد در مناطق روستایی شهرستان نیر، شاخص‌های روستای خلاق به چه میزان تحقق‌یافته است. لذا جهت دستیابی به پاسخ این سؤال ابتدا به بررسی سنجش دیدگاه متخصصین و مسئولان امور روستایی و روستائیان پرداخته شد و به دنبال آن شاخص‌های روستای خلاق در هر روستا موردبررسی و سنجش قرار گرفت.

۲. مبانی نظری تحقیق

توسعه خلاق شامل رسانه، تبلیغات، انتشارات، نرم‌افزار، موزه‌ها و موسیقی و ... است و بسیار از محققان برای موردتوجه قرار دادن، همزیستی این بخش‌های مختلف، اقدام به به‌کارگیری اکوسیستم خلاق نموده‌اند و شبکه‌های بزرگ‌تری مانند رستوران، هتل و مراکز تفریحی را به هم متصل کرده‌اند. روستای خلاق، فضایی است که با اتکا بر فرایندهای بوم‌مدارانه سبک زندگی، امکانات مطلوب در زمینه جذب طبقه خلاق در صنایع با فناوری غیر سطح بالا، محیط‌زیست پاک و بخش فرهنگ و هنر، بستر را برای طبقه خلاق جامعه روستایی، مخاطبان و مصرف‌کنندگان محصولات خلاقانه در بیرون از محیط روستا فراهم آورد. ویژگی‌های روستایی مانند امکانات فرهنگی و طبیعی، چشم‌انداز، آب‌وهوا، امکانات رفاهی در فضای باز و سطح تعامل بالای اجتماعی و فرهنگی، طبقه خلاق روستایی را جذب می‌کند. به‌زعم کیقبادی خلاقیت را می‌توان از سه جنبه موردبرر سی قرار داد، اولین جنبه، هنری است و متضمن تخیل و توانایی آفرینش ایده‌های بدیع، دومین جنبه عملی است و بیان‌کننده کنجکاوی و تشنگی برای تجزیه و پی‌ریزی روابط جدید و سومین جنبه اقتصادی است و فرایندی است پویا که به نوآوری در فناوری و ... می‌پردازد. از مؤلفه‌های اصلی خلاق بودن می‌توان تنوع، تسامح، سرزندگی، دسترسی، آسایش و ایمنی را نام برد.

۳. روش‌شناسی تحقیق

این پژوهش ازلحاظ روش توصیفی- تحلیل می‌باشد و بر اساس هدف کاربردی است. جامعه آماری این پژوهش روستاهای بالای ۵۰ خانوار در شهرستان است که دارای ۲۹۳۷ خانوار، ۹۴۳۳ جمعیت است. پس از بررسی‌ها مشخص گردید که در این شهرستان ۳۳ روستا دارای جمعیت بالای ۵۰ خانوار است. حجم نمونه موردمطالعه بر اساس فرمول کوکران ۳۴۰ نفر برآورد گردید. پراکندگی تعداد نمونه‌ها در روستاها به‌صورت طبقه‌ای و بر اساس نسبت جمعیت آن‌ها می‌باشد. روش گردآوری داده‌ها برای دستیابی به نتایج تحقیق به‌صورت اسنادی و پیمایشی بوده است. ابزار موردا ستفاده در روش پیمایشی پرسشنامه بوده است. جهت عملیاتی‌سازی موضوع و انتخاب شاخص‌ها از مطالعات سایر پژوهشگران به‌صورت تلفیقی استفاده گردید. روایی صوری پرسشنامه توسط پانل متخصصان و صاحب‌نظران

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این حیطه مورد تأیید قرار گرفت. جهت تعیین پایایی پرسشنامه تعداد ۳۰ پرسشنامه در منطقه توزیع گردید و ضریب پایایی برای کل پرسشنامه با استفاده از نرم‌افزار SPSS ۲۶ انجام گرفت و برای ترسیم نقشه‌های از نرم‌افزار ArcGIS استفاده گردید. جهت رتبه‌بندی روستاها ازلحاظ خلاقیت از تکنیک‌های سوارا و کوداس بهره گرفته شد.

۴- یافته‌های تحقیق

نتایج آزمون t تک نمونه‌ای نشان می‌دهد که شش بعد خلاقیت در روستاهای شهرستان نیر پایین‌تر از حد متوسط قرار دارد. زیرا میانگین شاخص‌های انعطاف‌پذیری، ابتکار، ترویج و آموزش و رهبری کمتر از عدد۳ حد مطلوب به‌دست‌آمده است، از سوی دیگر مقدار t این چهار شاخص نیز منفی برآورد گردید و تنها در دو شاخص خطرپذیری و مشارکت این مقدار بیشتر از عدد ۳ است. نتایج تکنیک کوداس نشان داد که در بین ۳۳ روستای شهرستان نیر، روستاهای گلستان و سقزچی با در بالاترین سطح خلاقیت قرار دارند. اما ۱۷ روستا با داشتن مقادیر منفی در پایین‌ترین سطح از خلاقیت روستایی قرار دارند. سایر روستاها مانند ولیعصر، کورعباسلو، سایین، مجیدآباد، مشتقین، قره‌شیران، خانقشلاقی، اباذر و بوسچین در حد متوسط بین روستاهای در سطح بالا و روستاهای در سطح منفی قرار داشتند. می‌توان گفت میان بین ۳۳ روستای موردمطالعه ازلحاظ شاخص‌های روستای خلاق، عدم تعادل زیادی وجود دارد که تحقق‌پذیری این موضوع را با مشکل مواجه نموده است، این نابرابری‌ها می‌توان از طریق برنامه‌ریزی مناسب جهت اختصاص منابع و زیرساخت و فناوری، ایجاد روحیه همکاری و مشارکت، وجود رهبران و مدیران آگاه و اختصاص بودجه مناسب حل گردد تا زمینه برای بروز خلاقیت در روستاها فراهم گردد.

۵- بحث و نتیجه‌گیری

بررسی نتایج بیانگر این است میانگین کل شاخص‌های روستای خلاق ۲/۹۳۳ برآورد گردید که نشان داد ۳۳ روستای موردمطالعه با میانگین مطلوب فاصله اندکی دارند و این شاخص‌ها در روستاهای موردمطالعه پتانسیل موردنظر را برای خلاقیت دارا هستند و نیازمند تغییرات در سبک رهبری و مدیریت روستایی، توجه به مقوله ابتکار و خلاقیت، ترویج و آموزش است، تا با بهره‌گیری از منابع موجود، استعدادها، سبک زندگی، تجربه و فرهنگ‌های خاص موجود در هر روستا، زمینه‌های باززنده سازی و خلاقیت در جامعه ساکن در روستا فراهم گردد و جریان زندگی در روستا از طریق ایجاد اشتغال و کسب‌وکار و توسعه صنایع بومی فراهم گردد. عملکرد مدیران روستای جهت جذب خدمات و تسهیل فرآیندهای قانونی و نهادی در سطح پایینی قرار داشت. لذا در این روستاها جهت جذب توسعه و ارتقا شاخص‌های روستای خلاق، مدیران روستایی باید زمینه افزایش آگاهی روستائیان در زمینه فعالیت‌های خلاق از طریق ایجاد تسهیلات برای ورود تکنولوژی و همکاری با دولت در زمینه بازاریابی را فراهم نمایند، تا از این طریق روحیه کار جمعی در روستاها افزایش یابد و با ایجاد کارگاه های آموزشی و در اولویت قرار دادن راه‌اندازی کسب‌وکار در روستا، طرح‌های کارآفرینی گسترش پیدا نماید.

کلیدواژه‌ها: روستای خلاق، توسعه پایدار روستایی، شاخص‌های روستای خلاق، تکنیک سوارا و کوداس، شهرستان نیر

تشکر و قدردانی

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Original Article

An Analysis of the Infrastructure for the Development of Rural Ecotourism in Ardabil Province

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Abstract

Purpose- Ecotourism is a foundation of sustainable development of societies and a way for conserving natural landscapes and reservoirs. In this regard, rural tourism, especially rural ecotourism, is a sort of tourism that can be highly effective in the revival of villages considering the natural and cultural capacities of these areas. So, this research analyzes the infrastructure for the development of rural ecotourism in Ardabil province, Iran.

Design/methodology/approach- The research is an applied study in goal and an analytical study in nature. The research realm includes 311 villages with a population of over 500 people in Ardabil province. The research adopted the TOPSIS model. The criteria used to measure the ecotourism potential included healthcare, transportation infrastructure, business and services, information technology, energy, and cultural, sports, and religious infrastructure. Weights were assigned by experts to the criteria based on their importance.

Finding- The results showed that the villages with the highest potential for the development of rural ecotourism in the counties of Ardabil, Bileh Savar, Parsabad, Khalkhal, Sareyn, Kowsar, Germi, Meshgin Shahr, Nir, and Namin included Somarin, Gug Tappeh, Shahrak-e Gharbi, Shal, Ardi Musa, Zarjabad, Qarah Aghaj-e Pain, Alni, Virseq, and Anbaran-e Olya. In this regard, the village of Anbaran-e Olya in Namin exhibits the best performance across the province with a CL score of 1. Out of all studied villages, 86 percent were placed in the moderate and low category, 2 percent in the very high category, 8 percent in the high category, and 4 percent in the very low category.

Research limitations/implications - The main limitation of the research is the lack of access to up-to-date information.

Practical implications- Given the results, it is recommended to invest in villages that have the potential for ecotourism, thereby contributing to attracting tourists and converting them into rural tourism hubs.

Originality/value- The analysis of the potential of Ardabil province, which is a tourist destination, for the development of rural ecotourism can help identify touristy villages to focus on their prosperity.

Keywords- Ecotourism, Village, TOPSIS, Ardabil Province.

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1. Introduction

The tourism industry is regarded in all countries as a vital economic factor due to its role in job creation and income generation, so it can be a proper solution for development (Nazmfar et al.,, 2019; Zalaghi et al.,, 2022). However, despite its positive impacts, especially on the economy, it may have negative consequences due to inattention to its likely effects and optimal management (Ghorbani et al.,, 2014: 104). Some negative effects include the commoditization of culture, increased crime, mobilization of agricultural labor to the tourism sector, immigration, changes in social and religious values, and environmental impacts, e.g., water, air, and noise pollution of the host community (Khosrowjerdi & Nouripour, 2017). The concept of sustainable tourism emerged from the negative impacts of tourism (Ocampo et al.,, 2018; Wang et al.,, 2016). It is, therefore, important for tourism activities in the destination to satisfy tourists' needs without harming the natural resources. Among different approaches to sustainable tourism, ecotourism is regarded as the most adaptive sort of tourism (Taghdisi et al.,, 2014) with the biggest potential. Blangy and Wood (1993) express that ecotourism is a responsible trip to natural landscapes, which protects the environment and reinforces local people's welfare. Ecotourism shows great respect for people, tourist destinations, and objects that are visited and puts special emphasis on protecting natural and cultural resources, engaging local people in planning processes, and creating welfare for people (Seydaei et al.,, 2013). Therefore, ecotourism is known as a part of sustainable development in the tourism industry that should be accountable for providing socioeconomic benefits and protecting the environment at the local and global levels (Cobbinah et al.,, 2017). A key goal in organizing ecotourism activities is the all-inclusive protection of the environment with the greatest focus on the development of ecotourism as a factor for regional development with optimal costs. The achievement of this goal calls for detecting regions apt for ecotourism, planning for these regions to attract visitors, and creating infrastructural facilities for them as an approach for the development of the ecotourism industry (Hamzeh, 2018; Zarabi & Safarabadi, 2014). Since rural areas have high potential for tourism in social, cultural, economic, and natural dimensions, they can become tourism hubs in the territorial area. The rural areas are more apt for the development of ecotourism than other tourism types owning to their tourism opportunities, including natural attractions, virgin landscapes, and pleasant weather (Sajasi Qeidari et al.,, 2015). Indeed, given the natural and cultural potentials of rural areas, rural ecotourism can be an invaluable process for reviving the villages and creating employment and income for rural people (Habibi Kaveshkouhi et al.,, 2021) and can be an economic supplement to alleviate poverty and reduce immigration from rural areas to urban areas (Ghanbari et al.,, 2019). It is capable of improving rural people's welfare and can have deep impact on rural people's lives (Navabakhsh & Rafieifar, 2010). In general, the rural economy becomes more dynamic with the development of tourism, and the resulting economic added value can improve rural people's life quality (Najafi Kani & Najafi, 2020). Although rural tourism is not the final solution for all problems of rural areas, one of its main functions is the development of regions that have potential for this industry (Tavallaei et al.,, 2013). Given the significance of ecotourism and the fact that Ardabil province has a lot of unique attractions for the development of ecotourism in Iran and these attractions can provide a basis for the sustainable rural development in this province, the present research aimed to analyze the infrastructure for the development of rural ecotourism in the villages with a population of over 500 people in this province. To achieve this goal, the following questions were compiled:

- Which villages have higher potential for the development of rural ecotourism in Ardabil province?
- What fraction of the studied villages can be candidates for becoming a rural ecotourism hub in Iran?

2. Research Theoretical Literature

The history of ecotourism dates back to 1965. It is formed of two words 'ecology' and 'tourism'. Ecotourism at the international level is a concept that is rooted in the conservation of natural resources and the idea of sustainable development. The International Ecotourism Society defines ecotourism as "*responsible travel to natural areas that conserves the environment and improves the well-being of local people*" (Sultanzadeh, 2006). Ecotourism is an environmental-friendly activity that happens in naturally rich areas and is a sort of sustainable tourism (Swangjang & Kornpiphat, 2021).

Most studies have identified the following essential factors for the ecotourism definition:

- Employment for local communities
- Conservation of natural resources
- Education of the environment
- Sustainability and less environmental degradation
- Protection of endangered species
- Cultural heritage in the world (Santarém et al.,, 2015)

In one of the first definitions of ecotourism, Hetzere used it to describe the interrelationships of tourism, the environment, and cultural features, which should satisfy four criteria of the least negative impact on the natural environment, the maximum responsibility for the culture of the host community, the addition of economic benefits to the host community, and the maximum participation of the local community for increasing the tourists' satisfaction (Popescu & Zamfir, 2011). Despite the growing use of the term *ecotourism*, presently it is rarely used correctly as it is used as an alternative for the term nature tour with a general application in most scientific and non-scientific circles. The profound differences between ecotourism and other terms that refer to the nature tour require us to provide a more precise definition of ecotourism as a much more general approach and term than the nature tour. Ecotourism is a subset of the broader term *nature-tour* that aims to increase the number of tourists who seek a pure experience in nature and tries to reduce economic, sociocultural, and environmental costs and be useful for the environment and local community (Mogheimehfar, 2011). Although there is no single definition of ecotourism, any comprehensive definition should emphasize the followings from scientific, social, and economic perspectives:

Scientific

- Knowing the natural capacities of ecosystems to ensure their conservation, rehabilitation, and sustainable generation
- Protecting the natural, cultural, and religious heritage in the tourism setting
- Increasing the value of heritage by raising awareness, developing culture, and doing continuous training for people, local communities, and tourists

Social

- Identifying and respecting the very important role of people and the local community and involving them in decision-making, planning, and the implementation of projects
- Respecting the social, cultural, and traditional structures, customs, and lifestyle of local people and communities
- Respecting local people and communities' livelihood needs and dependencies on forests, landscapes, and forest resources
- Considering positive cultural exchanges between tourists and local people and promoting the culture of the conservation of natural and cultural heritage among tourists and the host
- Promoting local people and communities' life quality and scientific awareness

Economic

- Generating income for local people and communities and fair distribution of incomes
- Allocating a part of the income to heritage management and conservation
- Economicalizing ecotourism for its organizers and, in the meantime, attention to the projection and support of project implementation (Bostanchi, 2019).

Furthermore, ecotourism pursues various socioeconomic, cultural, and environmental goals. The most important goals are to guide tourists to natural destinations, minimize destructive contact with the environment, promote environmental awareness, provide financial sources for environmental protection, generate income and financial sources to improve local people's life quality and the quality of tourist attractions, respect local culture, support human rights and freedom-seeking movements, reinforce public participation, reduce the consumption of non-renewable sources as a liability, enhance employment by attracting ecotourists and providing relevant services, reinforce the attributes of microcultures, participate in supplying welfare for local communities, take responsibility for the protection of biodiversity, and provide learning and educational opportunities (Kasehgar Mohammadi et al.,, 2016).

2.1. Sustainable ecotourism

Sustainable ecotourism is tourism that is ecologically sustainable; i.e., it responds to the current needs of ecotourists, focuses on protecting and expanding ecotourism opportunities in the future, and attempts to ensure the sustainability of ecology instead of harming it. The main incentive in sustainable ecotourism is to visit the natural attractions of a

region including physical features and indigenous culture. After an ecotourist visits an attraction, she leaves the location without disturbing or damaging it. So, it can be said that ecotourism is an antithesis of tourism that considers short-term benefits (Cobbinah, 2015). In sustainable ecotourism, continuous long-term benefits are in focus. In this regard, an ecotourist is a person who aims to gain sound and authentic experience through mental and physical challenges and is ready to bear the hardships and discomforts of the trip to gain experience and learn. Sustainable ecotourism is a management approach that aims to, directly and indirectly, contribute to protecting nature through the cooperation of local officials and people by enforcing proper regulations considering the socioeconomic and environmental goals (Davari, 2017). Ecotourism expresses sustainable development strategy by five principles: effort to conserve the environment, motivating the participation of local communities, empowering volunteer groups, gaining economic benefits, and finally, protecting local cultures (Asadpourian et al.,, 2020).

2.2. Positive and negative impacts of ecotourism

As with all other activities, ecotourism has its own pros and cons. Obviously, in this tourism branch, the more we act on regulations, the less the damage will be, and the more impetuous the programs are, the more the negative impacts will be. An issue faced by those involved in ecotourism is to persuade people to observe its principles and regulations, which is especially graver when the decline in financial benefits and gains is in question. A unique feature of this specific type of tourism is that it allows different groups to pursue their goals and benefits. However, since the economic benefit is in priority in other branches of tourism, it inevitably affects ecotourism, too. Some positive and negative effects are listed below (Niksirat et al.,, 2015).

2.3. The positive effects of ecotourism

The positive effects of ecotourism can be listed as follows:

- The use of its income for the management of natural landscapes
- Employment creation and income generation for the host community. Informed tourists who are mostly educated and have relatively high incomes will be able to have short-term and long-term positive impacts on the ecotourism regions.
- The promotion of local people's knowledge and awareness of regional nature and its value and consequently, the increase in their sensitivity to the protection of natural resources
- Stimulation of local people to protect farms and wildlife instead of selling their lands. As such, by ecotourism, they can both protect these resources and use them as a source of income for making a living.
- The increase in self-confidence and self-honor of local people due to their awareness of having natural and cultural value
- The decrease in immigration from rural areas to urban areas
- Motivation for the protection of stability and the revival of local architecture, rituals, art, handicraft, and folklore in the host community (Schweinsberg et al.,, 2018).

2.4. The negative effects of ecotourism

The negative effects of ecotourism can be listed as follows:

- Damaging the natural resources
- Unwanted impacts on local culture and traditions
- Souvenir production from scarce plants and animals in some cases, which endangers them
- Not spending tourism income on the management and protection of natural resources
- The introduction of virgin areas on tourism maps, which may attract irresponsible tourists to these regions. Some critics name ecotourism eco-terrorism because they argue that it paves the way for mass tourism.
- Ecotourism allows cannily strategies for profit-seekers who talk about sound treatment with nature and its sustainability. This is sometimes called Eco Façade.
- The natural capitals that once attracted tourists are gradually ruined.
- Watching wildlife beyond its tolerance levels will change its behaviors and disrupt its natural life and reproduction trends (Barkauskiene & Sniesk, 2013).

Two of the most important indirect negative effects are poor management and poor implementation of the regulations. Furthermore, not focusing on establishing a balance between supply and demand due to economic benefits will have consequences. For example, the high demand of tourists for local cheese in some regions has caused an increase in the number of cows. In proportion, the natural habitats have been destructed and other wildlife species have been

jeopardized. These impacts mainly happen due to economic benefits and incorrect management (Ehsani, 2018).

2.5. Benefits of ecotourism for rural communities

The benefits of this industry for local communities in rural areas can be enumerated as follows based on a review of the literature:

- In the economic sense, the interrelationship of development and tourism, especially ecotourism, contributes to the development of economic and social opportunities in rural communities. Ecotourism has the most consistency with development.
- In the financial sense, the effects of ecotourism include the increase in employment and the alleviation of poverty, the increase in land and orchard prices, the improvement of the livelihood of local people and local communities, the optimal use of basic, natural, financial, and human resources to achieve an optimal consumption pattern, and the use of technical facilities and proper structure and organization to meet the needs of the present and future generations.
- In the environmental conservation sense, ecotourism is the most fitted method for local and rural regions and communities and contributes to the protection of nature. This component is ideal for sustainable development, which ecologically reduces the pressure on natural resources (Sepahvand et al.,, 2021)

2.6. Literature Review

Numerous studies in Iran and other parts of the world have investigated our research topic, some of which are reviewed below.

In a systematic study on tourism development in rural areas, Mohammadi et al.,, (2022) divided tourism development factors into economic, managerial, sociocultural, and tourist attraction factors. They focused on factors like investment in the region in the economic category and factors like rural people's participation, security in villages, hospitality, and education in rural areas in the sociocultural category. In the managerial category, the two factors of planning by the government and efficient management were found to be important. Finally, in the category of attractions, natural attractions like natural landscapes, communicational attractions like proximity to urban areas and access to roads, and recreational attractions like residential facilities are very important. Xiang and Yin (2020) evaluated rural ecotourism resources. They state that cultural-human factors and natural conditions are the key elements of rural ecotourism resources and natural landscapes and cultural objects are of higher importance. Their results can provide significant evidence to assess the sources of tourism index and producing remarkable tourism products in future rural ecotourism planning. Kamyabi and Rezaee (2018) conducted a research study to provide an approach for ecotourism development in Chahardangeh District, Sari County in Iran. The total score of the internal and external factors was estimated at 2.51 and 2.57, respectively. This shows that the management of ecotourism activities with respect to internal and external factors is at an optimal level and higher than average. It is also in an aggressive state. However, the figures calculated were very close to other strategies. Lonn et al.,, (2018) explored the effects of community-based ecotourism on the livelihood of rural families and concluded that ecotourism had the greatest impact on the income and economic dimensions of rural families' livelihoods. They provided some approaches and opinions in this context. Salehi et al. (2018) focused on ecotourism development with an emphasis on the cooperation of local communities in Jannat Rudbar village, Ramsar, Iran. The results showed the positive attitude of the local community toward ecotourism. The local community was found to be aware of the social, cultural, economic, and environmental impacts of the rural development projects and it was relatively highly supportive of ecotourism development. In addition, a relationship was found between the local community's support of ecotourism development projects and the socioeconomic components.

Abbasi et al.,, (2022) designed a model for rural ecotourism entrepreneurial development with a qualitative approach in Dezful. The results revealed that a combination of social responsibility, environmental responsibility, growth and development through ecotourism, and ecotourism innovations and creativities would contribute to the development of rural ecotourism entrepreneurship. Furthermore, the structural-infrastructural factor, economic factor, educational factor, institutional factor, environmental factor, sociocultural factor, and personal factor were identified as the most important factors underpinning the development of rural ecotourism entrepreneurship. Omarzdeh et al.,, (2022) studied the development of ecotourism in West Azerbaijan province, Iran. Based on their results,

about 57 percent of the total area of the studied area has a status higher than average, but the remaining parts of the province are poor for tourist attraction due to their residential and commercial land uses. The results of this research are important in identifying natural tourism potential. The researchers drew recommendations from the results for improving the status and increasing the use of environmental potentials without harming it with a foresight view, which can be helpful for planners and decision-makers of natural tourism development. Rezvani et al.,, (2021) assessed the potential of ecotourism development in rural areas of Mazandaran province, Iran. According to their results, the distance from constructed lands and the distance from fault had the highest and lowest weights, respectively. With the increase/decrease in risk-taking degree, the area of high-potential class increases/decreases so that only one percent of the total area in the study site was in the class of very high potential when the risk-taking degree was zero whereas it was increased to 35 percent when the risk-taking degree was one. Data on the proper villages for the development of ecotourism at the risk-taking degree of 0.5 revealed that only 55 villages were classified in the group of regions with very high potential. Among these villages, Aali-kola was found to have the highest potential for the development of ecotourism with a relative distance of 0.8505. Finally, the sensitivity analysis showed the acceptable stability of the model results across different scenarios, reflecting the high reliability of the results.

Rafiee and Majidi (2021) conducted a feasibility study on rural ecotourism in the village of Qaleh Qafeh in Minoodasht, Iran. Analysis by SWOT resulted in providing fourfold strategies. According to these strategies and the matrix of internal and external factors, the studied village is at a strategically low status in the county of Minoodasht. Based on the results, aggressive-developmental strategies are the best method for the management of activities and performance. Using the strategic planning matrix, the best aggressive-developmental strategies were presented as conclusions and practical recommendations.

In an assessment of tourist attractions for the development of ecotourism, Hajinejhad et al.,, (2019) evaluated the awareness of experts and tourists in Ardabil province and revealed significance between the awareness of tourists and experts regarding the development of ecotourism (correlation = 0.45, Sig. < 5%) and the improvement of ecotourism strengths in creating and developing ecotourism opportunities (correlation = 0.46, Sig. < confidence interval). The final examination of the data shows that the opportunities can be grabbed more optimally if strengths are used optimally, or in other words, the efficiency of the strengths is increased. Hajinejhad & Aghaei (2013) studied the optimal ways to develop ecotourism in Ardabil province using the SWOT strategic planning method. Based on the results, SO strategy 4 (creating proper conditions, e.g., reducing tax and granting subsidies, for foreign investment given the potential for ecotourism development) gained the highest score of 24.61 among the aggressive strategies for ecotourism planning in this province. This strategy is important because most attractions are left isolated due to the lack of facilities. So, authorities must facilitate the attraction of investment for the development of ecotourism as its consequences will benefit whole the province. In other words, attention should be paid to the investment in whole the province, not just focusing on a spot like Sareyn. Varesi et al., (2012) conducted a study on the feasibility of expanding ecotourism attractions in Ardabil province and found that the province is capable of becoming a natural tourism hub in Iran given its capabilities in the ecotourism industry. So, it is imperative to develop ecotourism in the province for the sake of its endogenous sustainable development.

Figure 1 displays the benefits and effects of ecotourism for local and rural communities.

Sociocultural	Economic	Environmental
• Increasing awareness and active participation of local people • Contributing to the long-term survival of cultural heritage • Reviving the culture and traditional cultural activities • Motivating native communities to value natural and cultural capitals • Contributing to regional balance and preventing immigration • Sustaining community values • Showing respect • Facilitating the process of natural consensus • Contributing to security and peace • Solving gender inequalities in employment environments	• Economic development and diversity • Diversifying economic growth • Distributing income among local communities • Supplying income for the survival of attractions • Creating job opportunities and income • Developing local infrastructure • Generating foreign exchange • Contributing to local small-scale investment • Attracting money and capital from the center • Developing socio-economic opportunities • Developing people's welfare • Empowering people's livelihood	• An incentive to protect the natural and physical regions • Optimal management of resources • Improving wildlife habitats • Developing regions with tourist attractions • Sound and efficient management of the use of basic and natural resources

Figure 1. The positive effects of ecotourism for rural communities (Sepahvand et al., 2021: 188)

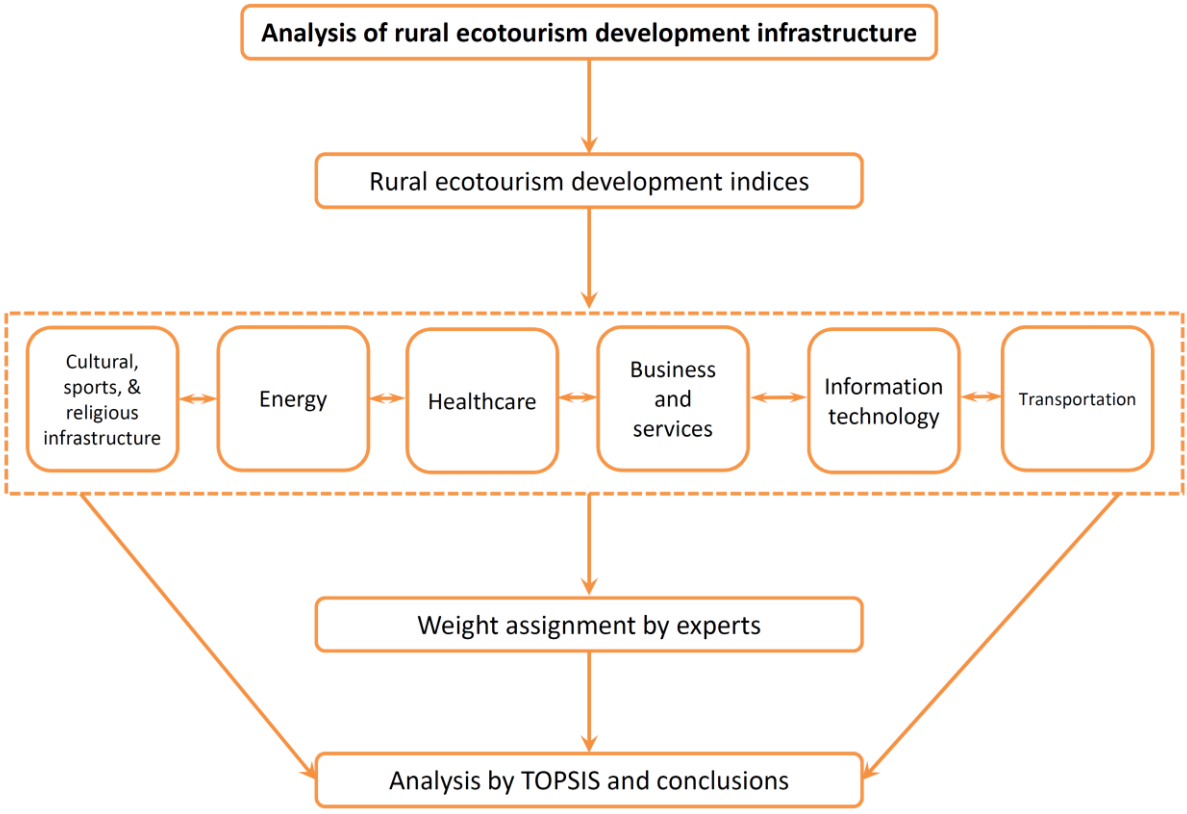

Figure 2. The theoretical framework of the research

3. Research Methodology

Ardabil province in the northwest of Iran is located between the longitudes 47°17' and 48°55' E. and the latitudes 37°06' and 39°42' N. and is delimited by East Azerbaijan province in the west, the Republic of Azerbaijan in the north and northeast, Guilan province in the east and southeast, and Zanjan province in the south. The province has 10 counties, 71 rural districts, and 1855 non-desolated villages (Anonymous, 2016). The research is an applied study in goal and nature, which was conducted by analytical and descriptive methods. Data were collected by the document, library, and field methods. The study was composed of 311 villages with a population of 500 people. The sample size was 50 people composed of tourism students and professors who determined the significance of the indices on a scale from 1 to 5. The quantitative data used in the research were collected from the information in the village ID cards published by the Deputy of Rural and Deprived Regions Development. They were then analyzed by the TOPSIS model, and the villages were divided into five categories based on their scores including very high (0.80-1.00), high (0.60-0.80), moderate (0.40-0.60), low (0.20-0.40), and very low ecotourism potential (0.00-0.20). The research realm included all rural areas with a permanent population of over 500 people across Ardabil province. Based on rural demographics, the counties of Ardabil, Meshgin Shahr, and Parsabad are home to the greatest fraction of the rural population, i.e., over 50 percent. Out of a total of 1855 rural points in this province, 311 villages with a population of over 500 people were selected for the research. The shares of Meshgin Shahr, Ardabil, and Parsabad were 53, 52, and 47 villages, respectively. Nir, Sareyn, Kowsar, and Bileh Savar counties had the fewest number of villages in this selection (Anonymous, 2011b).

Table 1. The criteria used in the research

Criteria	Sub-criteria
Road type	Asphalt road, gravel road, earthen road, dirt road
Rural spatial planning project	Implemented rural spatial planning project, rural spatial planning project under implementation, no rural spatial planning project
Healthcare	Waste collection system, pharmacy, physician, healthcare center, minor health center, major health center, childbirth facility, dentistry, paramedic
Communications and transportation	Public access to the Internet, railway station, public transportation, post office, rural ICT office
Vital infrastructure	Public power grid, access to gas grid, access to water piping grid, water refinery system
Institutional criterion	Rural Islamic council, village head, police station, agriculture service center, agriculture extension agent, conflict settlement council, rural cooperative
Religious places	Mosques, holy shrines, other Islamic monuments, religious monuments of other religions
Cultural-sports places	Rural park, public library, sports field, gym
Business and services	Bank, gas station, non-agricultural machinery service center, supermarket, firefighting station, cooperative store, bakery, butchery

Source: (Anonymous, 2011a)

3.1. TOPSIS model

Human thoughts are mostly subject to uncertainty, and this uncertainty affects decision-making. In these conditions, multi-criteria decision-making methods are useful. One of these methods is TOPSIS, which stands for the Technique for Order Preference by Similarity to Ideal Solution. The method was first used by Hwang and Yoon in 1981 (Mokhtari et al., 2016: 126). These two researchers proposed a technique for the selection of the best suggestion with the method of similarity to the ideal solution in which the alternative that is selected must have the shortest distance from the ideal solution and the longest distance from the constrained ideal solution. This is an advantage of TOPSIS over other multi-criteria methods (Rafeie Darani & Shahnoushi, 2010: 154). The positive criterion is profit and the negative criterion is cost. So, the ideal solution can readily be determined. The alternatives are ranked by the value of CLi, which varies in the range of 0-1 in which the high extreme (1)

represents the highest rank and the low extreme (0) represents the lowest rank (Olson, 2004: 723). The rationale of the method is to find the best-compromised solution out of all probable solutions evaluated by numerous quantitative and qualitative criteria (Erfani & Hemmati, 2014: 68).

4. Research Findings

This section presents the results of using the TOPSIS model to rank the villages in different counties of Ardabil province based on their potential for ecotourism development. The weights were assigned based on the experts' opinions given in Table 2. The criterion of roads and road type was given the highest score in the development of rural ecotourism due to its grave importance. The healthcare criterion was assigned with the lowest weight of 0.05. Based on these criteria, the villages were ranked by the TOPSIS model into five categories of the potential for ecotourism development – very high potential (0.80-1.00), high potential (0.60-0.80), moderate potential (0.40-0.60), low potential (0.20-0.40), and very low potential (0.00-0.20). The results are reported for the counties in the next sections.

Table 2. The weights of the criteria used in the research

Criterion	Weight	Criterion	Weight
Road type	0.19	Institutional criterion	0.10
Rural spatial planning project	0.15	Religious places	0.07
Healthcare	0.05	Cultural-sports places	0.09
Communications and transportation	0.17	Business and services	0.06
Vital infrastructure	0.12		

4.1. Potential of ecotourism development in the villages of Ardabil County

Based on the analysis of the data using the TOPSIS model (Table 3), Somarin in Ardabil County (CL = 0.804) has the highest potential for the development of rural ecotourism among the studied 52 villages. The next ranks are for Aralluy-e Bozorg (CL = 0.702), Pir Aquam (CL = 0.657), and Anzab-e Olya (CL = 0.604), respectively. The lowest ranks are for Sharifabad and Nuran whose CL is <0.200. According to the results, 28 villages are in the category of low potential, and 18 villages in the category of moderate potential. In general, 2, 6, 34, 54, and 4 percent of the villages have very high to very low potential for the development of rural ecotourism.

Table 3. The scores of villages in Ardabil County for the ecotourism index

Village	Di+	Di-	LC	Village	Di+	Di-	LC
Sheykh Ahmad	0.108	0.127	0.542	Aqa Baqer	0.141	0.073	0.342
Gendishmin	0.126	0.099	0.439	Aq Bolagh-e Aqajan Khan	0.100	0.120	0.544
Mijandi	0.150	0.067	0.308	Aq Bolagh-e Rostam Khani	0.139	0.083	0.374
Yengejeh-ye Molla	0.187	0.048	0.203	Pir Aquam	0.088	0.168	0.657
Somarin	0.041	0.168	0.804	Topraqlu	0.112	0.105	0.485
Jabah Dar	0.155	0.063	0.289	Chanzanaq	0.155	0.059	0.277
Masumabad	0.180	0.050	0.218	Kamiabad	0.154	0.066	0.301
Taleb Qeshlaqi	0.154	0.058	0.275	Anzab-e Olya	0.094	0.143	0.604
Hasan Baruq	0.164	0.058	0.262	Tazeh Kand	0.190	0.034	0.153
Hakim Qeshlagi	0.105	0.127	0.548	Samian	0.111	0.126	0.531
Shamasbi	0.108	0.119	0.523	Soltanabad	0.096	0.137	0.587
Nuran	0.190	0.032	0.146	Sowmaeh	0.157	0.070	0.307
Omidcheh	0.138	0.075	0.352	Qarahlar	0.142	0.074	0.344
Barough	0.127	0.103	0.446	Karkaraq	0.101	0.131	0.566
Chanaghrood	0.140	0.073	0.342	Gilandeh	0.124	0.107	0.465
Hamlabad	0.138	0.091	0.399	Aralluy-e Bozorg	0.065	0.153	0.702
Khoshka Roud	0.132	0.087	0.396	Aralluy-e Kouchak	0.168	0.058	0.257
Khiarak	0.159	0.055	0.256	Ayuriq	0.129	0.102	0.442
Dijvijen	0.144	0.075	0.343	Khalilabad	0.132	0.105	0.443
Divlaq	0.139	0.076	0.353	Nowshahr	0.119	0.111	0.483

Village	Di+	Di-	LC	Village	Di+	Di-	LC
Amuqin	0.157	0.058	0.269	Baqarabad	0.145	0.070	0.325
Qarah Tappeh-ye Sabalan	0.160	0.054	0.251	Shablu	0.158	0.052	0.249
Qaleh Juq-e Sabalan	0.141	0.078	0.354	Qezel Qayah	0.113	0.129	0.531
Garjan	0.117	0.114	0.494	Kargan	0.117	0.110	0.484
Gonsoul Kandi	0.154	0.063	0.289	Keriq	0.111	0.128	0.535
Vakilabad	0.164	0.051	0.236	Kuhsareh	0.153	0.069	0.311

According to Table 3, the studied villages were ranked in the following five categories:

- Very high: Somarin
- High: Aralluy-e Bozorg, Pir Aquam, Anzab-e Olya
- Moderate: Soltanabad, Karkaraq, Hakim Qeshlagi, Aq Bolagh-e Aqajan Khan, Sheykh Ahmad, Keriq, Qezel Qayah, Samian, Shamasbi, Garjan, Topraqlu, Kargan, Nowshahr, Gilandeh, Barough, Khalilabad, Ayuriq, Gendishmin
- Low: Hamlabad, Khoshka Roud, Aq Bolagh-e Rostam Khani, Qaleh Juq-e Sabalan, Divlaq, Omidcheh, Qarahlar, Dijvijen, Chanaghrood, Aqa Baqer, Baqarabad, Kuhsareh, Mijandi, Sowmaeh, Kamiabad, Jabah Dar, Gonsoul Kandi, Chanzanaq, Taleb Qeshlaqi, Amuqin, Hasan Baruq, Aralluy-e Kouchak, Khiarak, Qarah Tappeh-ye Sabalan, Shablu, Vakilabad, Masumabad, Yengejeh-ye Molla
- Very low: Tazeh Kand Sharifabad, Nuran

Table 4. The ranking of the villages in Ardabil County

Village	Score	Rank	Village	Score	Rank
Somarin	0.804	1	Divlaq	0.353	27
Aralluy-e Bozorg,	0.702	2	Omidcheh	0.352	28
Pir Aquam	0.657	3	Qarahlar	0.344	29
Anzab-e Olya	0.604	4	Dijvijen	0.343	30
Soltanabad	0.587	5	Chanaghrood	0.342	31
Karkaraq	0.566	6	Aqa Baqer	0.342	32
Hakim Qeshlagi	0.548	7	Baqarabad	0.325	33
Aq Bolagh-e Aqajan Khan	0.544	8	Kuhsareh	0.311	34
Sheykh Ahmad	0.542	9	Mijandi	0.308	35
Keriq	0.535	10	Sowmaeh	0.307	36
Qezel Qayah	0.531	11	Kamiabad	0.301	37
Samian	0.531	12	Jabah Dar	0.289	38
Shamasbi	0.523	13	Gonsoul Kandi	0.289	39
Garjan	0.494	14	Chanzanaq	0.277	40
Topraqlu	0.485	15	Taleb Qeshlaqi	0.275	41
Kargan	0.484	16	Amuqin	0.269	42
Nowshahr	0.483	17	Hasan Baruq	0.262	43
Gilandeh	0.465	18	Aralluy-e Kouchak	0.257	44
Barough	0.446	19	Khiarak	0.256	45
Khalilabad	0.443	20	Qarah Tappeh-ye Sabalan	0.251	46
Ayuriq	0.442	21	Shablu	0.249	47
Gendishmin	0.439	22	Vakilabad	0.236	48
Hamlabad	0.399	23	Masumabad	0.218	49
Khoshka Roud	0.396	24	Yengejeh-ye Molla	0.203	50
Aq Bolagh-e Rostam Khani	0.374	25	Tazeh Kand Sharifabad	0.301	51
Qaleh Juq-e Sabalan	0.354	26	Nuran	0.289	52

4.2. Potential of ecotourism development in the villages of Bileh Savar County

A total of 16 villages were studied in this county. The results are presented in Table 5. Accordingly, the village of Gug Tappeh was ranked first (CL =

0.821) followed by the villages of Anjirlu, Babak, Ruh Kandi, Shur Gol, and Qiz Qalehsi in the second to fifth ranks. The villages Gun Papaq, Fouladlu Qoei, Chalmah Kandi, Damirchilu, and Khalifelu Kandi Bozorg were ranked last. Most villages in this county are in the categories of villages with low rural ecotourism potential (7 villages, 44%) and moderate ecotourism potential (6 villages, 38%).

Table 5. The scores of villages in Bileh Savar County for the ecotourism index

Village	Di+	Di-	LC	Village	Di+	Di-	LC
Shur Gol	0.148	0.174	0.541	Babak	0.136	0.191	0.585
Chalmah Kandi	0.235	0.069	0.226	Damirchilu	0.252	0.070	0.217
Khan Baba Kandi	0.201	0.109	0.353	Zargar	0.240	0.113	0.321
Khalifelu Kandi Bozorg	0.267	0.031	0.105	Fouladlu Qoei	0.204	0.090	0.305
Ruh Kandi	0.151	0.200	0.570	Qarah Qasemlu	0.203	0.166	0.451
Anjirlu	0.150	0.228	0.603	Gug Tappeh	0.052	0.239	0.821
Qiz Qalehsi	0.190	0.196	0.508	Gun Papaq	0.209	0.095	0.312
Odolo	0.161	0.146	0.476	Moradlu	0.180	0.116	0.393

According to the output of the TOPSIS model, the studied villages were divided into the following five categories:

- Very high: Gug Tappeh
- High: Anjirlu
- Moderate: Babak, Ruh Kandi, Shur Gol, Qiz Qalehsi, Odolo, Qarah Qasemlu
- Low: Moradlu, Khan Baba Kandi, Zargar, Gun Papaq, Fouladlu Qoei, Chalmah Kandi, Damirchilu
- Very low: Khalifelu Kandi Bozorg

Table 6. The ranking of the villages in Bileh Savar County

Village	Score	Rank	Village	Score	Rank
Gug Tappeh	0.821	1	Moradlu	0.393	9
Anjirlu	0.603	2	Khan Baba Kandi	0.353	10
Babak	0.585	3	Zargar	0.321	11
Ruh Kandi	0.570	4	Gun Papaq	0.312	12
Shur Gol	0.541	5	Fouladlu Qoei	0.305	13
Qiz Qalehsi	0.508	6	Chalmah Kandi	0.226	14
Odolo	0.476	7	Damirchilu	0.217	15
Qarah Qasemlu	0.451	8	Khalifelu Kandi Bozorg	0.105	16

4.3. Potential of ecotourism development in the villages of Parsabad County

After Ardabil and Meskinshahr, the county of Parsabad has the highest number of villages with a population of over 500 people. In this county, 47 villages were studied. The results of the TOPSIS model revealed that Shahrak-e Gharbi, Eslamabad-e Qadim, Owltan, and Gushlu were in the first to four ranks, respectively. The villages of Hallajabad, Takah Chi, Gedaylu, Palanglu, Omranabad, Tupraq Kandi, and Qeshlaq Amir Khanlu were ranked last. According to Table 7, no villages were in the category of villages with very high ecotourism potential. The categories of the villages with low and moderate ecotourism potential included 22 and 19 villages (47% and 40% of whole the villages), respectively.

Table 7. The scores of villages in Parsabad County for the ecotourism index

Village	Di+	Di-	LC	Village	Di+	Di-	LC
Aq Qabaq-e Sofla	0.156	0.109	0.412	Bahramabad	0.139	0.110	0.441
Idir-e Olya	0.107	0.119	0.527	Para Qeshlaq	0.155	0.103	0.399
Palanglu	0.177	0.053	0.229	Takah Chi	0.174	0.054	0.237
Tarbat Kandi	0.168	0.068	0.287	Khan Qeshlaqi-ye Yek	0.136	0.111	0.449

Village	Di+	Di-	LC	Village	Di+	Di-	LC
Omranabad	0.162	0.048	0.228	Dust Kandi	0.150	0.095	0.387
Qareh Qabaq-e Sofla	0.125	0.102	0.451	Abdol Rezaabad	0.135	0.090	0.400
Gedaylu	0.175	0.054	0.234	Arablu Kandi	0.162	0.061	0.272
Mahbub Kandi	0.158	0.062	0.280	Qatarabad	0.134	0.114	0.459
Maqsudlu-ye Olya	0.143	0.106	0.426	Gushlu	0.099	0.149	0.601
Nur Mohammad Kandi	0.142	0.068	0.324	Majidabad	0.168	0.060	0.264
Nur Mohammad Kandi	0.159	0.063	0.284	Molla Kandi	0.114	0.128	0.529
Borran-e Sofla	0.145	0.098	0.403	Ebrahimabad	0.146	0.101	0.409
Borran-e Olya	0.123	0.119	0.491	Eslamabad-e Jadid	0.146	0.109	0.426
Owzun Qui-ye Yek	0.149	0.089	0.374	Eslamabad-e Qadim	0.087	0.161	0.650
Takleh-ye Bakhsh-e Yek	0.133	0.115	0.464	Uzun Tappeh	0.145	0.075	0.341
Takleh-ye Bakhsh-e Do	0.136	0.104	0.434	Owltan	0.093	0.148	0.613
Firuzabad	0.160	0.073	0.314	Pirayuvatlu	0.150	0.065	0.300
Qeshlaq-e Hajji Avaz	0.141	0.114	0.448	Tupraq Kandi	0.166	0.042	0.200
Esmail Kandi	0.141	0.084	0.373	Shahrak-e Gharbi	0.052	0.175	0.771
Hallajabad	0.173	0.057	0.248	Qarah Daghlu	0.135	0.110	0.449
Qeshlaq Amir Khanlu	0.186	0.033	0.152	Qeshlaq-e Eslamabad	0.164	0.060	0.269
Mahmudabad-e Taleqani	0.136	0.111	0.449	Qeshlaq-e Qitranlu	0.151	0.088	0.369
Ajirlu	0.107	0.141	0.569	Hezar Kandi	0.143	0.082	0.365
Iranabad	0.124	0.116	0.482				

The studied villages in this county were divided into the following five categories:
Very high: -

- High: Shahrak-e Gharbi, Eslamabad-e Qadim, Owltan, and Gushlu
- Moderate: Ajirlu, Molla Kandi, Idir-e Olya, Borran-e Olya, Iranabad, Takleh-ye Bakhsh-e Yek, Qatarabad, Qareh Qabaq-e Sofla, Khan Qeshlaqi-ye Yek, Mahmudabad-e Taleqani, Qarah Daghlu, Qeshlaq-e Hajji Avaz, Bahramabad, Takleh-ye Bakhsh-e Do, Eslamabad-e Jadid, Maqsudlu-ye Olya, Aq Qabaq-e Sofla, Ebrahimabad-e Jadid, Borran-e Sofla, and Abdol Rezaabad
- Low: Para Qeshlaq, Dust Kandi, Owzun Qui-ye Yek, Esmail Kandi, Qeshlaq-e Qitranlu, Hezar Kandi, Uzun Tappeh, Nur Mohammad Kandi-e Sulfa, Firuzabad, Pirayuvatlu, Tarbat Kandi, Nur Mohammad Kandi-e Olya, Mahbub Kandi, Arablu Kandi, Qeshlaq-e Eslamabad, Majidabad, Hallajabad, Takah Chi, Gedaylu, Palanglu, Omranabad, and Tupraq Kandi
- Very low: Qeshlaq Amir Khanlu

Table 8. The ranking of the villages in Parsabad County

Village	Score	Rank	Village	Score	Rank
Shahrak-e Gharbi	0.771	1	Para Qeshlaq	0.399	25
Eslamabad-e Qadim	0.650	2	Dust Kandi	0.387	26
Owltan	0.613	3	Owzun Qui-ye Yek	0.374	27
Gushlu	0.601	4	Esmail Kandi	0.373	28
Ajirlu	0.569	5	Qeshlaq-e Qitranlu	0.369	29
Molla Kandi	0.529	6	Hezar Kandi	0.365	30
Idir-e Olya	0.527	7	Uzun Tappeh	0.341	31
Borran-e Olya	0.491	8	Nur Mohammad Kandi-e Sulfa	0.324	32
Iranabad	0.482	9	Firuzabad	0.314	33
Takleh-ye Bakhsh-e Yek	0.464	10	Pirayuvatlu	0.300	34
Qatarabad	0.459	11	Tarbat Kandi	0.287	35
Qareh Qabaq-e Sofla	0.451	12	Nur Mohammad Kandi-e Olya	0.284	36
Khan Qeshlaqi-ye Yek	0.449	13	Mahbub Kandi	0.280	37
Mahmudabad-e Taleqani	0.449	14	Arablu Kandi	0.272	38
Qarah Daghlu	0.449	15	Qeshlaq-e Eslamabad	0.269	39

Village	Score	Rank	Village	Score	Rank
Qeshlaq-e Hajji Avaz	0.448	16	Majidabad	0.264	40
Bahramabad	0.441	17	Hallajabad	0.248	41
Takleh-ye Bakhsh-e Do	0.434	18	Takah Chi	0.237	42
Eslamabad-e Jadid	0.426	19	Gedaylu	0.234	43
Maqsudlu-ye Olya	0.426	20	Palanglu	0.229	44
Aq Qabaq-e Sofla	0.412	21	Omranabad	0.228	45
Ebrahimabad-e Jadid	0.409	22	Tupraq Kandi	0.200	46
Borran-e Sofla	0.403	23	Qeshlaq Amir Khanlu	0.152	47
Abdol Rezaabad	0.400	24			

4.4. Potential of ecotourism development in the villages of Khalkhal County

Khalkhal, which is the southeast county in Ardabil, is composed of three districts of Khvor Rostan, Shahrud, and Central. Based on the results of the TOPSIS model, the villages of Shal, Lerd, Lonbar, and Barandaq were ranked first to fourth (CL = 0.855, CL = 0.789, CL = 0.753, and CL = 0.721), respectively. The last ranks were assigned to the villages of Aghbolagh, Mian Rudan , Derav, Diz, and Mostafalu. Out of the studied villages, 60 percent (18 villages) are in the category of moderate potential for the development of ecotourism.

Table 9. The scores of villages in Khalkhal County for the ecotourism index

Village	Di+	Di-	LC	Village	Di+	Di-	LC
Barandaq	0.065	0.168	0.721	Khames	0.134	0.113	0.458
Nesaz	0.147	0.101	0.408	Khujin	0.109	0.156	0.588
Nemahil	0.109	0.130	0.545	Towlash	0.141	0.114	0.445
Kazaj	0.144	0.103	0.417	Aliabad	0.132	0.104	0.440
Til	0.128	0.082	0.390	Guran Sarab	0.147	0.120	0.450
Karin	0.150	0.115	0.433	Mazraeh	0.107	0.131	0.551
Lerd	0.047	0.174	0.789	Mezajin	0.102	0.134	0.569
Mian Rudan	0.157	0.071	0.312	Tarzanaq	0.147	0.100	0.405
Diz	0.175	0.045	0.204	Susahab	0.141	0.108	0.434
Shal	0.030	0.177	0.855	Koli	0.149	0.113	0.432
Askestan	0.134	0.116	0.464	Lameh Dasht	0.133	0.123	0.480
Derav	0.167	0.058	0.256	Aghbolagh	0.160	0.084	0.343
Andabil	0.146	0.089	0.379	Owchghaz-e Olya/Bolukan	0.151	0.086	0.364
Bafrajerd	0.140	0.112	0.445	Lonbar	0.056	0.172	0.753
Khaneqah-e Bafrajerd	0.149	0.110	0.424	Mostafalu	0.182	0.030	0.142

The studied 16 villages of this county were divided into the following five categories:

- Very high: Shal
- High: Lerd, Lonbar, Barandaq
- Modrate: Khujin, Mezajin, Mazraeh, Nemahil, Lameh Dasht, Askestan, Khames, Guran Sarab, Towlash, Bafrajerd, Aliabad, Susahab, Karin, Koli, Khaneqah-e Bafrajerd, Kazaj, Nesaz, Tarzanaq
- Low: Til, Andabil, Owchghaz-e Olya/Bolukan, Aghbolagh, Mian Rudan, Derav, Diz
- Very low: Mostafalu

Table 10. The ranking of the villages in Khalkhal County

Village	Score	Rank	Village	Score	Rank
Shal	0.855	1	Susahab	0.434	16
Lerd	0.789	2	Karin	0.433	17
Lonbar	0.753	3	Koli	0.432	18
Barandaq	0.721	4	Khaneqah-e Bafrajerd	0.424	19
Khujin	0.588	5	Kazaj	0.417	20

Village	Score	Rank	Village	Score	Rank
Mezajin	0.569	6	Nesaz	0.408	21
Mazraeh	0.551	7	Tarzanaq	0.405	22
Nemahil	0.545	8	Til	0.390	23
Lameh Dasht	0.480	9	Andabil	0.379	24
Askestan	0.464	10	Owchghaz-e Olya/Bolukan	0.364	25
Khames	0.458	11	Aghbolagh	0.343	26
Guran Sarab	0.450	12	Mian Rudan	0.312	27
Towlash	0.445	13	Derav	0.256	28
Bafrajerd	0.445	14	Diz	0.204	29
Aliabad	0.440	15	Mostafalu	0.142	30

4.5. Potential of ecotourism development in the villages of Sareyn

The county of Sareyn is known as a medical tourism hub in Ardabil province. Fifteen villages of this county were studied. According to the TOPSIS model, the villages of Ardi Musa, Aldashin, and Shayeq were ranked first to third and the villages of Owjur and Darabad were ranked last. According to CL values, no villages were put in the categories of very high and very high potential for ecotourism development. The highest frequency was for the category of moderate potential with 10 villages.

Table 11. The scores of villages in Sareyn County for the ecotourism index

Village	Di+	Di-	LC	Village	Di+	Di-	LC
Atashgah	0.153	0.145	0.486	Owjur	0.177	0.114	0.393
Benmar-e Sabalan	0.171	0.114	0.400	Shayeq	0.125	0.203	0.620
Sain	0.168	0.119	0.414	Vargeh Saran	0.165	0.169	0.506
Ardi Musa	0.063	0.204	0.764	Bilah Daraq	0.155	0.176	0.532
Darabad	0.219	0.095	0.303	Kordeh Deh	0.155	0.164	0.515
Asb-e Marz	0.160	0.134	0.456	Kalkhvoran-e Viyand	0.163	0.131	0.445
Aldashin	0.124	0.204	0.623	Kanzaq	0.146	0.163	0.527
Alvars	0.161	0.175	0.522				

Based on the results, the villages were divided into the following five categories:

- Very high: -
- High: Ardi Musa, Aldashin, Shayeq
- Moderate: Bilah Daraq, Kanzaq, Alvars, Kordeh Deh, Vargeh Saran, Atashgah, Asb-e Marz, Kalkhvoran-e Viyand, Sain, Benmar-e Sabalan
- Low: Owjur, Darabad
- Very low: -

Table 12. The ranking of the villages in Sareyn County

Village	Score	Rank	Village	Score	Rank
Ardi Musa	0.764	1	Atashgah	0.486	9
Aldashin	0.623	2	Asb-e Marz	0.456	10
Shayeq	0.620	3	Kalkhvoran-e Viyand	0.445	11
Bilah Daraq	0.532	4	Sain	0.414	12
Kanzaq	0.527	5	Benmar-e Sabalan	0.400	13
Alvars	0.522	6	Owjur	0.393	14
Kordeh Deh	0.515	7	Darabad	0.303	15
Vargeh Saran	0.506	8			

4.6. Potential of ecotourism development in the villages of Kowsar

Kowsar County in Ardabil has 19 villages with a population of over 500 people. Based on the results, the villages of Zarjabad and Firuzabad were ranked first and second, respectively. The villages of Heshin, Havashanq, Goli Jan, Saqqavaz, Joghanab, Aqa Mirlu, and Chalgarud were ranked last. CL for the village of Zarjabad for its potential for ecotourism development was estimated at 0.663, showing its undesirable conditions.

Table 13. The scores of villages in Kowsar County for the ecotourism index

Village	Di+	Di-	LC	Village	Di+	Di-	LC
Burestan	0.180	0.149	0.453	Meresht	0.143	0.199	0.582
Zarjabad	0.109	0.215	0.663	Aqa Mirlu	0.218	0.070	0.242
Quzlu	0.169	0.181	0.517	Joghanab	0.222	0.082	0.270
Firuzabad	0.121	0.237	0.663	Chalgarud	0.247	0.057	0.187
Goli Jan	0.215	0.091	0.298	Sangabad	0.187	0.159	0.459
Heshin	0.182	0.106	0.367	Farab	0.161	0.161	0.500
Bonyadabad	0.217	0.146	0.402	Ganjgah	0.160	0.185	0.535
Zaviyeh-ye Kord	0.175	0.173	0.498	Nilaq	0.189	0.154	0.449
Saqqavaz	0.226	0.087	0.278	Havashanq	0.207	0.091	0.305
Karandaq	0.190	0.154	0.448				

Based on the results in Table 14, the villages f Kowsar County were divided into the following five categories:

- Very high: -
- High: Zarjabad, Firuzabad
- Moderate: Meresht, Ganjgah, Quzlu, Farab, Zaviyeh-ye Kord, Sangabad, Burestan, Nilaq, Karandaq, Bonyadabad
- Low: Heshin, Havashanq, Goli Jan, Saqqavaz, Joghanab, Aqa Mirlu
- Very low: Chalgarud

Table 14. The ranking of the villages in Kowsar County

Village	Score	Rank	Village	Score	Rank
Zarjabad	0.663	1	Karandaq	0.448	11
Firuzabad	0.663	2	Bonyadabad	0.402	12
Meresht	0.582	3	Heshin	0.367	13
Ganjgah	0.535	4	Havashanq	0.305	14
Quzlu	0.517	5	Goli Jan	0.298	15
Farab	0.500	6	Saqqavaz	0.278	16
Zaviyeh-ye Kord	0.498	7	Joghanab	0.270	17
Sangabad	0.459	8	Aqa Mirlu	0.242	18
Burestan	0.453	9	Chalgarud	0.187	19
Nilaq	0.449	10			

4.7. Potential of ecotourism development in the villages of Germi

Germi is the fourth county in Ardabil province with the most number of villages that have a population of over 500 people. 35 villages were included in the research. The analysis by the TOPSIS model revealed that the village of Qarah Aghaj-e Pain was ranked first (CL = 0.836) and the villages of Sarvaghaji, Yekvan, Kalan, Kalansura, Qeshlaq, and Mollalu were ranked the last.

Table 15. The scores of villages in Germi County for the ecotourism index

Village	Di+	Di-	LC	Village	Di+	Di-	LC
Abbas Alilu	0.153	0.081	0.346	Shahrak-e Vali Asr	0.166	0.079	0.323
Kuramalu	0.151	0.085	0.361	Qeshlaq	0.197	0.055	0.217
Garmi Angut	0.151	0.117	0.435	Zengir	0.162	0.080	0.331
Mohammad Taqi Kandi	0.155	0.126	0.448	Ezmareh-ye Sofla	0.128	0.138	0.519
Mollalu	0.191	0.052	0.214	Ani-ye Sofla	0.163	0.071	0.302
Aqa Mohammad Beyglu	0.114	0.134	0.540	Ani-ye Olya	0.145	0.109	0.430
Ziveh	0.122	0.127	0.509	Ani-ye Vosta	0.121	0.141	0.539
Sarvaghaji	0.180	0.067	0.272	Tappeh	0.147	0.084	0.363
Qarah Aghaj-e Pain	0.040	0.202	0.836	Chalak	0.161	0.101	0.387
Qarah Khan Beyglu	0.133	0.136	0.506	Pormehr	0.113	0.161	0.588
Yekvan	0.183	0.062	0.252	Darmanlu	0.138	0.125	0.475
Qasem Kandi	0.134	0.126	0.484	Kalan	0.188	0.059	0.239
Nasrollah Beyglu	0.145	0.122	0.455	Kalansura	0.193	0.056	0.225
Aranchi	0.169	0.069	0.290	Van-e Sofla	0.128	0.115	0.472
Own Bir Beyglu	0.174	0.069	0.284	Hachakand-e Darmanlu	0.157	0.078	0.332
Beneh	0.137	0.129	0.485	Parchin-e Sofla	0.140	0.101	0.418
Takanlu	0.114	0.148	0.566	Kord Lar	0.135	0.138	0.505
Dizaj	0.140	0.101	0.418				

The studied villages in Germi County were divided into the following five categories:

- Very high: Qarah Aghaj-e Pain
- High: -
- Moderate: Pormehr, Takanlu, Aqa Mohammad Beyglu, Ani-ye Vosta, Ezmareh-ye Sofla, Ziveh, Qarah Khan Beyglu, Kord Lar, Beneh, Qasem Kandi, Darmanlu, Van-e Sofla, Nasrollah Beyglu, Mohammad Taqi Kandi, Garmi Angut, Ani-ye Olya, Dizaj, Parchin-e Sofla
- Low: Chalak, Tappeh, Kuramalu, Abbas Alilu, Hachakand-e Darmanlu, Zengir, Shahrak-e Vali Asr, Ani-ye Sofla, Aranchi, Own Bir Beyglu, Sarvaghaji, Yekvan, Kalan, Kalansura, Qeshlaq, Mollalu
- Very low: -

Table 16. The ranking of the villages in Germi County

Village	Score	Rank	Village	Score	Rank
Qarah Aghaj-e Pain	0.836	1	Parchin-e Sofla	0.418	19
Pormehr	0.588	2	Chalak	0.387	20
Takanlu	0.566	3	Tappeh	0.363	21
Aqa Mohammad Beyglu	0.540	4	Kuramalu	0.361	22
Ani-ye Vosta	0.539	5	Abbas Alilu	0.346	23
Ezmareh-ye Sofla	0.519	6	Hachakand-e Darmanlu	0.332	24
Ziveh	0.509	7	Zengir	0.331	25
Qarah Khan Beyglu	0.506	8	Shahrak-e Vali Asr	0.323	26
Kord Lar	0.505	9	Ani-ye Sofla	0.302	27
Beneh	0.485	10	Aranchi	0.290	28
Qasem Kandi	0.484	11	Own Bir Beyglu	0.284	29
Darmanlu	0.475	12	Sarvaghaji	0.272	30
Van-e Sofla	0.472	13	Yekvan	0.252	31
Nasrollah Beyglu	0.455	14	Kalan	0.239	32
Mohammad Taqi Kandi	0.448	15	Kalansura	0.225	33
Garmi Angut	0.435	16	Qeshlaq	0.217	34
Ani-ye Olya	0.430	17	Mollalu	0.214	35
Dizaj	0.418	18			

4.8. Potential of ecotourism development in the villages of Meshgin Shahr

Meshgin Shahr is in the top rank with 53 villages with a population of over 500 people. This county is composed of four districts of Arshaq, Moradlu, Central, and Meshgin-e Sharqi. According to the results of the TOPSIS model, the villages of Alni, Qowsheh-ye Sofla, Sarbanlar, Naqdi-ye Olya, and Movil are at the top of the list, and the villages of Mazraeh-e Khalaf, Kavich, Majandeh, Qarah Aghaj, Jamalabad, and Salman Kandi are the bottom of the list.

Table 17. The scores of villages in Meshgin Shahr County for the ecotourism index

Village	Di+	Di-	LC	Village	Di+	Di-	LC
Davahchi-ye Olya	0.100	0.106	0.516	Ballujeh Mirak	0.105	0.108	0.508
Qowsheh-ye Sofla	0.047	0.131	0.736	Bijaq	0.128	0.049	0.276
Koli-ye Olya	0.110	0.070	0.389	Dowlatabad	0.111	0.082	0.425
Qurt Tappeh	0.098	0.086	0.468	Sarbanlar	0.050	0.134	0.726
Gadeh Kahriz	0.116	0.059	0.338	Ahmadabad	0.113	0.063	0.359
Mazafa	0.096	0.086	0.482	Ahmad Beyglu	0.106	0.065	0.381
Salavat	0.086	0.124	0.589	Andazaq	0.091	0.096	0.512
Qarah Aghaj	0.130	0.041	0.241	Jamalabad	0.134	0.041	0.232
Kanchubeh	0.094	0.086	0.468	Hiq	0.118	0.059	0.333
Mashiran	0.094	0.110	0.540	Asrabad	0.135	0.073	0.351
Agh Bolagh	0.109	0.104	0.486	Ur	0.137	0.049	0.264
Barezil	0.094	0.094	0.501	Qosabeh	0.079	0.122	0.607
Parikhan	0.087	0.119	0.579	Majandeh	0.133	0.043	0.243
Tobnaq	0.135	0.053	0.281	Mazraeh-e Khalaf	0.127	0.045	0.261
Jabdaraq	0.071	0.130	0.645	Mir Kandi	0.109	0.095	0.466
Khorramabad	0.133	0.054	0.288	Arjaq	0.100	0.086	0.461
Dust Beyglu	0.119	0.057	0.324	Chapaqan	0.105	0.066	0.384
Sarikhanlu	0.105	0.077	0.421	Dadeh Beyglu	0.083	0.097	0.537
Saheb Divan	0.095	0.095	0.0497	Kavich	0.129	0.042	0.248
Arablu	0.120	0.057	0.321	Lombar	0.088	0.095	0.518
Qurt Tappeh	0.090	0.104	0.535	Anar	0.073	0.097	0.570
Kujanaq	0.081	0.127	0.610	Jalayer	0.130	0.076	0.367
Movil	0.066	0.139	0.679	Qarah Qayah	0.093	0.110	0.543
Nasirabad	0.129	0.047	0.267	Kangarlu	0.086	0.117	0.576
Salman Kandi	0.144	0.042	0.227	Arbab Kandi	0.108	0.096	0.471
Mizan	0.134	0.051	0.277	Naqdi-ye Olya	0.059	0.134	0.693
Alni	0.018	0.153	0.896				

The studied villages were divided into the following five categories:

- Very high: Alni
- High: Qowsheh-ye Sofla, Sarbanlar, Naqdi-ye Olya, Movil, Jabdaraq, Kujanaq, Qosabeh,
- Moderate: Salavat, Parikhan, Kangarlu, Anar, Qarah Qayah, Mashiran, Dadeh Beyglu, Qurt Tappeh, Lombar, Davahchi-ye Olya, Andazaq, Ballujeh Mirak, Barezil, Saheb Divan, Agh Bolagh, Mazafa, Arbab Kandi, Qurt Tappeh, Kanchubeh, Mir Kandi, Arjaq, Dowlatabad, Sarikhanlu
- Low: Koli-ye Olya, Chapaqan, Ahmad Beyglu, Jalayer, Ahmadabad, Asrabad, Gadeh Kahriz, Hiq, Dust Beyglu, Arablu, Khorramabad, Tobnaq, Mizan, Bijaq, Nasirabad, Ur, Mazraeh-e Khalaf, Kavich, Majandeh, Qarah Aghaj, Jamalabad, Salman Kandi
- Very low: -

Table 18. The ranking of the villages in Meshgin Shahr County

Village	Score	Rank	Village	Score	Rank
Alni	0.896	1	Mir Kandi	0.466	28
Qowsheh-ye Sofla	0.736	2	Arjaq	0.461	29
Sarbanlar	0.726	3	Dowlatabad	0.425	30
Naqdi-ye Olya	0.693	4	Sarikhanlu	0.421	31
Movil	0.679	5	Koli-ye Olya	0.389	32
Jabdaraq	0.645	6	Chapaqan	0.384	33
Kujanaq	0.610	7	Ahmad Beyglu	0.381	34
Qosabeh	0.607	8	Jalayer	0.367	35
Salavat	0.589	9	Ahmadabad	0.359	36
Parikhan	0.579	10	Asrabad	0.351	37
Kangarlu	0.576	11	Gadeh Kahriz	0.338	38
Anar	0.570	12	Hiq	0.333	39
Qarah Qayah	0.543	13	Dust Beyglu	0.324	40
Mashiran	0.540	14	Arablu	0.321	41
Dadeh Beyglu	0.537	15	Khorramabad	0.288	42
Qurt Tappeh	0.468	16	Tobnaq	0.281	43
Lombar	0.518	17	Mizan	0.277	44
Davahchi-ye Olya	0.516	18	Bijaq	0.276	45
Andazaq	0.512	19	Nasirabad	0.267	46
Ballujeh Mirak	0.508	20	Ur	0.264	47
Barezil	0.501	21	Mazraeh-e Khalaf	0.261	48
Saheb Divan	0.0497	22	Kavich	0.248	49
Agh Bolagh	0.486	23	Majandeh	0.243	50
Mazafa	0.482	24	Qarah Aghaj	0.241	51
Arbab Kandi	0.471	25	Jamalabad	0.232	52
Qurt Tappeh	0.535	26	Salman Kandi	0.227	53
Kanchubeh	0.468	27			

4.9. Potential of ecotourism development in the villages of Nir

The county of Nir with 9 villages had the fewest number of villages with a population of over 500 people in Ardabil province. The results of the TOPSIS model showed that the villages of Virseq and Busjin were at the top and the village of Vali Asr was at the bottom of the list.

Table 19. The scores of villages in Nir County for the ecotourism index

Village	Di+	Di-	LC	Village	Di+	Di-	LC
Busjin	0.222	0.347	0.609	Eslamabad	0.384	0.112	0.225
Qurtulmush	0.293	0.167	0.362	Diman	0.338	0.167	0.330
Qarah Shiran	0.337	0.209	0.383	Virseq	0.170	0.314	0.649
Majidabad	0.290	0.172	0.373	Golestan	0.241	0.231	0.490
Vali Asr	0.420	0.033	0.072				

The studied villages were divided into the following five categories:

- Very high: -
- High: Virseq, Busjin
- Moderate: Golestan
- Low: Qarah Shiran, Majidabad, Qurtulmush, Diman, Eslamabad
- Very low: Vali Asr

Table 20. The ranking of the villages in Nir County

Village	Score	Rank	Village	Score	Rank
Virseq	0.649	1	Qurtulmush	0.362	6
Busjin	0.609	2	Diman	0.330	7
Golestan	0.490	3	Eslamabad	0.225	8
Qarah Shiran	0.383	4	Vali Asr	0.072	9
Majidabad	0.373	5			

4.10. Potential of ecotourism development in the villages of Namin

Namin County has 35 villages and is the fourth county after Germin in the number of villages with a population of over 500 people. The results indicated that the villages of Anbaran-e Olya and Niyaraq were ranked first and second and the villages Hur, Kolosh, and Mahmudabad were ranked last.

Table 21. The scores of villages in Namin County for the ecotourism index

Village	Di+	Di-	LC	Village	Di+	Di-	LC
Anbaran-e Olya	0.000	0.224	1	Kolleh Sar	0.133	0.120	0.475
Jeyd	0.145	0.128	0.469	Gollu	0.171	0.070	0.292
Kolosh	0.211	0.049	0.190	Naneh Karan	0.120	0.139	0.536
Mirzanaq	0.163	0.085	0.342	Hur	0.210	0.050	0.192
Minabad	0.107	0.155	0.590	Saqqezchi	0.173	0.066	0.278
Anzab-e Sofla	0.136	0.128	0.484	Arkhazlu	0.105	0.142	0.575
Dowlatabad	0.116	0.145	0.556	Agh Bolagh-e Mostafa Khan	0.162	0.073	0.310
Saqsolu	0.156	0.102	0.395	Aladizgeh	0.201	0.057	0.222
Ali Bolaghi	0.143	0.090	0.387	Beris	0.138	0.119	0.463
Nowjeh Deh	0.127	0.135	0.516	Khalifehlu	0.162	0.073	0.310
Yeznabad	0.177	0.065	0.268	Suha	0.199	0.088	0.308
Yengejeh-ye Molla Mohammad Reza	0.160	0.075	0.320	Qarah Tappeh	0.172	0.069	0.288
Gerdeh	0.142	0.112	0.439	Garm Cheshmeh	0.200	0.052	0.205
Novashnaq	0.139	0.117	0.456	Mahmudabad	0.212	0.038	0.151
Pateh Khvor	0.192	0.065	0.254	Marani	0.151	0.086	0.364
Khaneqah-e Sofla	0.168	0.101	0.376	Niyaraq	0.080	0.172	0.682
Dagermandaraq	0.196	0.061	0.239	Yunjalu	0.195	0.059	0.231
Sula	0.176	0.058	0.247				

The studied villages were divided into the following five categories:

- Very high: Anbaran-e Olya
- High: Niyaraq
- Moderate: Minabad, Arkhazlu, Dowlatabad, Naneh Karan, Nowjeh Deh, Anzab-e Sofla, Kolleh Sar, Jeyd, Beris, Novashnaq, Gerdeh
- Low: Saqsolu, Ali Bolaghi, Khaneqah-e Sofla, Marani, Mirzanaq, Yengejeh-ye Molla Mohammad Reza, Agh Bolagh-e Mostafa Khan, Khalifehlu, Suha, Gollu, Qarah Tappeh, Saqqezchi, Yeznabad, Pateh Khvor, Sula, Dagermandaraq, Yunjalu, Aladizgeh, Garm Cheshmeh
- Very low: Hur, Kolosh, Mahmudabad

Table 22. The ranking of the villages in Namin County

Village	Score	Rank	Village	Score	Rank
Anbaran-e Olya	1	1	Yengejeh-ye Molla Mohammad Reza	0.320	19
Niyaraq	0.682	2	Agh Bolagh-e Mostafa Khan	0.310	20
Minabad	0.590	3	Khalifehlu	0.310	21
Arkhazlu	0.575	4	Suha	0.308	22

Village	Score	Rank	Village	Score	Rank
Dowlatabad	0.556	5	Gollu	0.292	23
Naneh Karan	0.536	6	Qarah Tappeh	0.288	24
Nowjeh Deh	0.516	7	Saqqezchi	0.278	25
Anzab-e Sofla	0.484	8	Yeznabad	0.268	26
Kolleh Sar	0.475	9	Pateh Khvor	0.254	27
Jeyd	0.469	10	Sula	0.247	28
Beris	0.463	11	Dagermandaraq	0.239	29
Novashnaq	0.456	12	Yunjalu	0.231	30
Gerdeh	0.439	13	Aladizgeh	0.222	31
Saqsolu	0.395	14	Garm Cheshmeh	0.205	32
Ali Bolaghi	0.387	15	Hur	0.192	33
Khaneqah-e Sofla	0.376	16	Kolosh	0.190	34
Marani	0.364	17	Mahmudabad	0.151	35
Mirzanaq	0.342	18			

According to the output of the TOPSIS model (Figure 3), the village of Anbaran-e Olya in Namin County (LC = 1) was found to be the best village for the development of ecotourism. Also, the villages of Alni in Meshgin Shahr (LC = 0.896), Shal in Khalkhal (LC = 0.855), Qarah Aghaj in Germi (LC = 0.836), Gug Tappeh in Bileh Savar (LC = 0.821), and Somarin in Ardabil (LC = 0.804) have high potential for the development of rural ecotourism.

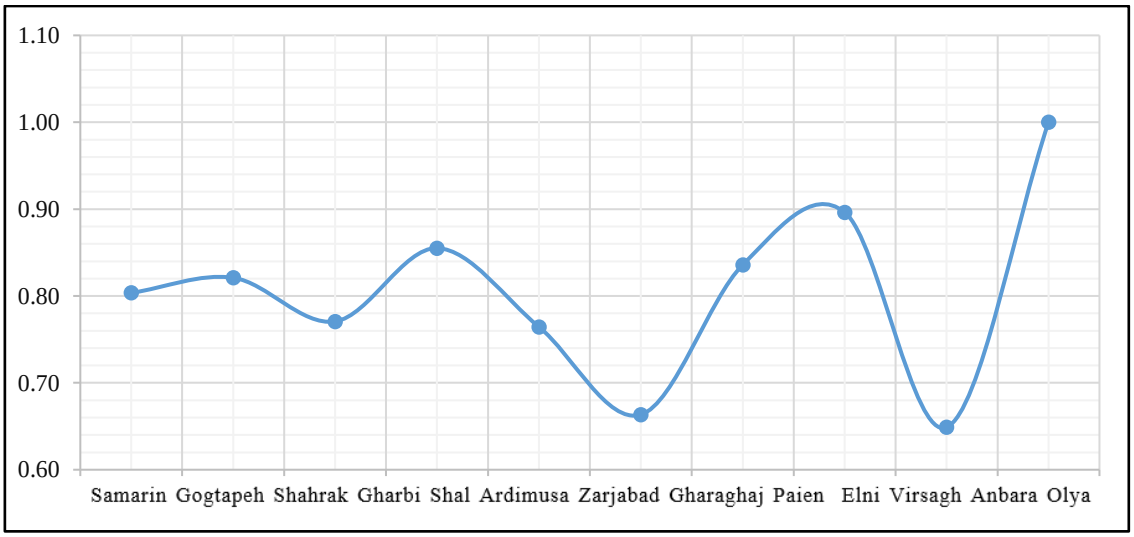

Figure 3. The best villages for the development of rural ecotourism in Ardabil province

5. Discussion and Conclusion

As the most compatible tourism type, ecotourism has drawn attention more than other forms of tourism for rural development in recent years. Since some villages have no or very weak potential for the development of ecotourism, it is imperative to select villages for this purpose consciously. The prioritization of villages for the development of rural tourism is even more important when considering the constraints on financial resources. So, the present study aimed to analyze the infrastructure for the development of rural ecotourism in Ardabil province. The results of the analysis were used to answer the research questions. Regarding the question as to which villages have higher potential for the development of rural ecotourism in Ardabil province, the results showed that the villages of Somarin, Gug Tappeh, Shahrak-e Gharbi, Shal, Ardi Musa, Zarjabad, Qarah Aghaj-e Pain, Alni, Virseq, and Anbaran-e Olya had the highest potential for the development in rural ecotourism in the counties of Ardabil, Bileh Savar, Parsabad, Khalkhal, Sareyn,

Kowsar, Germi, Meshgin Shahr, Nir, and Namin, respectively. Among these villages, Anbaran-e Olya in Namin obtained a TOPSIS score of 1, showing the best performance across the province. Regarding the question as to what fraction of the studied villages can be candidates for becoming a rural ecotourism hub in Iran, it was found that out of the studied 311 villages, six villages of Anbaran-e Olya, Alni, Shal, Qarah Aghaj-e Pain, Gug Tappeh, and Somarin with CL scores of 1, 0.896, 0.855, 0.836, 0.821, and 0.804, respectively can have the performance in the development of rural ecotourism. They account for 2 percent of the studied villages. Also, 26 villages (8%) have high potential. A total of 134 villages were put in the category of moderate potential and 134 villages in the category of low potential, each accounting for 43 percent of all the studied villages. So, most studied villages were put in the categories of moderate and low potential. Finally, 11 villages (8%) have very low potential. These results are somewhat consistent with the reports of Lotfi (2019), Kia Kojori and Isa Kakroodi (2015), and Maleki et al., (2013) regarding the fact that rural ecotourism can be developed by planning for, managing, and recognizing their potential. The difference arises from the fact that our results are based on real data, while these studies have mostly used questionnaires and the SWOT model. According to the results, it is recommended to

- plan for attracting investors for villages with very high potential (Anbaran-e Olya, Alni, Shal, Qarah Aghaj-e Pain, Gug Tappeh, and Somarin),
- introduce Anbaran-e Olya in Namin County as the best tourism village in Iran,
- provide more facilities for 28 villages with high potential for the development of ecotourism, and
- provide incentives for investment in tourism hubs of each county in the province.

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Authors' contributions

The authors equally contributed to the preparation of this article**.**

Conflict of interest

The author declare no conflict of interest.

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تحلیل زیرساخت‌های توسعه اکوتوریسم روستایی در استان اردبیل

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چکیده مبسوط

۱. مقدمه

در میان رویکردهای متعدد برای گردشگری پایدار، اکوتوریسم به‌عنوان سازگارترین نوع گردشگری با بزرگ‌ترین پتانسیل مطرح شد. این شکل گردشگری احترام عمیقی نسبت به مردم، مکان‌های گردشگری و اشیایی که مورد بازدید قرار می‌گیرند دارد و در آن تأکید خاصی روی حفاظت از منابع طبیعی و فرهنگی، درگیر کردن مردم محلی در فرآیندهای برنامه‌ریزی و ایجاد رفاه برای این مردم دیده می‌شود. ازآنجایی‌که نقاط روستایی از پتانسیل‌های گردشگری در ابعاد مختلف اجتماعی، فرهنگی، اقتصادی و طبیعی برخوردار هستند می‌توانند یکی از کانون‌های گردشگری در قلمرو سرزمینی باشند. از میان فرصت‌های گردشگری موجود در مناطق روستایی، وجود جاذبه‌های طبیعی، چشم‌اندازهای بکر و آب‌وهوای مناسب، زمینه را برای توسعه اکوتوریسم در روستاها بیش از سایر جنبه‌های توسعه گردشگری تقویت می‌کند. درواقع اکوتوریسم مناطق روستایی با توجه به ظرفیت‌های طبیعی و فرهنگی موجود در روستاها، می‌تواند فرایند باارزشی در تجدید حیات روستاها، ایجاد اشتغال و درآمد برای روستاییان باشد و به‌عنوان اقتصاد مکمل روستایی راهکاری مفید در جهت کاهش فقر و کاهش مهاجرت‌های روستایی به شهر و افزایش سطح رفاه مردم روستایی مطرح است و می‌تواند تأثیر همه‌جانبه بر زندگی مردم روستایی داشته باشد.

با توجه به اهمیت اکوتوریسم و اینکه استان اردبیل با داشتن جاذبه‌های بسیار زیاد و منحصربه‌فرد مستعد توسعه اکوتوریسم در سطح کشور می‌باشد و این ویژگی‌ها و مزیت‌ها در صورت برنامه‌ریزی می‌تواند مبنای توسعه پایدار روستایی استان تلقی شود. لذا پژوهش حاضر باهدف تحلیل زیرساخت‌های توسعه اکوتوریسم روستایی در روستاهای بالای ۵۰۰ نفر جمعیت استان اردبیل انجام‌شده است.

۲. مبانی نظری

تاریخچه اکوتوریسم به سال ۱۹۶۵ میلادی بازمی‌گردد و از ترکیب دو واژه "اکولوژی" و "توریسم" تشکیل‌شده است. در سطح بین‌الملل، اکوتوریسم به‌عنوان مفهومی که ریشه در حفاظت منابع طبیعی و آرمانه‌ای توسعه‌ی پایدار دارد، مطرح‌شده است."انجمن بین‌المللی اکوتوریسم (TIES) اکوتوریسم را این‌گونه تعریف می‌کند. سفر مسئولانه به عرصه‌های طبیعی که اهداف عمده‌ی آن حفاظت از منابع محیط‌زیست طبیعی و ارتقای سطح زندگی جوامع محلی است. اکوتوریسم مانند هر فعالیت دیگری مزایا و مضراتی دارد. مسلماً در این شاخه از گردشگری هرچه اساس و ضوابط عمل شود زیان‌های ناشی از آن کاهش میابد و هرچه برنامه‌ها شتاب‌زده و بی‌انضباط پیش رود تبعات منفی آن بیشتر خواهد بود. یکی از مشکلات فعالان در این بخش متقاعد کردن افراد به رعایت اصول و قواعد اکوتوریسم است. به‌ویژه اگر موضوع منافع مالی و کاهش سوددهی در میان باشد این مشکلات وسیع‌تر و عمیق‌تر خواهد بود. از دیگر مسائل توریسم وجود باید متفاوت در این شاخه‌ای از گردشگری است که به گروه‌های مختلف فرصت می‌دهند تا بانام اکوتوریسم به اهداف و منافع خود برسند.

۳. روش‌شناسی تحقیق

پژوهش حاضر به لحاظ هدف و ماهیت به ترتیب از نوع کاربردی و روش‌های تحلیلی و توصیفی است. محدوده مکانی موردمطالعه ۳۱۱ نقطه روستایی بالای ۵۰۰ نفر جمعیت استان اردبیل و حجم نمونه ۵۰ نفر از دانشجویان و اساتید گردشگری جهت تعیین اهمیت

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شاخص‌ها است و اهمیت‌ها به ترتیب از ۵ تا ۱ می‌باشد. داده‌های کمی مورداستفاده در این پژوهش از طریق اطلاعات مندرج در شناسنامه آبادی‌ها که توسط معاونت توسعه روستایی و مناطق محروم کشور انتشار می‌یابد به‌دست‌آمده و با استفاده از مدل تاپسیس تحلیل‌شده و روستاها با توجه به امتیاز به‌دست‌آمده به پنج گروه با قابلیت اکوتوریسم خیلی بالا (۱ الی ۰/۸۰)، بالا (۰/۸۰ الی ۰/۶۰)، متوسط (۰/۶۰ الی ۰/۴۰)، پایین (۰/۴۰ الی ۰/۲۰) و خیلی پایین (۰/۲۰ الی ۰) تقسیم شدند.

۴. یافته‌های تحقیق

باتوجه به خروجی مدل تاپسیس، روستای عنبران علیا شهرستان نمین با میزان تاپسیس ۱ بهترین روستا جهت توسعه اکوتوریسم می‌باشد. همچنین روستای آلنی مشکین‌شهر با امتیاز ۰/۸۹۶، روستای شال شهرستان خلخال با امتیاز ۰/۸۵۵، روستاهای قره‌آغاج شهرستان گرمی با امتیاز ۰/۸۳۶، روستاهای گوک‌تپه شهرستان بیله‌سوار با امتیاز ۰/۸۲۱ و روستای ثمرین شهرستان اردبیل با امتیاز ۰/۸۰۴ از پتانسیل بالایی برای اکوتوریسم روستایی برخوردار هستند. به طور کلی نتایج تحلیل‌های انجام‌شده نشان داد که در شهرستان‌های اردبیل، بیله‌سوار، پارس‌آباد، خلخال، سرعین، کوثر، گرمی، مشکین‌شهر، نیر و نمین به ترتیب روستاهای ثمرین، گوگتپه، شهرک غربی، شال، اردیموسی، زرج آباد، قره‌آغاج پائین، النی، ویرسق و عنبران علیا از بالاترین قابلیت توسعه اکوتوریسم روستایی برخوردار هستند. در این میان روستای عنبران علیا شهرستان نمین با امتیاز تاپسیس ۱ بهترین عملکرد را در کل استان دارا می‌باشد.

۵. بحث و نتیجه‌گیری

نتایج تحلیل‌های انجام شده با استفاده از مدل تاپسیس حاکی از آن است که از ۳۱۱ روستای مورد مطالعه، ۶ روستای عنبران علیا، النی، شال، قره‌آغاج پائین، گوگتپه و ثمرین به ترتیب با امتیاز CL برابر ۱، ۰/۸۹۶، ۰/۸۵۵، ۰/۸۳۶، ۰/۸۲۱ و ۰/۸۰۴ بهترین و بالاترین عملکرد را در زمینه توسعه اکوتوریسم روستایی دارا هستند که مجموع ۲ درصد از روستاها را تشکیل، تعداد ۲۶ روستا(۸درصد) در وضعیت بالا قرار دارند. تعداد ۱۳۴ روستا در وضعیت متوسط و تعداد ۱۳۴ روستا در وضعیت پایین قرار دارند که هریک ۴۳ درصد را به خود اختصاص داده‌اند. به‌این‌ترتیب بیشتر روستاهای موردمطالعه در طبقه متوسط و پایین قرارگرفته‌اند. درنهایت ۱۱ روستا که شامل ۸ درصد از روستاها می‌باشد در وضعیت خیلی پایین قرارگرفته‌اند. نتایج پژوهش حاضر به طور تقریبی با نتایج پژوهش‌های لطفی(۱۳۹۸)، کیا کجوری و عیسی کاکرودی(۱۳۹۴)، ملکی و همکاران (۱۳۹۲) در این مورد که درصورت برنامه‌ریزی، مدیریت و شناخت پتانسیل‌ها می‌توان اکوتوریسم روستایی را توسعه داد؛ برابر می‌باشد. تمایز یافته‌های این پژوهش در این می‌باشد که نتایج تحقیق حاضر براساس داده‌های واقعی بدست آمده درصورتیکه اغلب پژوهش‌های انجام شده در این زمینه با استفاده از ابزار پرسشنامه و مدل SWOT به نتایجی دست یافته‌اند.

کلیدواژه‌ها: اکوتوریسم، روستا، تاپسیس، استان اردبیل.

تشکر و قدرانی

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Original Article

Evaluation and Analysis of Resilience of Rural Tourism and Identification of Key Drivers Affecting It in The Face of The Covid-19 Pandemic in Iran

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Abstract

Purpose- Owramanat County in Kermanshah province with 14 tourism regions, is one of the best tourist destinations of Kermanshah province, in which the tourism activists have faced challenges during the period of the outbreak of the Covid-19 pandemic. The purpose of the present study is to evaluate and analyze the resilience of rural tourism and identify the key drivers affecting it in the face of Covid-19 pandemic in Owramanat County.

Design/methodology/approach- the present applied, quantitative study has been conducted with a combined approach (combination of descriptive-analytical and exploratory methods). The questionnaire method was used for data collection and its validity and reliability have been confirmed by observing scientific principles. In order to achieve the purposes of the study, the opinions of 150 people from the local community active in the field of tourism were used to evaluate the resilience, and the opinions of 30 experts were used to identify the primary factors affecting the resilience and also the views of 25 experts were taken into consideration in order to identify the key drivers affecting the resilience of rural tourism. The SPSS and MICMAC software were used to analyze the collected data.

Findings- The research findings showed that, the average of four variables including local government budget, environmental knowledge, community welfare, and social support system as the main components of the resilience of rural tourism were 1.757, 2.358, 1.808, and 2.295 respectively and have been significantly lower than the base average. The overall assessment results showed that the calculated average with a value of 2.014 has been significantly lower than the medium level. The results also showed that, among 17 factors affecting the resilience of tourism, 5 factors of government financial support, financial capital, sanitary equipment, infrastructural facilities and disease control are the most effective key drivers on resilience .

Originality/ value- Evaluation and analysis of the resilience of rural tourism in the face of Covid-19 pandemic with an approach of presenting the key indicators and variables in this field and also identification of key drivers affecting the resilience of rural tourism have received less attention from researchers and this proves the originality of the present study.

Keywords- Covid-19 Pandemic, Rural Tourism, Resilience, Key Drivers.

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1. Introduction

Today, the role of tourism in national political communications, economic development and residents' welfare and also achieving the goals of sustainable development has received increasing momentum (Huang et al., 2021). Tourism provides opportunities for employment and income and also markets for local goods and services; however, if the tourism industry did not exist, these opportunities would not exist either (Munanura et al., 2021). In most countries, the tourism sector has been identified as a potential tool for increasing the economic growth and reducing poverty (Henseler et al., 2021). Among different types of tourism industry, rural tourism is one of the most important dimensions of this industry (Bayrak, 2022). The importance of rural tourism is to the extent that, it has been referred to as a rural revitalization strategy[1]. Rural tourism plays an essential role as a new model of poverty alleviation, especially in the poor areas including rural areas with abundant tourism resources (Dang et al., 2022). Nevertheless, the surveys show that, nowadays rural communities face numerous challenges (Bayrak, 2022) such as unemployment (Jamshidi et al., 2015), limited access to facilities (Amini & Jamini; 2014; Ghadermarzi et al., 2015), poverty, food insecurity, low welfare level (Jamini & Jamshidi, 2021), and migration from villages to cities (Jamini et al., 2022). Therefore, rural tourism can be used to achieve rural development (Latifi et al., 2013) and sustainable rural development (Shokati Amghani et al., 2016).

Surveys show that, during the past periods tourism industry has been affected by various crises. But the outbreak of Covid-19 whose origin goes back to Wuhan, China (Jagdale & Ganatra, 2021), as the greatest challenge after world war II (Panthhe & Kokate, 2021), has influenced all economic sectors (Jagdale & Ganatra, 2021; Komasi et al., 2022; Chen et al., 2022; Lin et al., 2022), all jobs and industries, public health, macroeconomics and social aspects of life (Kocak et al., 2022) and especially tourism industry with maximum pressure (Duro et al., 2022; Simarangkir et al., 2021; Al-Mughairi et al., 2021). Given that, tourists avoid visiting dangerous destinations (Rahman et al., 2021), the outbreak of Covid-19 led to decrease in air traffic, the rapid decrease in the occupancy of residences in countries, suspension of personnel and in many cases bankruptcy of companies in the tourism sector (Zouni et al., 2021), in such a way that, World Travel and Tourism Council has announced that, 50 million jobs in the world's travel and tourism sector are in danger (Waleed et al., 2022: 2). It is necessary to mention that, limited knowledge and experience about how coronavirus works, made the tourism industry quite vulnerable (McCartney et al., 2022). Exactly like all types of tourism industry, rural tourism also with the beginning of the Covid-19 epidemic, with the forced closure of residences, restaurants and tourist attractions, quarantine regulations at the national and regional levels and with different degrees of strictness, with the goal of limiting the spread of the coronavirus, suffered a deep economic crisis (Panzer-krause, 2022) and was severely affected by the coronavirus (Curtis & Slocum, 2021). The chain-like and complex effect of this disease which has been compared to the effect of a snowball, has brought significant negative effects on the tourism industry by destroying the links in the chain of jobs and livelihoods of people (Ghann, 2021). In the meantime, Corona has had more effects on areas that have relied too much on ecotourism. On the contrary, the corona virus has had less effects on areas whose livelihood activities were more focused on agriculture and processing of agricultural products (Solicu et al., 2021) and also the consequences of the corona virus on areas with low income levels have been much more severe (Sah et al, 2020).

Nevertheless, local households and communities have different capacities to deal with or adapt to risks which can be referred to as resilience capacity[2] and efforts must be made and significant resources must be collected in order to achieve and improve it. In other words, households and communities must use different types of capitals to deal with risks and invest on it (Bayrak, 2022). Therefore, one of the most important categories to reduce the harmful effects of Covid-19 on tourism is to pay attention to the concept of resilience, as an essential concept in sustainable development, (Wang et al., 2022) whose main goal in all systems is to reach perfection even in facing pressures and

1. Rural Revitalization Strategy

2. Resilience capacity

stress (Eghbali et al., 2021). Resilience has increased in recent years due to the experienced shocks in tourism and other industries all over the world (Gabriel-Campos et al., 2021). Based on scientific texts, resilience is dependent on drivers and determinants that are different according to the studied spaces, not adopting one approach for all urban areas or all rural areas (Solicu et al., 2021).
Rural settlements located in Owramanat (including four towns of Javanrood, Paveh, Rawansar, and Salas and Babajani counties) are among the prone areas in the west of the country in terms of attracting tourists. The pristine nature of the area, dense forests of oak, border markets, stepped villages, spectacular caves, the attractive environment around Darian dam, 50 tourism areas and so on, are only a part of tourism attractions of this area. With the outbreak of the Covid-19 pandemic, tourism activists in this region faced many challenges following the national and international trends. Considering that the level of resilience of villagers against the effects of the Covid-19 disease plays a vital role in the continuation of their activities when facing the disease as well as the future status of their activities, the study of resilience among the villagers active in the tourism sector is very important. Since resilience is influenced by various factors which are different according to natural and human conditions and the atmosphere governing different areas, the main questions of the present study are: what is the state of resilience among activists of rural tourism in Owramanat region in the face of Covid-19 crisis? And what are the key drivers affecting the resilience of rural tourism activists in Owramanat region?

2. Research Theoretical Literature

The pandemic Covid-19 is often considered as a kind of crisis or disaster. In general, crisis refers to domestic events, while a disaster is related to foreign events. Anyway, crises and disasters (catastrophes) are unexpected events which threaten the function of tourism businesses, endanger the reputation of the destination, and affect the passengers' trust (Yang et al., 2021). The concept of resilience is among the most key concepts to counter all risks (crises and disasters) (Bayrak, 2022). The term resilience was basically a concept in the field of physics, which meant "return to one's original shape" (Wang et al., 2022). In other words, resilience is the capacity of a system to absorb a disorder; in a way that the function, structure, feedback and identity of the system are maintained at the same time (Naylor et al., 2021). The indigenous resilience is one of the concepts related to resilience which consists of: the ways that cultural factors such as knowledge and learning, along with a broader political ecology determine how local and native people perceive the environmental changes, deal with it and adapt to it (Bayrak, 2022). Psychological resilience is another concept related to resilience and can be described as " the ability of an individual to adapt, go back, and even progress in the face of changes and adversity" (Weng et al., 2022). The notion of resilience was gradually applied to the study of ecosystems, social systems, and socio-ecological systems. However, the resilience of tourism destination is a combination of resilience and tourism geography. The resilience of the tourism destination is the ability of these places to resist, adapt and self-organize against disorders. This, is a new approach and view for the tourism destinations to counter the threats resulted from crises and different natural or human uncertainties (Wang et al., 2022). In another definition, tourism resilience is described as the ability of a destination to absorb shocks and remain active (Duro et al., 2022). Researchers have considered the use of more methods and models, such as structural equations, scenario planning, etc. to be very useful and effective for evaluating the resilience of tourism destinations (Wang et al., 2022).
Lew et al (2016) during a field study, have suggested the following components and indicators as the indicators of rural tourism resilience (Table 1).

Table 1. Indicators of rural tourism resilience
Source: (Lew et al., 2016)

Component	Resilience Indicators
Local Government Budgeting	Building capacity in the society for change: • The level of building infrastructure for education/ interpretation and explanation and access to resources • Plans for innovative development and marketing of tourism
Environmental Knowledge	Creating new environmental knowledge: • Participation of local people and tourists in the environmental education programs • Innovative use of traditional knowledge by local people
Community Well Being	Improving life and employment conditions: • The rate of unemployment and youth migration • The rate of employment in tourism
Social Support System	Supporting social cooperation: • The rate of participation in religious organizations and • other local organizations

However, resilience of tourism destinations is dependent on numerous stimulants and drivers. On this base, having factors such as financial capital (sufficient income and saving), natural capital (access to natural resources, modern irrigation equipment, improving soil quality), social capital (social networks and institutes), physical capital (ecosystem services and fixed assets), human capital (knowledge and skill) are effective in increasing resilience against the risks (Bayrak, 2022). Also according to a few more views the use of digital technology (Abbas et al., 2021), actions of local, regional or national governments in attracting investors through tax exemptions, facilitating legal conditions of land use, boosting tourism, flexibility of technology, sense of place, trust of customers and employees (Sharma et al., 2021) and social capital (Gabriel-Campos et al., 2021; Bayrak, 2022) are other factors influencing the resilience of tourism destinations.

Considering the importance of rural tourism in the process of rural development and the effects of Covid-19 on this industry and also the role of key determinants in increasing the rate of resilience, researchers have conducted studies in this field, whose results are discussed in the following.

Sadeghloo et al., (2016) conducted a study with the aim of analyzing the resilience of tourism businesses in rural areas of the tourism sphere of influence of Mashhad city and concluded that, the study villages do not have a suiTable condition in terms of resilience of tourism businesses. The results of the study by Nizamivand Chegini (2021) on the resilience of tourism industry against Covid-19 indicated that, government accountability, technological innovation, local communities' sense of place and trust of customers and employees are among the most important factors affecting the increase of resilience level.

Asadi and Jabbari (2022) in their study investigated the factors influencing the resilience of rural tourism community in the tourism destination villages of Hamadan. The results showed that, social dimensions and components (the ability of society to adapt to changes, content creation and producing the knowledge of tourism and empowering the tourism local community), the environmental dimensions and components (management and local supervision of the environment, creating and using local knowledge and new environmental knowledge, health and safety of the tourism community) and economic dimensions and components (improvement of life and economic conditions, diversity and flexibility of tourism activities and financial support in line with sustainable development of tourism) are the factors influencing resilience and from all of them, financial support is the most effective component and it is the cornerstone of resilience of rural tourism community in line with sustainable development of tourism.

The results of the study conducted by Sharma et al., (2021) on the revival of the tourism industry after Covid-19 with a resilience-based approach globally showed that four prominent factors for developing resilience in tourism industry in their proposed approach are: governments, market actors, technology innovators and workforce active in the tourism industry. Meanwhile, the role of

local community participation has been referred to as a significantly vital factor.

Gabriel-Campos et al., (2021) in a study on the resilience of community eco-tourism against Covid-19 and climate change in a village located in Andes mountains in Peru, showed that, society's readiness for both threats is heterogeneous. On the one hand, the community eco-tourism system has created sufficient tools to cope with the temporary effects of Covid-19 through a coherent social structure and a strong cultural identity, and on the other hand, local community has performed poorly in communication with other local organizations to prevent and successfully respond to climate change. The results of a study by Lee et al., (2022) on the effect of social support on the perception of Covid-19 and the moderating effect of job resilience in tourism of Taiwan, indicated the effectiveness of social support (family and friends, national supportive policies (subsidies) and support at work) for tourism activists in the fight against corona virus and increase their resilience.

Panzer-Krause (2022) in a study on the resilience of rural tourism during Covid-19 in two tourism destinations of Germany and Ireland, concluded that political actions can be effective on increasing the resilience of rural tourism. The results of a research by Duro et al., (2022) on the resilience of tourism against Covid-19 in Spain showed that, Covid-19 has significantly influenced the tourism destinations of Spain which is one of the leading countries of the world in this field. Also the results of this research showed that, the expertise and previous experience in attracting domestic tourists (during Covid-19 few foreign tourists have visited tourism destinations), population density (despite the overall reduction of tourism activities, the areas with less density had a better relative performance), and disease control had considerable effects on tourism resilience. The results of a study by Bayrak (2022) with the aim of surveying the effects of local tourism on the native's resilience against the risks in high areas of Taiwan, indicated that, the participation in indigenous tourism has helped to improve and enhance the level of resilience.

Review of the theoretical foundations and the research literature shows that, several studies have been done on the subject of study in other countries, but the research conducted in our country regarding the resilience of rural tourism is very limited and no study has been done on the resilience of rural tourism in the face of Covid-19. Also identifying the key drivers of the discussed topic has been neglected by researchers. Therefore, the present study is innovative in terms of the subject, presenting the indicators of tourism resilience and identifying the key drivers affecting it and can be used as a basis for future studies.

3. Research Methodology

Owramanat region (including four counties of Javanrood, Paveh, Rawansar, and Salas and Babajani) is one of the prone border areas of Kermanshah province and the country, which according to the results of the last population and housing census had a population of 218476 people. Of these, 83558 people (about 38.3% of the population) live in rural settlements of this region. This high percentage of rural dwellers compared to the provincial and national average indicates the high potential of this region in maintaining the rural population (Statistical Center of Iran, 2016). One of the most important potentials of rural part of Owramanat region, is its tourism attractions. Currently, 14 out of 50 prone tourism areas of Kermanshah province have been located in Owramanat region. Among these areas the most important ones are Qooriqaleh, Hajij, Sefid barg, Bozin and Markheil, Dalani, Shamshir, Nowdeshah, and Nosoud (General department of Cultural Heritage, Tourism and Handicrafts of Kermanshah province, 2022).

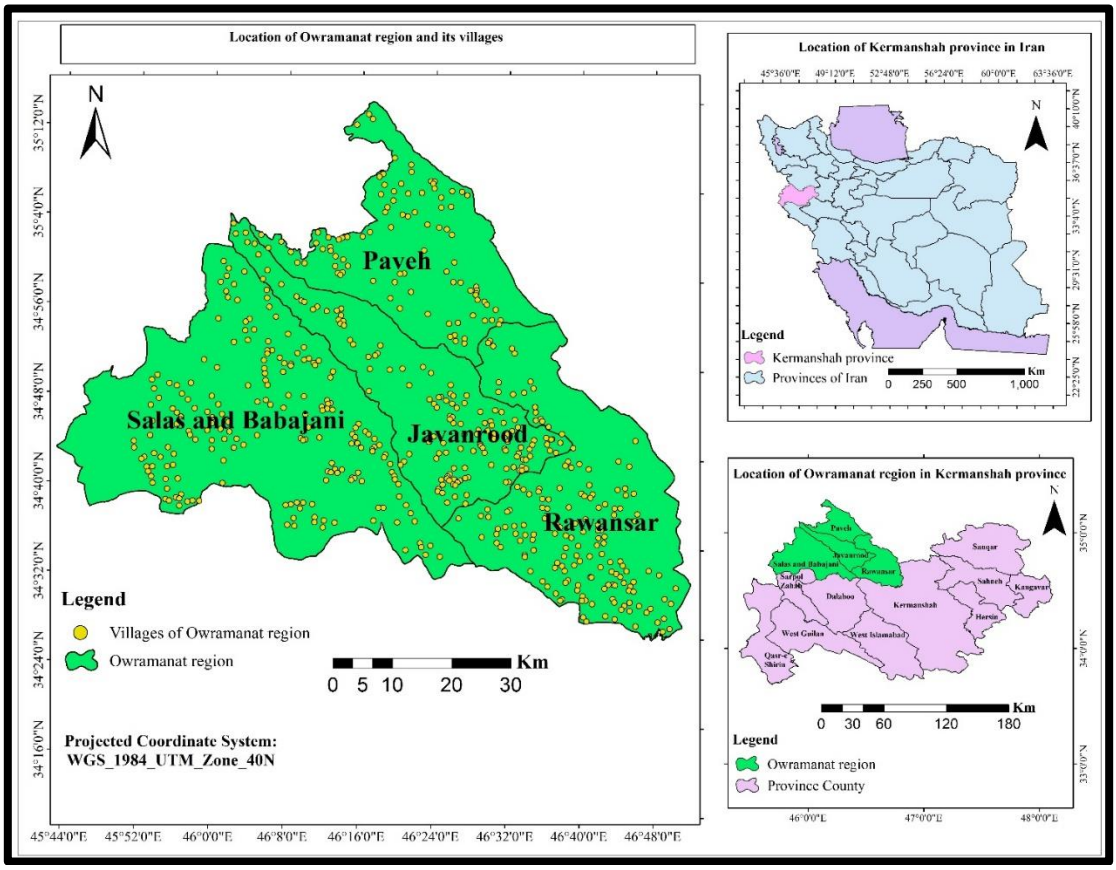

Figure 1. the location of the study area in Kermanshah province and Iran
Source: (Statistical Center of Iran, 2016)

The present quantitative and applied research has been conducted using a combined approach (a combination of descriptive-analytical and exploratory methods) in terms of methodology. Documentary (article contents, reports, and the data of Statistical Center of Iran) and field (questionnaires of citizens and experts) were used to collect data and it was done in two main parts. The first part of the study is related to evaluation and measurement of the indicators of the resilience of rural tourism in the face of Covid-19 and the second part is assigned to identifying the key drivers affecting the resilience of rural tourism in the face of Covid-19.

In the first part of the study, the statistical population includes all the rural tourism activists in Owramanat region, and there is no exact number of them. Nevertheless, 150 tourism activists were considered as a statistical sample. The questionnaires were distributed in such a way that field information can be collected from all touristic areas of the region (villages near the communication axes and natural and human tourism attractions such as caves and shrines, etc.). Finally, the questionnaires were distributed among activists of tourism industry who were selected through convenience sampling and completed by them. In this part of the study, the main tools of collecting field information was researcher-made questionnaire. Its (face) validity was examined by the views of experts and specialists in rural planning and tourism. The pretest method and completing 30 questionnaire were done to examine its reliability and the obtained Cronbach's alpha coefficient was more than 0.7 which indicated the reliability of the applied tools. The mentioned questionnaire was designed in two main parts. The first part was assigned to demographic information of the respondents such as age, job, monthly income, experience in tourism, household size and their education and the second part was assigned to the status of indicators and variables of the resilience of rural tourism. It is worth mentioning that the study of Lew et al., (2016) was used as the basis of the rural tourism resilience questionnaire. Five level Likert scale (1=very low, 2=low,

3=average, 4-high, 5=very high) was used to measure the variables of rural tourism resilience. In this part of the study SPSS software was used to analyze the collected data.

Table 2. The main dimensions, indicators, and variables of rural tourism resilience in the face of Covid-19 crisis
Source: (Lew et al., 2016 & Research findings, 2022)

Components	Resilience indicators	Variables
Local Government Budgeting	Building capacity in the society for change: -level of building infrastructure for education/ interpretation and explanation and access to resources -plans for innovative development and marketing of tourism	-capacity building in the society for change through allocation of government credits to build educational infrastructure to strengthen tourism - capacity building in the society for change through allocation of government credits to develop access to banking infrastructure -capacity building in the society for change through allocation of government credits to develop access to other financial infrastructure (cooperative companies, private companies, etc.) - capacity building in the society for change through allocation of government credits to establish micro credit funds for tourism development -capacity building in the society for change through allocation of government credits to develop tourism entrepreneurship
Environmental Knowledge	Creating new Environmental Knowledge: -participation of inhabitants and tourists in environmental education program -innovative use of traditional knowledge of local people	-the level of participation and cooperation of villagers and tourists in face-to-face environmental protection classes and courses -the level of participation and cooperation of villagers and tourists in virtual classes and courses on environmental protection -the level of participation and membership of villagers in environmental protection associations -the extent to which villagers use local knowledge to protect the environment -the rate of innovation in local knowledge to protect the environment
Community Well Being	Improving Living and Employment conditions -rate of unemployment -rate of employment in Tourism	-the effect of tourism on improving youth employment -the effect of tourism on reduction of youth migration -the effect of tourism on job creation -the effect of tourism on improving job diversity
Social Support Systems	Supporting social Cooperation: -the amount of participation in religious organizations and other local organizations	-the amount of support for people's participation in religious ceremonies -the amount of support for people's participation in local ceremonies (Nowrouz eve, local festivals, celebrations and local contests, etc.) - the amount of support for people's participation in formation of local charities

In the second part of the research, Delphi method and the views of 30 experts and specialists in rural planning and tourism were used to identify the key drivers affecting the resilience of rural tourism in Owramanat region in the face of Covid-19 pandemic. Among all the primary factors affecting the resilience of rural tourism, 17 main variables have been identified and extracted (Table 3). Then, by distributing questionnaires and surveying 25 certified experts, the key drivers affecting the resilience of rural tourism in Owramanat region were identified through cross-impact analysis using MICMAC software. It should be noted that the selection of experts in both stages was done using the snowball method.

Table 3. The main factors affecting the resilience of rural tourism in the face of Covid-19 crisis from the experts and specialists' points of view
Source: (Research findings, 2022)

Variable	Code	Variable	Code	Variable	Code
Social capital	A1	Infrastructure Facilities	A7	Investment in Private sector	A13
Social support	A2	Skill and Expertise	A8	Local Management	A14
Access to digital Technology	A3	Tourists' Interactions	A9	Sense of place	A15
Knowledge and Awareness	A4	Transparency	A10	Disease control	A16
Financial capital	A5	Security	A11	Government's Financial Support	A17
Regional Management	A6	Sanitary Equipment	A12		

4. Research Findings

4.1. Examining the personal characteristics of respondents

The research findings in regard with age status of respondents showed that, the average age was about 43 and the youngest and the oldest respondents were 22 and 63 years old respectively. The household size was 4.3. In terms of employment status of the respondents, the results indicated that, the main jobs of about 53% of respondents were providing various services to tourists and the rest were working in the tourism sector on a seasonal and part-time basis in addition to other jobs. The monthly household income of 53% of the respondents was less than 3 million tomans and 31% of them had an income between 3 to 5 million tomans which showed a severe income decrease during Covid-19 pandemic in the study area. The calculated average activity history of the respondents in the tourism sector was about 11 years. The results also showed that, 6% of the respondents were illiterate, 24% had primary education, 27% had middle school education, 29% had a diploma, and about 14% had university education.

4.2. Examining the status of the main components of rural tourism resilience in the face of Covid-19 pandemic

In order to examine the status of the main components of rural tourism resilience in the face of Covid-19 pandemic, 19 variables of each indicator were combined to each other and the required data were obtained to examine four components of local government budgeting, environmental knowledge, community well-being, and social support system. Mean comparison test (one sample t test considering 3 as the test value) was used to evaluate the mentioned indicators. The results show that, (Table 4) the average of four components of rural tourism resilience in the face of Covid-19 pandemic was significantly lower than the average level. Negative t statistics, mean deviation, and the upper and lower limits confirm this. Among the mentioned components, two components of local government budgeting and community well-being were in a relatively weaker position with the average values of 1.757 and 1.808 respectively. Nevertheless, the main components of rural tourism resilience in Owramanat region were in an unsuitable status in the face of Covid-19.

Table 4. examining the status of main components of rural tourism resilience in the face of Covid-19 pandemic

Source: (Research findings, 2022)

-	Test Value = 3						
	t	df	Sig. (2-tailed)	Mean	Mean Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Local government Budgeting	-35.464	149	0.000	1.757	-1.242	-1.311	-1.173
Environmental Knowledge	-17.785	149	0.000	2.358	-0.641	-0.712	-0.570
Community Well-being	-38.785	149	0.000	1.808	-1.192	-1.252	-1.131
Social Support System	-13.582	149	0.000	2.295	-0.704	-0.806	-0.602

After reviewing the status of main components of rural tourism resilience in the face of Covid-19 pandemic, the overall status of rural tourism resilience in the face of Covid-19 pandemic in the study area (using frequency distribution Table and mean comparison test) was examined. The findings of frequency distribution Table (Table 5) shows that, 43.3% of the villagers had low and very low resilience, 46.7% had average resilience, and only 10% had high and very high resilience in the face of Covid-19. The mean comparison test was used to present an overall and precise report of the status of rural tourism resilience in Owramanat region in the face of Covid-19. The results indicate that (Table 6), the calculated mean with the value of 2.014, is significantly lower than the base limit. In general, it can be mentioned that, the resilience of rural tourism and their key components in the face of Covid-19 in Owramanat region is in a weak state and this situation can cause many harms and negative consequences for activists in the field of rural tourism. The low resilience of the villagers means more vulnerability and somehow leads to the instability of the tourism industry.

Considering the high potential of the area in attracting tourists and the low income of rural tourism activists during the outbreak of the disease and also given that the resilience of rural tourism is

dependent on different stimulants and drivers according to the geographical conditions of different areas, it is necessary to identify the key drivers affecting the resilience of rural tourism in the face of Covid-19 in the study area. This topic is discussed in the next section.

Table 5. evaluating the overall status of the resilience of rural tourism in the Face of Covid-19 pandemic
Source: (Research findings, 2022)

-	Frequency	Percent	Cumulative percent
Very low	17	11.3	11.3
Low	48	32	43.3
Average	70	46.7	90
High	13	8.7	98.7
Very high	2	1.3	100
Sum	150	100	-

Table 6. evaluation of the overall status of the resilience of rural tourist in the face of Covid-19 pandemic using t-test
Source: (Research findings, 2022)

-	Test Value=3						
	t	df	Sig. (2-tailed)	Mean	Mean Difference	95% confidence Interval of the difference	
						Lower	Upper
Resilience of Rural tourism	-37.842	149	.000	2.014	-.985	-1.037	-.934

4.3. Identification of the key drivers affecting the resilience of rural tourism in the face of Covid-19

The results of the analysis of the key drivers affecting the resilience of rural tourism in Owramanat region using the MICMAC software and the cross-impact analysis method show that the degree of filling is 84%, which indicates the influence of the factors on each other. Out of a total of 243 evaluable matrix relations, 53 relations have cross impact of 3, that is, the indicators have been influenced by each other and have influenced each other. 61 relationships had cross impact of 2, that is, they had a reinforcing role. 129 relationships also had cross impact of 1, that is, they have more influence on other indicators. Also, 46 relationships from the total cross-impact have neither been influenced by each other nor have they influenced each other (Table 7).

Table 7. MDI matrix of key drivers affecting the resilience of rural tourism in the face of Covid-19 pandemic
Source: (Research findings, 2022)

Matrix size	Number of Iterations	Number of Zeros	Number of ones	Number of twos	Number of threes	Fillrat	Total
17*17	2	46	129	61	53	84%	243

4.4. Analysis of the extent of influence of main variables of the resilience of rural tourism

As it can be observed in figure 2, out of 17 main factors affecting the resilience of rural tourism, 5 key variables affect the resilience of rural tourism. These variables are located in Northwest half of the figure 2. In such a way that, these variables have the most influence on other variables and receive the least influence from other variables and include the factors of government financial support (A17); financial capital (A5); sanitary equipment (A12); infrastructure facilities (A7); and disease control (A16). The risk variables are around the diagonal line of the northeast area of the diagram. These variables have a significantly high potential to become the key actors of the resilience of rural tourism in the future, since due to their instable nature, they have the potential to turn into the "breaking point" of the resilience of rural tourism and include factors of knowledge and awareness (A4); investment in private sector (A13); social support (A2); access to digital technology (A3); and social capital (A1). The variables located in the Southeast of the diagram are called variables under influence. These variables have high effect and countereffect on each other, therefore they are

quite sensitive to influential and bimodal variables which include: skill and expertise (A8); tourists' interactions (A9); transparency (A10); regional management (A6); and finally, the independent variables of the resilience of rural tourism are located in the Southwest of the diagram. These variables which have low effects and countereffects, include sense of place (A15); local management (A14); and security (A11).

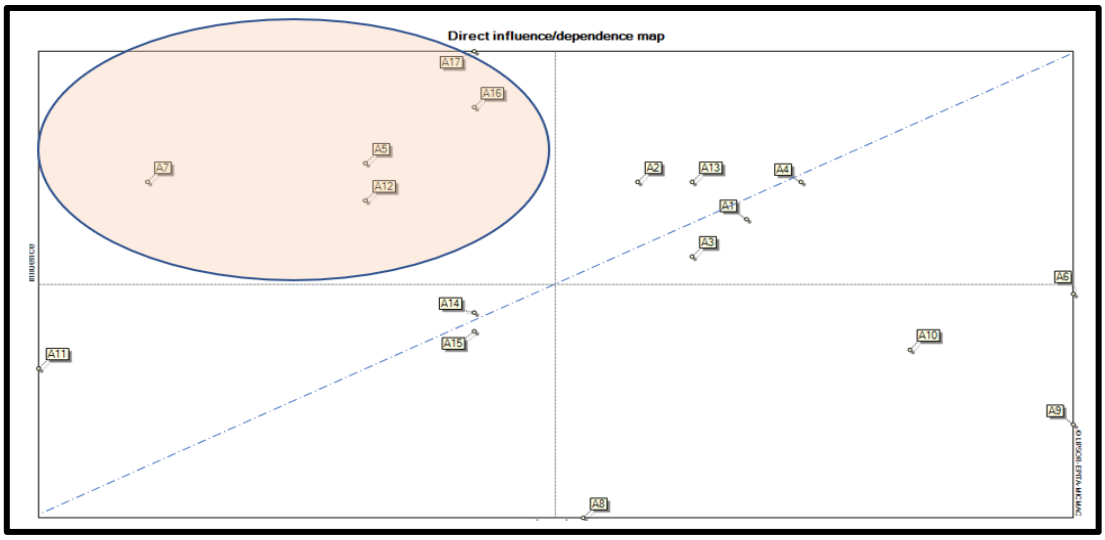

Figure 2. the status of key drivers of the resilience of rural tourism
Source: (Research findings, 2022)

Figure 3 indicates significantly strong direct impact of the variables of the resilience of rural tourism on each other. As it is observed, the factors of government social support (A17) and control disease (A16) had the strongest impact on other variables. These factors should be considered in short-term, medium-term, and long-term programs.

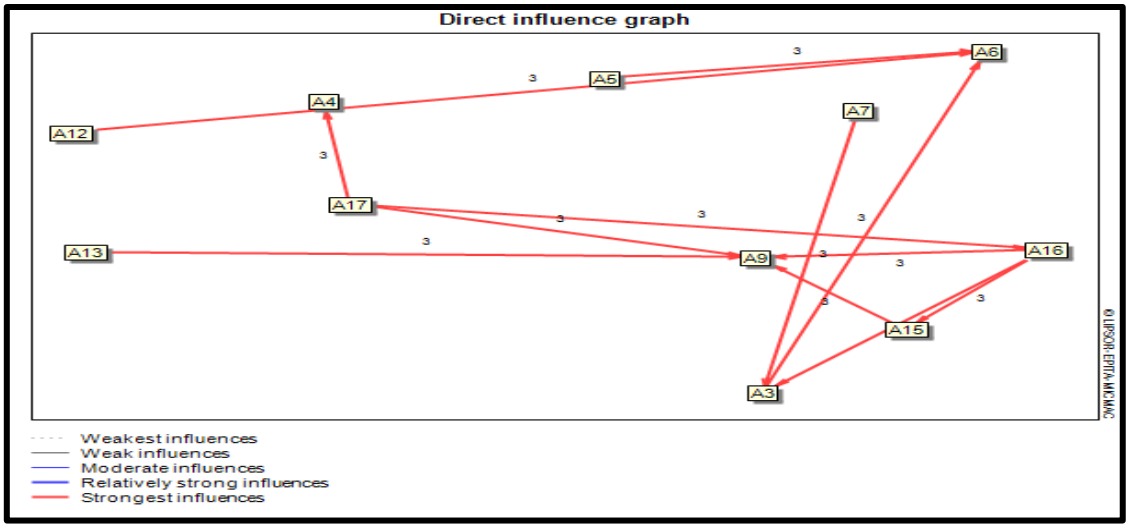

Figure 3. the direct effects of the variables of rural tourism resilience on each Other
Source: (Research findings, 2022)

Figure 4 shows the significantly high indirect effects of the influencing factors on the resilience of rural tourism. Government social support (A17) has had the greatest effects on other variables. It is noteworthy that this factor, in addition to being one of the key drivers of the resilience of rural tourism

in Owramanat region, has the most direct effects on other variables as well. Therefore, it should be given special attention in planning and policies related to the resilience of rural tourism.

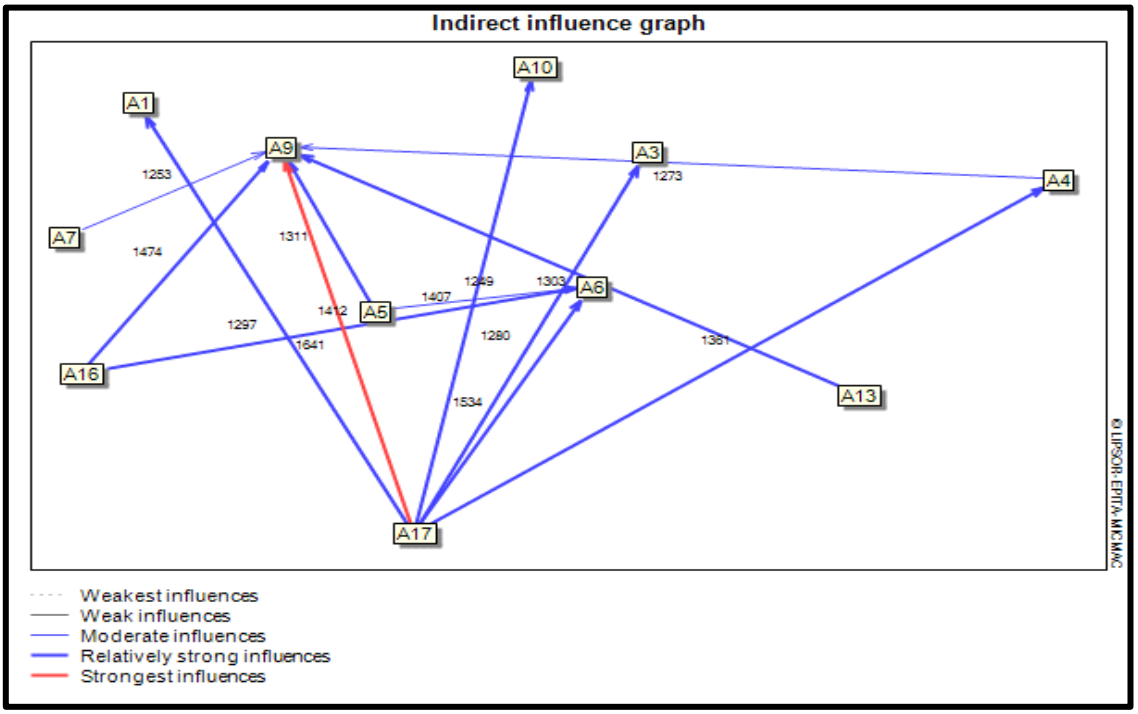

Figure 4. the indirect effects of the variables of rural tourism resilience on Each other (very strong effects)
Source: (Research findings, 2022)

5. Discussion and Conclusion

The outbreak of Covid-19 pandemic severely affected all the activities of human community. To the extent that many activities, including the tourism industry, faced severe stagnation and were pushed to the edge of destruction. In the meantime, rural tourism also was not kept away from the effects of this disease and was extremely affected by it. Due to the drastic impact of the outbreak of Corona on tourism industry, the communities with more dependence on this industry, were more affected. Reviews show that, the more a community is resilient against the crises, the less the negative effects of the crises on them will be. However, this has been neglected by the researchers in our country. Therefore, the resilience of rural tourism and its determinants in the face of various crises including Covid-19 is of great importance. In this regard, the present study was conducted with the aim of examining and analysis of the resilience of rural tourism and identifying the key drivers affecting it in the face of Covid-19 pandemic in Owramanat region. The findings of the study showed that, the resilience of rural tourism and its main components in the study area are in an unfavorable situation in the face of Covid-19. This condition intensifies the vulnerability of the tourism activists. Since, Sadeghloo et al., (2016) in their study pointed out the poor state of resilience of tourism in rural areas located in the sphere of influence of tourism in Mashhad city, the result of the present study is in line with it. Some reasons for poor the poor resilience of rural tourism in the study area are as follows: a sharp decrease in the number of tourists, loss of a major part of the main source of income, disruption of other alternative occupations, poor support of government sector, insufficient allocation of sanitary equipment, poor information about how to deal with the disease, villagers' weak financial base and low savings, rapid increase in the price of food and other consumables, weak knowledge and awareness of villagers about the proper way to prevent and deal with the disease, mismanagement in quarantine, low trust in vaccination and late public vaccination, decrease in the level of participation and cooperation among villagers due to the fear of getting the disease.

Nevertheless, the best strategy to enhance the level of the resilience of tourism activists is to identify

its drivers and stimulants in the study area. The results of the study showed that, government financial support, financial capital, sanitary equipment, infrastructure facilities and disease control are the most effective key drivers on the resilience.

Since the results have determined government financial support as an effective key driver on the resilience of rural tourism activists in Owramanat region, this key component should be prioritized in tourism development policies. Since the activists in the field of rural tourism of this area are weak in terms of financial base and livelihood and the Covid-19 crisis has decreased their affordability. Thus, the effective financial support of the government through the allocation of financial subsidies and livelihood assistance, as well as the allocation of interest-free or low-interest loans and credits, is necessary within the scope of studies. it is worth mentioning that Nizamivand Chegini (2021), Asadi & Jabbari (2022), Sharma et al., (2021), Lee et al., (2022), and Panzer-Krause (2022) in their studies have emphasized on increasing the resilience of tourism activists due to the support of the government sector.

Financial capital is another key driver affecting the resilience of activists of rural tourism in Owramanat region. Asadi & Jabbari (2022) and Bayrak (2022) have also emphasized on the importance and effectiveness of financial capital on increasing resilience. Enhancing the level of financial capital of tourism activists which is dependent on the financial support and investment of government and private sectors, increase of tourists visiting the region and increase in the income of activists in the field of tourism, has been significantly disrupted during Corona crisis. Weak financial capital greatly reduces the ability to purchase life necessities and medical equipment, and as a result, the villagers' resilience will also be weakened. Given that, this area is a border region and considering the poor financial base of the villagers as well as the high level of unemployment in this region, temporary financial support policies (allocation of monthly subsidies for tourism activists), development of alternative jobs (development of border bazaars and local markets, etc.) should be considered by policy makers and planners.

Sanitary equipment is another key driver affecting the resilience of rural tourism activists in the study area. Asadi and Jabbari (2022) and Duro et al., (2022) have acknowledged the importance of sanitary equipment in increasing resilience. The severe weakness of health and treatment services in Owramanat region, including health centers and clinics, as well as the lack of administrative personnel and geographical isolation of the region, have led to the poor provision of health services and equipment in the study area. Equipping 12 prone tourism areas including Shamshir, Quriqaleh, hajij, sefidbarg, Ezgeleh, Dalani, etc. with health centers and clinics with expert administrative staff and also clinics with all medical services near the tourist areas are among practical suggestions to enhance this component in the study area.

The results showed that creating and development of the infrastructural facilities is another factor affecting the resilience of rural tourism which has been emphasized in a study by Byrak (2022). Due to the fact that, Owramanat region is a border and mountainous area and also due to its geographical isolation, this region is one of the most deprived areas in the west of the country in terms of having infrastructural indicators (communication, health, therapeutic, etc.). The weakness of tourism related infrastructures in this region is particularly evident in the field of communication axes. Two-way roads of low width and low quality, the mountainous nature of the region, and as a result, the high slope and roughness of the roads, have created many problems for tourists; in such a way that several car accidents occur in this region annually. Expansion of the communication axes, and creating healthcare infrastructure and also service and welfare infrastructures are the most important and practical suggestions to improve infrastructural facilities in the study area.

The results showed that, during the critical conditions of the outbreak of Covid-19, disease control is another key driver affecting the resilience of activists of rural tourism in Owramanat region. Asadi & Jabbari (2022) and Duro et al., (2022) have emphasized the importance of disease control in increasing the resilience of tourists. Disease control leads to a reduction in casualties and the number of infected people, as well as increasing the peace of mind of tourists. In the study area, due to the weakness of the health and treatment infrastructure as well as the weakness of the information system, the low trust of the local

community in the quality of vaccines, as well as the dominance of the traditional view towards vaccination, and the combating the disease, the control of the Covid-19 disease has faced several challenges. Despite this, the participation of local community in fighting with the disease and imposing mandatory quarantines have been effective in controlling the disease. In this regard, transparency about the quality of vaccines, gaining the trust of the general public, financial and livelihood support for tourism activists during quarantine are some of practical solutions for disease control and consequently increase the resilience of activists in rural tourism of Owramanat region.

In general, the surveys show that the identified key drivers are under the influence of the basic key component of "coherent and integrated tourism management". Coherent, integrated management of tourism based on respect for local social capital, is the missing link to increase the resilience in the study area. Because coherent, integrated management, while attracting financial support from the government and raising the level of financial capital of tourism activists, will allocate health equipment and infrastructural facilities to the local community, and as a result, disease control will be more pocible. It will also effectively involve the local community in all policies, processes and planning.

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Authors' contributions

The authors equally contributed to the preparation of this article**.**

Conflict of interest

The author declare no conflict of interest.

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Original Article

ارزیابی و تحلیل تاب‌آوری گردشگری روستایی و شناسایی پیشران‌های کلیدی موثر بر آن در مواجهه با پاندمی کووید-۱۹ در ایران

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چکیده مبسوط

۱. مقدمه

با شیوع بیماری همه‌گیر کووید-۱۹، فعالان عرصه گردشگری روستایی در منطقه اورامانات به تبعیت از روند ملی و بین‌المللی با چالش‌های متعددی مواجه شدند. با توجه به اینکه میزان تاب‌آوری روستاییان در برابر اثرات بیماری کووید-۱۹ نقش مهمی را در بقای فعالیت آن‌ها در زمان مواجهه با بیماری و وضعیت آینده فعالیت آن‌ها دارد، بررسی مقوله تاب‌آوری در میان روستاییان فعال در بخش گردشگری، از اهمیت زیادی برخوردار است. همچنین با توجه به اینکه تاب‌آوری، متأثر از عوامل مختلفی است و این عوامل متناسب با شرایط طبیعی، انسانی و حتی فضایی حاکم بر مناطق مختلف، متفاوت می‌باشند، سوال‌های اصلی پژوهش حاضر عبارت‌اند از: وضعیت تاب‌آوری در میان فعالان عرصه گردشگری روستایی منطقه اورامانات در مواجهه با بحران کووید- ۱۹ به چه صورتی است؟ و پیشران‌های کلیدی موثر بر تاب‌آوری فعالان عرصه گردشگری روستایی در منطقه اورامانات کدامند؟

۲. مبانی نظری تحقیق

بیماری همه‌گیر کووید-۱۹ اغلب به عنوان یک نوع بحران یا فاجعه در نظر گرفته می‌شود. به‌طور کلی بحران به رویدادهای داخلی اشاره دارد، در حالی که یک فاجعه به رویدادهای خارجی مربوط می‌شود. در هر صورت تاب‌آوری مقاصد گردشگری تابع محرک‌های و پیشران‌های متعددی است. بر این اساس برخورداری از عواملی مانند سرمایه مالی (درآمد کافی و پس انداز)، سرمایه طبیعی (دسترسی به منابع طبیعی، تجهیزات آبیاری مدرن، بهبود کیفیت خاک)، سرمایه اجتماعی (شبکه‌ها و موسسات اجتماعی)، سرمایه فیزیکی (خدمات اکوسیستمی و دارایی های ثابت)، و سرمایه انسانی (دانش و مهارت) در افزایش تاب‌آوری در مقابل مخاطرات موثر هستند. همچنین بر اساس چند دیدگاه دیگر استفاده از فناوری‌های دیجیتال، اقدامات دولت‌های محلی، منطقه‌ای یا ملی با جذب سرمایه‌گذاران از طریق معافیت‌های مالیاتی، تسهیل شرایط قانونی کاربری اراضی، رونق دادن به گردشگری داخلی، انعطاف‌پذیری فناوری، تعلق محلی، اعتماد مشتریان و کارکنان و سرمایه اجتماعی، از عوامل موثر بر تاب‌آوری مقاصد گردشگری هستند.

۳. روش‌شناسی تحقیق

پژوهش کمی و کاربردی حاضر، به لحاظ روش‌شناختی با رویکرد ترکیبی (ترکیب روش‌های تو صیفی ـــ تحلیلی و اکت شافی) انجام گرفته است که در آن برای جمع‌آوری داده‌ها از شیوه اسنادی (م طالب م قالات، گزارش ها، داده های مرکز آ مار ایران) و م یدانی (پر س شنامه رو ستاییان و کار شنا سان) ا ستفاده شده ا ست و در مجموع در دو بخش اصلی انجام شده است. بخش اول پژوهش به ارزیابی و سنجش شاخص‌های تاب‌آوری گردشگری روستایی در مواجهه با بیماری کووید-۱۹ مربوط می‌شود و بخش دوم به شناسایی پیشران‌های کلیدی موثر بر تاب‌آوری گردشگری روستایی در مواجهه با بیماری کووید-۱۹ تخصیص یافته است.

۴. یافته‌های تحقیق

یافته‌های پژوهش نشان داد تاب‌آوری گردشگری روستایی و مولفه های کلیدی آن در مواجهه با پاندمی کووید-۱۹ در منطقه اورامانات در وضعیت ضعیفی قرار دارد و این وضعیت می‌تواند آسیب‌ها و پیامدهای منفی متعددی را برای فعالان عرصه گردشگری

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روستایی به همراه داشته باشد. تاب‌آوری پایین روستاییان به معنای آسیب‌پذیری بیشتر و به نوعی ناپایداری صنعت گردشگری را به دنبال دارد.

با توجه به پتانسیل بالای منطقه در خصوص جذب گردشگر و شرایط درآمدی پایین فعالان عرصه گردشگری دز مان شیوع بیماری همه‌گیری و همچنین با توجه به اینکه تاب‌آوری گردشگری روستایی متناسب با شرایط جغرافیایی مناطق مختلف (انسانی، طبیعی، فضایی و زمانی)، تابع محرک‌ها و پیشران‌های متفاوتی است، از این‌رو ضروری است که پیشران‌های کلیدی موثر بر تاب‌آوری گردشگری روستایی در مواجهه با کووید-۱۹ در محدوده مورد مطالعه شناسایی شوند که در بخش بعدی به آن پرداخته شده است.

۵. بحث و نتیجه‌گیری

از دلایل وضعیت نامناسب تاب‌آوری گردشگری روستایی در محدوده مورد مطالعه می‌توان به کاهش شدید تعداد گردشگران، از بین رفتن بخش عمده‌ای از منبع اصلی درآمد، مختل شدن سایر مشاغل جایگزین، حمایت مالی ضعیف بخش دولتی، تخصیص ناچیز تجهیزات بهداشتی، اطلاع‌رسانی ضعیف در خصوص نحوه مقابله با بیماری، بنیه مالی ضعیف روستاییان و پس‌انداز کم، افزایش شتابان قیمت قیمت مواد غذایی و سایر اقلام مصرفی، دانش و آگاهی ضعیف روستاییان برای نحوه مناسب پیشگری و مقابله با بیماری، سوء مدیریت در اعمال قرنطینه، سطح اعتماد پایین به واکسیناسیون و واکسیناسیون عمومی دیرهنگام، کاهش سطح مشارکت و همکاری میان روستاییان به دلیل ترس از ابتلا به بیماری، اشاره کرد. با این وجود، بهترین راهکار برای ارتقای سطح تاب‌آوری فعالان عرصه گردشگری، شناسایی پیشران‌ها و محرک‌های آن در محدوده مطالعاتی است. در این خصوص نتایج پژوهش نشان داد حمایت مالی دولت، سرمایه مالی، تجهیزات بهداشتی، امکانات زیر ساختی و کنترل بیماری، کلیدی‌ترین پیشران‌های موثر بر تاب‌آوری هستند.

کلیدواژه‌ها: پاندمی کووید-۱۹، گردشگری روستایی، تاب‌آوری، پیشران‌های کلیدی.

نتایج تجزیه و تحلیل پیشران های کلیدی مؤثر بر تاب‌آوری گردشگری روستایی در منطقه اورامانات با استفاده از نرم‌افزار میک‌مک و روش تحلیل اثرات متقاطع، بیانگر درجه پرشدگی ۸۴ درصد است که نشانگر تأثیرگذاری عوامل بر یکدیگر بوده است. از مجموع ۲۴۳ رابطه ماتریسی قابل ارزیابی، ۵۳ رابطه، دارای اثرات متقاطع ۳ بوده است یعنی شاخص‌ها از هم تأثیرپذیرفته‌اند و بر همدیگر تأثیرگذار بوده‌اند. ۶۱ رابطه دارای اثرات متقاطع ۲ بوده، یعنی نقش تقویت کننده داشته‌اند. ۱۲۹ رابطه نیز دارای اثرات متقاطع ۱ بوده، یعنی بر روی دیگر شاخص ها تأثیر بیشتری گذاشته‌اند. ۴۶ رابطه نیز از مجموع اثرات متقاطع، نه از هم تأثیر پذیرفته‌اند و نه بر روی هم تأثیر گذاشته‌اند.

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دکتر اصغر نوروزی (دانشیار جغرافیا و برنامه‌ریزی روستایی دانشگاه پیام نور)

۹. ۳. انواع نقل قول‌ها (مستقیم و غیر مستقیم)، نقل به مضمون و مطالب به دست آمده از منابع و مآخذ، با حروف نازک و استفاده از نشانه‌گذاری‌های مرسوم، مشخص شود و نام صاحبان آثار، تاریخ و شماره صفحات منابع و مآخذ، بلافاصله در میان پرانتز نوشته شود.

۱۰. مقالات برگرفته از رساله و پایان‌نامه دانشجویان با نام استاد راهنما، مشاوران و دانشجو به صورت توأمان و با مسؤولیت استاد راهنما منتشر می‌شود.

۱۱ . چنانچه مخارج تحقیق یا تهیه مقاله توسط مؤسسه‌ای تأمین مالی شده باشد، باید در بخش تشکر و قدردانی مشخص گردد.

۱۲ . شیوه ارزیابی مقالات: مقالات ارسالی که شرایط پذیرش را احراز کنند، برای داوران خبره در آن موضوع ارسال می‌شوند. داوران محترم، جدای از ارزشیابی کیفی مقالات، راهبردهای سازنده‌ای پیشنهاد می‌کنند. پیشنهادهای داوران محترم به طور کامل، اما بدون نام و نشان داور، برای نویسنده مقاله ارسال خواهد شد.

۱۳ . مجله حق رد یا قبول و نیز ویراستاری مقالات را برای خود محفوظ می‌دارد و مقالات مسترد نمی‌گردد. اصل مقالات رد یا انصراف داده شده پس از سه ماه از مجموعه آرشیو مجله خارج خواهد شد و مجله پژوهش و برنامه‌ریزی روستایی هیچ مسئولیتی در این ارتباط نخواهد داشت.

۱۴ . مسؤولیت ارائه صحیح مطالب مقاله بر عهده‌ی نویسندگان مقاله است. از این‌رو، نسخه‌ای از مقاله آماده چاپ برای انجام آخرین تصحیحات احتمالی به نشانی الکترونیکی نویسنده ارسال خواهد شد. چنانچه ظرف مدت یک هفته پاسخی از سوی نویسندگان واصل نگردید به معنای موافقت آنها با اصلاحات انجام شده تلقی و نسبت به چاپ آن اقدام می‌شود.

۱۵. دریافت مقاله صرفاً از طریق سامانه مجله (http://jrrp.um.ac.ir) خواهد بود و مجله از پذیرش مقالات دستی یا پستی معذور خواهد بود.

۱۶. نویسندگان گرامی، مقالاتی که مطابق فرمت مجله تهیه نشده باشند به نویسنده بازگردانده شده و در فرآیند ارزیابی قرار نخواهد گرفت.

۱۷. فایل های ضروری برای ارسال از طریق سامانه عبارتند از:

الف) فایل مشخصات نویسندگان: در محیط word شامل اسامی و مشخصات نویسندگان به فارسی و انگلیسی.

ب) فایل اصلی مقاله بدون مشخصات: در محیط word شامل متن اصلی مقاله بدون اسامی و مشخصات نویسندگان.

ج) فایل چکیده مبسوط (مکمل) مقاله: شامل چکیده مبسوط فارسی در قالب یک فایل در محیط Word.

۱۸. شرایط جزئی تر و دقیق تر نیز در فایل راهنمای نگارش و ارسال مقاله توسط نویسندگان ارائه شده است.

۱۹. مقاله پس از ارزیابی علمی به زبان انگلیسی برگردانده شده و نویسنده(گان) موظف به ترجمه آن در مراکز ویراستاری معتبر خواهند بود و تا قبل از انجام ترجمه، امکان ارسال گواهی پذیرش مقدور نمی‌باشد. لذا پیشنهاد می‌شود فارسی زبانان مقاله خود را به زبان فارسی تهیه و ارسال نموده و پس از طی فرایند ارزیابی علمی و پذیرش نسبت به ترجمه آن اقدام شود.

آدرس پستی: مشهد- میدان آزادی- پردیس دانشگاه فردوسی مشهد- دانشکده ادبیات و علوم انسانی- دفتر مجلهٔ پژوهش و برنامه‌ریزی روستایی.

کد پستی: ۹۱۷۷۹۴۸۸۸۳ تلفن و نمابر: ۳۸۷۹۶۸۴۰-۰۵۱ پست الکترونیکی Rplanning@um.ac.ir

وب سایت: http://jrrp.um.ac.ir/

فرم اشتراک (یک ساله/ دوشماره) **مجلهٔ پژوهش و برنامه‌ریزی روستایی**

این جانب ..... شغل ..... با ارسال فیش بانکی به مبلغ ..... ریال به حساب جاری شماره ۴۲۵۲۹۹۶۳۸ بانک تجارت شعبه دانشگاه مشهد کد ۴۲۵۰ به نام عواید اختصاصی دانشکده ادبیات و علوم انسانی، متقاضی اشتراک فصلنامه از شماره .....هستم. چنانچه صاحبان مقالات منتشر شده متقاضی دریافت مجلّه و تیراژه‌ی آن از طریق پست پیشتاز باشند، باید هزینه‌ی آن را به شماره حساب مذکور واریز و اصل فیش پرداختی را به نشانی دفتر مجلّه ارسال کنند.

نشانی: ..... کدپستی: .....

شرایط پذیرش مقاله

برای سرعت بخشیدن به امر داوری و چاپ مقالات، از همهٔ پژوهشگرانی که مایل به چاپ مقالات علمی خود در این نشریه هستند، درخواست می‌شود به نکات زیر توجه کافی داشته باشند:

۱ . مقالهٔ ارسال شده نباید قبلاً در هیچ نشریهٔ داخلی یا خارجی چاپ شده باشد. هیئت تحریریه انتظار دارد نویسندگان محترم تا هنگامی‌که جواب پذیرش از نشریه نرسیده است، مقالهٔ خود را به مجلهٔ دیگری برای چاپ ارسال نفرمایند.

۲ . مقالات انگلیسی با قلم نازک Times New Roman11 با نرم افزار Word تهیه شود. مقالات، روی کاغذ A4 (با حاشیه از بالا ۳ و پایین ۲ و راست ۲ و چپ ۲ سانتی‌متر) تایپ شود. متن به صورت دو ستونی با رعایت فاصله ۱ سانتی‌متر بین دو ستون و فواصل بین خطوط به صورت single باشد. ۳ . حجم مقاله نباید ازحدود ۹۵۰۰ کلمه و یا حداکثر ۱۵ صفحهٔ چاپی به قطع نشریه بیشتر باشد (با در نظر گرفتن محل جداول، اشکال، خلاصه فارسی و فهرست منابع).

۴ . عنوان مقاله با در نظرگرفتن فواصل بین کلمات نباید از ۶۰ حرف تجاوز کند و با قلم Times New Roman14 سیاه تایپ شود.

۵ . نام نویسندهٔ مقاله با قلم سیاه Times New Roman10 عنوان علمی یا شغلی او با قلم Times New Roman10 در زیر عنوان مقاله ذکر شود. ضمناً آدرس الکترونیکی و شماره تلفن نویسندهٔ مسؤول در پاورقی آورده شود.

۶ . چکیدهٔ مقاله ساختاریافته با قلم نازک Times New Roman 11 به صورت تک ستونی باشد.

۷ . شکل‌ها و نمودارهای مقاله حتماً اصل و دارای کیفیت مطلوب باشد. فایل اصلی اشکال (تحت PDF، Word،Excel) و با دقت ۳۰۰ dpi ارائه شود. اندازهٔ قلم‌ها خصوصاً در مورد منحنی‌ها (legend) به گونه‌ای انتخاب شوند که پس از کوچک‌شدن مقیاس شکل برای چاپ نیز خوانا باشند.

۸ . ساختار مقاله شامل عناصر زیر است:

۸ ۱ صفحهٔ عنوان: در صفحهٔ شناسنامه باید عنوان مقاله، نام و نام خانوادگی نویسنده (نویسندگان)، درجهٔ علمی، نشانی دقیق (کد پستی، تلفن، دورنگار و پست الکترونیکی)، محل انجام پژوهش، مسؤول مقاله و تاریخ ارسال) درج شود. عهده‌دار مکاتبات باید با علامت ستاره مشخص شود.

۸ ۲ چکیده: شامل چکیده‌های فارسی ساختار یافته (شامل هدف؛ روش؛ یافته‌ها؛ محدودیت‌ها؛ راهکارهای عملی؛ اصالت و ارزش و واژگان کلیدی (۳ تا ۶ کلمه)) است. تا حد امکان چکیدهٔ مقاله از ۳۰۰ کلمه تجاوز نکند . علاوه بر چکیده ساختار یافته، لازم است چکیدهٔ مبسوط فارسی بین ۷۵۰ تا ۱۰۰۰ کلمه نیز حاوی مقدمه، مبانی نظری، روش، نتایج و بحث، نتیجه‌گیری و کلیدواژه‌های مقاله تهیه شود، به طوری که حاوی اطلاعاتی از کل مقاله باشد و بتوان جداگانه آن را چاپ کرد. با توجه به این که مقاله بعدا به صورت کامل به انگلیسی برگردانده خواهد شد، نیازی به ترجمه چکیده مبسوط به انگلیسی نیست.

۸ ۳ مقدمه: شامل ۱- طرح مسئله؛ ۲- اهمیت و ضرورت؛ ۳- اهداف و سوالات اصلی تحقیق.

۸ ۴ ادبیات نظری تحقیق: شامل ۱- تعاریف و مفاهیم؛ ۲- دیدگاه‌ها و مبانی نظری؛ ۳- پیشینه نظری تحقیق و ... .

۸ ۵ روش‌شناسی تحقیق: در برگیرندهٔ ۱- محدوده و قلمرو پژوهش؛ ۲- روش تحقیق و مراحل آن (روش تحقیق، جامعهٔ آماری، روش نمونه‌گیری، حجم نمونه و روش تعیین آن، ابزار گردآوری داده‌ها و اعتبارسنجی آن‌ها)؛ ۳- سؤال‌ها و فرضیه‌ها؛ ۴- معرفی متغیرها و شاخص‌ها؛ ۵- کاربرد روش‌ها و فنون.

۸ ۶ یافته‌های تحقیق: ارائهٔ نتایج دقیق یافته‌های مهم با رعایت اصول علمی و با استفاده از جداول و نمودارهای لازم.

۸ ۷ بحث و نتیجه‌گیری: شامل آثار و اهمیت یافته‌های پژوهش و یافته‌های پژوهش‌های مشابه دیگر با تأکید بر مغایرت‌ها و علل آن، توضیح قابلیت تعمیم‌پذیری و کاربرد علمی یافته‌ها و ارائهٔ رهنمودهای لازم برای ادامهٔ پژوهش در ارتباط با موضوع، نتیجه‌گیری و توصیه‌ها و پیشنهادهای احتمالی.

۸ ۸ تشکر و قدردانی: قبل از منابع مورد استفاده ارائه شود و از ذکر عناوین دکتر و مهندس خودداری شود.

۹. نحوهٔ ارجاعات: منابع و مآخذ باید به صورت درون‌متنی و همچنین در پایان مقاله ذکر شود.

۹ ۱ ارجاعات در متن مقاله باید به شیوهٔ داخل پرانتز (APA) نسخه ۶ باشد؛ به گونه‌ای که ابتدا نام مؤلف یا مؤلفان، سال انتشار و صفحه ذکر شود. شایان ذکر است که ارجاع به کارهای چاپ شده فقط به زبان فارسی بوده و در اسامی لاتین معادل آن در زیر نویس همان صفحه ارائه شود. به عنوان نمونه: (شکوئی، ۱۳۸۷، ص. ۵۰) یا (وودز، ۲۰۰۵، ص. ۲۷).

۹ ۲ در پایان مقاله، منابع مورد استفاده در متن مقاله، به ترتیب الفبایِ نام خانوادگی نویسنده بر اساس الگوی فهرست نویسی APA تنظیم گردد.

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بسم الله الرحمن الرحيم

دانشکده ادبیات و علوم انسانی

مجلّهٔ پژوهش و برنامه‌ریزی روستایی

سال یازدهم، شمارهٔ ٤، پاییز ١٤٠١، شمارهٔ پیاپی ۳۹

صاحب امتیاز: دانشگاه فردوسی مشهد

مدیر مسئول: دکتر حمید شایان

سردبیر: دکتر علی‌اکبر عنابستانی

دستیار سردبیر: مهدی جوانشیری — **مدیر اجرایی:** زهرا بنی‌اسد

ویراستار انگلیسی: مرکز ویراستاری ادبیات — **حروف‌نگاری و صفحه‌آرایی :** الهه تجویدی

شمارگان: ۵۰ نسخه

نشانی: مشهد، دانشگاه فردوسی مشهد، دانشکدهٔ ادبیّات و علوم انسانی دکتر علی شریعتی، کد پستی ۹۱۷۷۹۴۸۸۸۳ ، نمابر: ۳۸۷۹۶۸۴۰ (۰۵۱)

بها: داخل کشور: ۲۰۰۰۰۰ ریال (تک‌شماره) خارج کشور: ۲۵ دلار (آمریکا– سالانه)، ۲۰ دلار (سایر کشورها– سالانه)

درگاه الکترونیکی: http://jrrp.um.ac.ir/ E-mail:Rplanning@um.ac.ir

*** این مجله در جلسهٔ کمیسیون بررسی نشریات علمی کشور مورخ ۱۳۹۲/۲/۲۵ رتبهٔ علمی–پژوهشی دریافت و طی نامهٔ شمارهٔ ۳/۱۸/۳۵۷۲۸ در تاریخ ۱۳۹۲/۳/۱۳ ابلاغ گردیده است.**

این مجلّه در پایگاه های زیر نمایه می‌شود:

- **پایگاه استنادی علوم جهان اسلام (ISC)**
- **پایگاه اطلاعات علمی جهاد دانشگاهی (SID)**
- **پایگاه بانک اطلاعات نشریات کشور (Magiran)**
- **فهرست دسترسی آزاد مجلات (Doaj)**
- **Index Copernicus- RICeST- ISI-Noormags- Googlescholar- Civilica- Oaji**

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مجله پژوهش و برنامه ریزی روستایی

سال یازدهم، شماره ۴، پاییز ۱۴۰۱، شماره پیاپی ۳۹

شاپا: ۲۷۸۳-۲۷۹۱