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# Scientific Advisers Journal

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**Original Article**

# Identification and Assessing Economic and Social Services of the Natural Ecosystems to Rural Communities

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**Abstract**

**Purpose-** Protected areas (PA) are effectively managed places dedicated to the long-term conservation of biodiversity and natural values with associated ecosystem services and cultural values. Forest and rengland ecosystems of national park provide a wide range of environmental, economic, and social services to human communities, with a variety of stakeholders. One of the beneficiaries of forest ecosystem services is the rural communities on the edge of forests. The proper and appropriate use of natural resources plays an important role in empowering local communities and affects their socio-economic status.

**Design/methodology/approach-** In this research, forest and rangeland ecosystem of the Kiasar National Park (KNP) was selected in Iran for assessing the social and economic natural ecosystems services to rural communities. For achieving the research goal, the Delphi questionnaire inclouding a set of indicators for natural ecosystems assessing extracted from various sources is used to identify the indicators of economic, and social services, Entropy and TOPSIS techniques to calculate their weight and prioritize, respectively. Also, GIS has been used to map the economic and social services of the natural ecosystems of KNP. In this study, 36 specialists in the field of national parks answered the Delphi questionnaire.

**Findings-** In this research exteracted 38 indicators including 20 social indicators and 18 economic indicators that among them, 7 economic indicators and 11 social indicators accepted and customized to assess the social and economical services of natural ecosystems. Then preparation capability map (Potential map) in four classes based on their weight and priority overplayed. The results indicated that recreational value, and interests and contributions from to rural communities protect and develop the park indicators had the highest priority in assessing the economic and social services of natural ecosystems. The KNP capability map showed that 1810.50 and 34.30 ha of the park is located in the very suitable class from an economic and social perspectives for utilization rural communities of services natural ecosystems park respectively.

**Keywords**: Stakeholders, Socio-economic Ecosystem Services, Multi-Criteria Decision Making, Delphi Method, Kiasar National Park.

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## 1. Introduction

Forest and rangeland ecosystems, as a renewable resource, are considered one of the main components of sustainable development in every country. By producing goods and services directly and indirectly, they play an important role in the economic and social development of regions, ensuring the well-being of rural communities of forest edage (Gu, 2023). In recent decades, non-timber forest and rangeland products have been recognized as an important component in reducing poverty in rural communities. Therefore, there is a need to deeply understand the role and importance of forest and rangeland services in the rural economy (Jagger et al., 2022). Forest and rangeland ecosystems and their non-timber products play a role in providing the livelihood needs of rural people, such as providing energy, food, medicine, raw materials for construction, handicrafts and the production of basic agricultural tools, producing fodder, medicinal plants, collecting firewood, medicinal plants, collecting and selling fruits, mushrooms, and mountain vegetables (De Groot et al., 2010; Chinnasamy et al., 2016). The diversification of these products can play an important role in rural development and the livelihoods of forest-fringe villagers. Because cash income from forest resource exploitation is often low-cost, such activities account for a larger share of household income in rural areas (Raihan, 2023). However, recent studies on the situation of rural households on the edge of forests, rangelands, and national parks show that their income is rarely considered in the mix of conventional rural activities, because the buying and selling of forest and rangeland products is done at the local level, and the cash income from them has been neglected and has been referred to as seemingly low-value and unimportant products (Bakkegaard et al., 2017). For this reason, there is a significant gap in our understanding of the true economic contribution of forests and rangelands, national parks, rural economic performance, and the extent of poverty and inequality in rural areas (Fisher, 2004). Therefore, there is a need to understand the ecosystem services of forests and rangelands of national parks and their role and importance in the rural economy (Li et al., 2019). Sustainable rural development is a multidimensional process that focuses on improving and enhancing the quality of life of vulnerable segments of the rural community. There are various economic strategies to improve the quality of life of villagers, one of which is the strategy of protecting and managing natural resources, which not only provides a platform for job creation, but also serves as a source of income for villagers.

National parks are one of the natural reserves which contain a variety of natural ecosystems such as forest, rangeland, etc. This natural ecosystem provided alot of ecosystem services (ES) for human communities. The importance and role of the natural ecosystems of national parks (NENP) is recognized as the best-managed areas nationally and globally in all countries (Järv et al., 2021). But today, due to the special economic and social structure of some countries, the destruction of natural ecosystems has been provided more than before (Rodríguez-Rodríguez et al., 2021). Therefore, in recent years, for protecting and supporting natural ecosystems, much attention has been paid to natural ecosystem. With making these areas, processing of reducing the level of forests and pastures has decreased and appropriate policies have been adopted to protect the country's natural resources and communities' attitudes toward national parks and protected areas have changed (Roux et al., 2020).

## 2. Research Theoretical Literature

Iran's national parks have many ecological, economic, social, and political values. One of the most important and effective factors that can play a role in their sustainability is monitoring, assessing and valuation of national parks ecosystem services using correct and accurate criteria. Studies have been conducted on the role of forest and rangeland ecosystem services in the economy of rural communities in Iran, some of which are mentioned below:

Malekmirzaei et al. (2017), Abdollahpour et al. (2020), and Mahmoudi (2022) studied the role of forest and rangeland by-products in the livelihoods of local communities in Zagros. The results showed that there is a positive and significant relationship between the exploitation of by products and employment creation, income generation, poverty reduction, and prevention of migration of rural communities.

In studies survaed about role of natural ecosystem services in the economy of rural communities in

abroad Iran; Angelsen et al. (2014), examined environmental income and sustainable livelihoods in 24 developing countries. They concluded in their study that 28 percent of total household income is provided by non-timber forest products. Ai et al. (2019) and Aguilar and Wen (2021), examined the socio-economic and environmental impacts of forest services in China and Myanmar, respectively. The results showed that more than 70 percent of the countries' population depends on forests to meet their daily needs. Also, 43 percent of total household income is generated through the sale of forest products. Järv et al. (2021), examined different socio-economic practices in the management of protected areas and the communities and stakeholders of five Estonian national parks. The results showed that the provision of natural ecosystem services is effective in improving local socio-economic conditions and protecting ecosystems. Kalogiannidis et al. (2022), estimated the contribution of the forestry bioeconomy to the socio-economic development of the Greek country using a questionnaire and survey of 312 experts in the f orestry and finance sectors of Greece. The results of the study showed that forests contribute to the economic development of a country through their direct and indirect impact on human livelihoods.

Also, studies have been conducted in the field of mapping the economic and social services of national natural park ecosystems to rural communities using geographic information systems (GIS), some of which are mentione: Sherrouse et al. (2011) used GIS for mapping, assessing the social values of ecosystem services (ES). Surveying results showed that social mapping ES provided a means to say social and economic values. Also, they expressed that social ecosystem services are the effective ES in the assessments of the natural ecosystems. Nemec and Raudsepp-Hearne (2013) used GIS for assessing and mapping ES. The result showed that GIS is a powerful tool for assessing and mapping ecosystem services within a landscape. Rocchinia et al. (2017), used GIS for measureing number of ecological tasks ecosystem. In this study, the most straightforward measures of spatial complexity of ecological patterns and processes available summarized in GIS. The result showed that among free and open-source options tools of assement, Gis provide chances to made new algorithms. Codato et al. (2017) evaluated ES Mapping (High-Biodiversity) using GIS in Italy and Peru regions. The results indicated GIS is a good software for assessing ecosystem services and producting map value. Also, landscape ES social mapping used asseing cultural and bioiversity parks in Italy and watershed Peru. Masoudi et al. (2021) evaluated the land-use schematization using GIS-Based MCMO[1] in the Qaleh Ganj County of Iran. The findings indicated that 30.80% of the rangeland zone and 22.9% the ecotourism zone had the highest suitability potential. GIS-based MCMO maide spontaneous and flexible method of assessing ecosystem services. Lacayoa et al. (2021) used GIS, INVEST and Ecosystem Services Web Services (ESWS) for assessing ecosystem service. The result showed that Ecosystem Services Web Services result can quickly add GIS software and overcome the key challenge of repeatability and comparative analysis. This approach also creates a new level of interoperability through data source. Siltanen et al., (2023), the economic impacts of the protected areas of the three national parks (NPs) Snæfellsjökull, Vatnajökull and Þingvellir in Iceland were evaluated. The results showed that based on data from 2087 visitors in 2019, they spent an average of $113 per day in the parks, generating an estimated total economic impact of between $30 and $99 million with 347 to 1,140 jobs created across the study sites. Krzanowski et al., (2024) examined and discussed the impact of land consolidation in rural areas using GIS (Geographic Information System) tools on the conservation and sustainable development of national parks, forests, and rural areas. The results were analyzed using a combination of maps, tables, and graphs. The results showed that service delivery decreased by 40 percent due to the implemented project. Also, Chen and Wu (2025), surveyed and assessed the supply and demand of rural recreational services in national parks in Zhejiang, China. In this study, the combined method of spatial analysis and model as MaxEnt tool played a positive role in modeling the areas that provide cultural ecosystem. Based on the research, the study area is divided into different zones to propose spatial planning. This study divided Changhong Township into four types of zones: developed recreational service zone,

1 Multiple Criteria and Multiple Objective

potential recreational service zone, recreational service requirement zone and marginal recreational service zone. The results showed that the MaxEnt model was strong in mapping the rural recreation services (RRS) supply.

A review of studies conducted on the evaluation of social and economic services of natural ecosystems of national parks to rural communities shows that, given that forests and renglands play a key role in poverty reduction strategies and economic development of rural communities, few studies has been conducted on identifying ecosystem services that affect the economy of rural communities and mapping them. Therefore, the purpose of this research is to identify and evaluate the economic, and social services of forest and rangeland ecosystems in national parks using the indicators IUCN (IUCN, 1994) and CIFOR[1] (CIFOR, 1999), SRM[2] (Mitchell, 2010) and other indicators extracted from scientific articles for rural communities, to map these services, and to map the capability map (Potential map) for providing these services to rural communities using the Geographic Information System (GIS).

## 3. Research Methodology

### *3.1 Geographical Scope of the Research*

Kiasar national park (KNP) is located amonge 53°36'08" and 53°39'54" (E) longitude, and 36°10'32" and 34°9'08" (N) latitude in northern Iran (Figure 1). The KNP area is 9528/97 ha and it have 400 plant species, 37 mammals, 113 birds, 7 amphibians, 7 fish species and 6 reptilesin KNP. Also, 10 Panthera pardus, 40 Ursus thibetanus, 47 Capreolus capreolus, 47 Cervus elaphus, 150 Phasianus colchicus, 35 Ovis Orientalis vignei and 12 endemics and endangered species in the park from 2005 to 2015 (Report on the detailed plan of Kiasar national park, 2012).

The villages of Alikola, Langar, Aghouzgale, Baladeh, Tilhebban, Tilak, Svasareh and Ghaleh are located in near of the Kiasar National Park. According to the surveys carried out and the statistics obtained from the general population and housing censuses, the total population living in the population centers of the region was about to 1222 people in the form of 345 households (Report on the detailed plan of Kiasar national park, 2012).

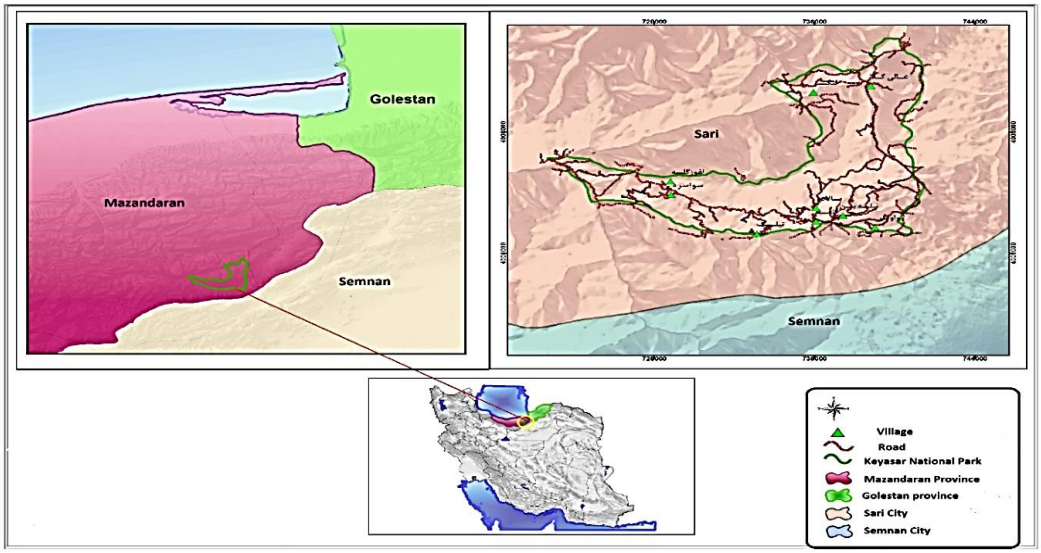



**Figure 1. Area location**

A lot of area of KNP is natural forest ecosystems (6672.62 he; 70.02%) and mountainous or summer rangelands (2064.80 he; 21.66%). In the KNP forest ecosystem, there are *Carpinus betulus*, *Fagus orintalis*, *Quercus persica*, *Carpinusbetulus × schuschaensis. H J. P. Winkl* forest types trees (3092.59 ha). Also, 375 plant species, 22 varieties and 28 subspecies belonging

1 Sustainable Rangeland Management

2 Criteria and Indicators for Sustainable Forest Management

to 321 genera 73 class were identified in the rangeland ecosystem of KNP. *Veronica*, *Ranunculus*, each *Stachys*, *Salvia,* and *Astragalus* are the most important plant species in the park in terms of species richness.

The biomass of plants of the rangeland ecosystem of KNP showed that hemicryptophytes with 136 species, therophytes with 113 species, cryptophytes with 60 species, phanerophytes with 49 Species, amphibians with 12 and epiphytes with one species have the highest abundance respectively (Report on the detailed plan of Kiasar national park, 2012).

In general, the rangeland ecosystem of KNP consists of two types: 1- Forested rangeland 2- Non-Forested rangeland;

- ***Forested rangeland includes the following species:*** *Festuca, Ovina, Bromus tementellus, Onobrychis cornuta, Astragalus* sp*, Dactylis glomerata, Carpinus orientalis, Quercus macranthera, Juniperus excelsa, Juniperus Sabina.*
- ***Non- Forested rangeland ecosystem includes the following species:*** *Festuca ovina- Onobrychis cornuta, Poa sp- Lolium sp – Forbs sp, Festuca ovina- Bromus tomentellus.*

### *3.2. Methodology*

In this study, for determineing the importance of assessing indicators of economic, and social services of natural ecosystems of the national park (NEKNP) used Delphi group decision-making method. First, a set of indicators used to assess the economic, and social NEKNP services for rural communities included the IUCN indicators (IUCN, 1994) and CIFOR[1] (CIFOR, 1999), SRM[2] (Mitchell, 2010), and other indicators extracted from scientific articles have been survyed in the form of Delphi questionnaire. To score those, questionnaires were distributed among the decision-making group consisting of 36 experts in environment, tourism and ecotourism, natural resources and faculty members in four periods (steps). To comment on the importance of indicators in the assessing process. Scoring was according to the Likert scale (1: insignificance until 5: very important) (Hosseini et al, 2021). The indicator average and Standard Deviation (SD) in each step was calculated to reach a consensus among Delphi members (Powell, 2003; Hosseini et al., 2021). In the research, indicators were accepted that scored an average of three or higher than it (Choi and Sirakaya 2006). Also, validity of the questionnaire calculated based on the opinion of experts and for assesseing the internal consistency of the questionnaire questions, the questionnaire distributed among 18 experts in the first stage. Also, reliability questionnaire questions measured to Cronbach's alpha coefficient the (Momeni et al. 2006). The reliability of the questionnaire was confirmed with Cronbach's alpha coefficient ($\alpha = 0.97$).

Then, weight and prioritization of accepted indicators determineted with entropy and TOPSIS respectively models (Wang and Chang, 2007; Hwang and Yoon, 1981). In this study, for creating a capability map (Potential map) of economic, and social NEKNP services; first, the information layer of each of the indicators created, ranked and overlaid according to their weight and priority in Arc GIS 9.3. Finally, the Kiasar National Park capability map (Potential map) made, and classified into four classes, including very suitable, suitable, very unsuitable and unsuitable classes. It should also be noted that in this study, the value of some services such as recreational value, values of $O^2$ supply, $CO_2$ absorption, carbon sequestration, value wildlife, the role of the rangeland and forest ecosystem in creating employment and etc., was calculated using valuation methods and then a map of these services was prepared. In this research, Excel and Spss16 software used for questionnaire data analysis and Arc GIS 9.3 for creating layers.

## 4. Research Findings

In this study, 22 indicators including 7 economic and 15 social indicators accepted for assessing Kiasar National Park services for rural communities. Then they prioritized based on their final weight (Table 1). The results of Entropy and TOPSIS techniques are presented in Table 1.

1 Sustainable Rangeland Management

2 Criteria and Indicators for Sustainable Forest Management

**Table 1. Weight and priority indicators of economic and social services assessing of NEKNP**

| Criterion | Indicator | Entropy Weight | TOPSIS | |
|---|---|---|---|---|
| | | | Relative proximity | Priority |
| Economic | Recreational value | 0.04998 | 0.735436 | 1 |
| | Values of $O_2$ supply, $CO_2$ absorption, carbon sequestration | 0.049990 | 0.735184 | 2 |
| | Aesthetic value (enjoyment and enjoyment of landscapes) | 0.049978 | 0.725477 | 3 |
| | Tourist productivity capacity | 0.049996 | 0.704693 | 4 |
| | Value wildlife | 0.050054 | 0.662796 | 5 |
| | Income obtained from forests and rangeland for livelihoods of local communities | 0.050000 | 0.583045 | 6 |
| | Reducing the cost of regenerative activities (ecosystem self-regulation) | 0.050015 | 0.562023 | 7 |
| Social | Interests and contributions from rural communities to protect and develop the park | 0.049982 | 0.749904 | 1 |
| | Improving the livelihood of dependent communities | 0.049987 | 0.733644 | 2 |
| | Existence of traditional buildings with historical value | 0.050002 | 0.722421 | 3 |
| | Geotouristic and ancient areas | 0.049997 | 0.716258 | 4 |
| | The contribution of the park in public culture (indigenous knowledge and local beliefs) | 0.049980 | 0.714557 | |
| | The number of local communities dependent on rangeland and forests | 0.049984 | 0.679006 | 5 |
| | Historical roads or bridges | 0.050022 | 0.675682 | 6 |
| | Historical tombs | 0.050015 | 0.675368 | 7 |
| | Contribute to food security in vilages | 0.050010 | 0.674188 | 8 |
| | The role of parks in promoting the social structures of local communities and customary systems | 0.050013 | 0.596919 | 9 |
| | Existence of old caves | 0.050011 | 0.596540 | 10 |
| | The role of the rangeland sector in creating employment | 0.049985 | 0.590541 | 11 |
| | The role of the forest sector in creating employment | 0.049999 | 0.589608 | 12 |

The results obtained of TOPSIS technique in Table (1) showed that recreational value from an economic perspective and the interests and contributions from rural communities to protect and develop the park indicator from a social perspective with the highest relative proximity (final weight) were in the first priority, respectively (Table 1).

**- Economic and social indicators of natural ecosystems of KNP**

In this research, the information layer of economic and social indicators of NEKNP created in GIS software. Output layers showed in figures 2 (A, B) and 3 (A, B, C).

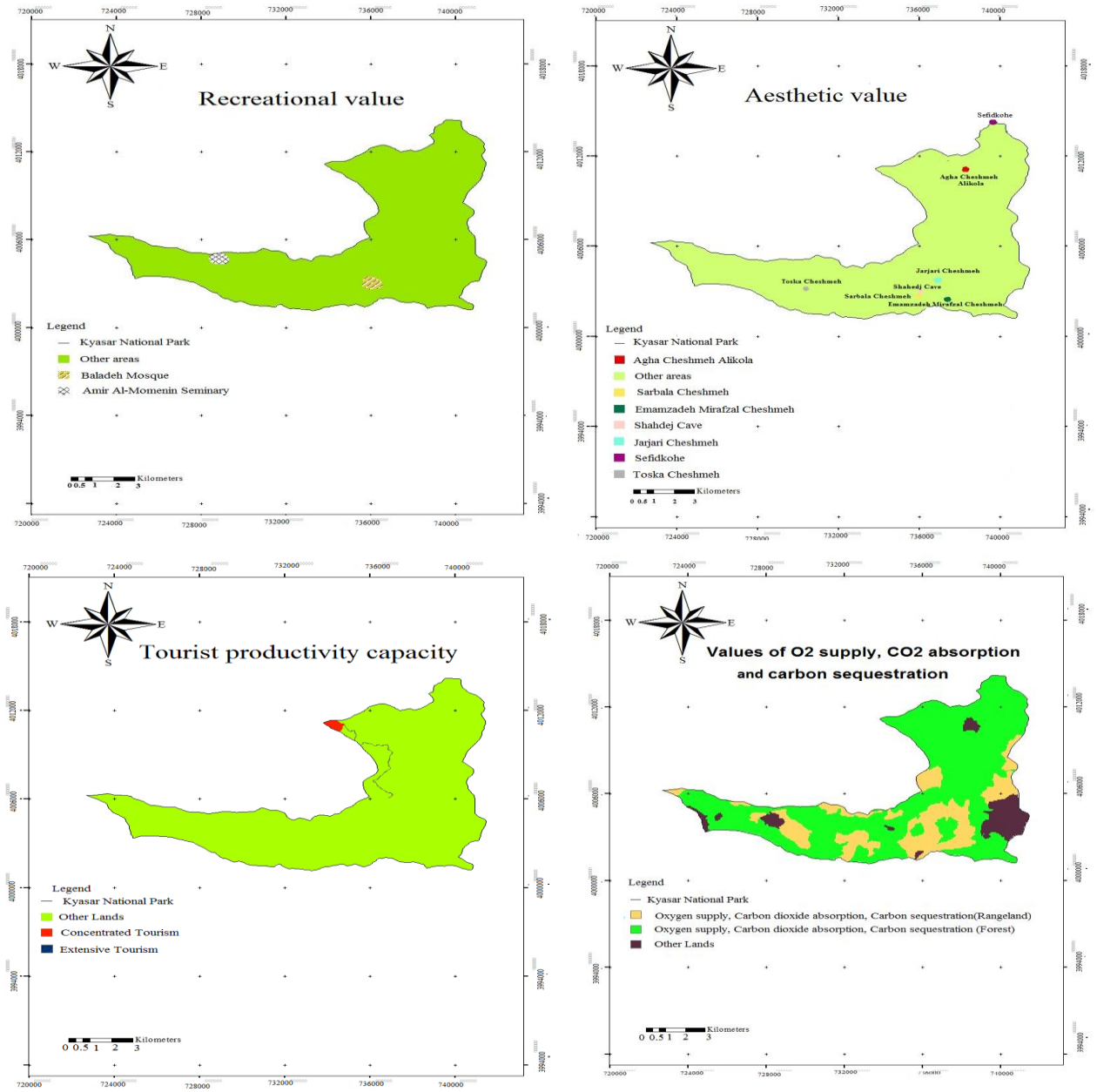



**Figure 2 (A). Indicators of economic services of NEKNP assessing**

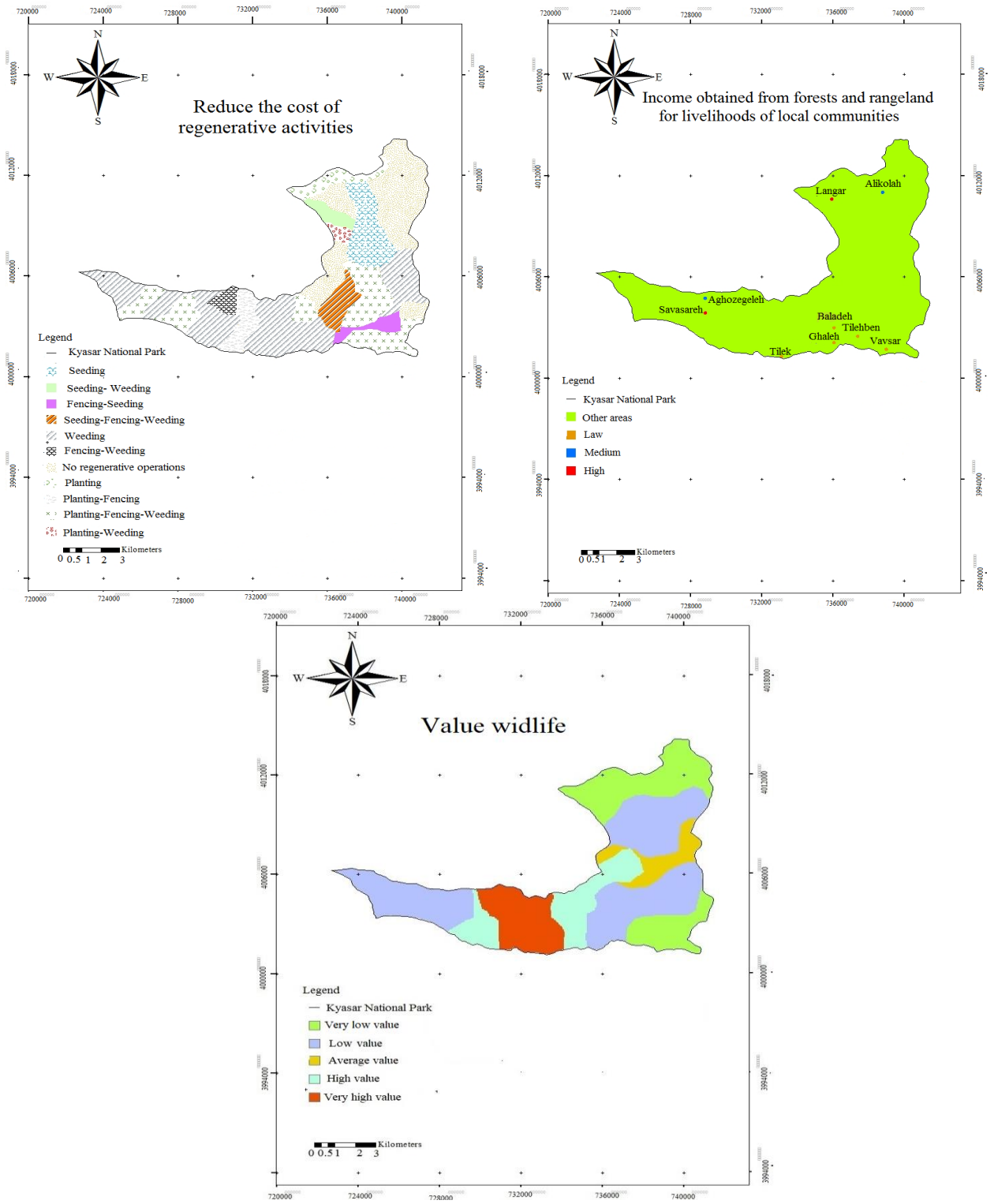



**Figure 2 (B). Assessing indicators of economic services of NEKNP to rural communities**

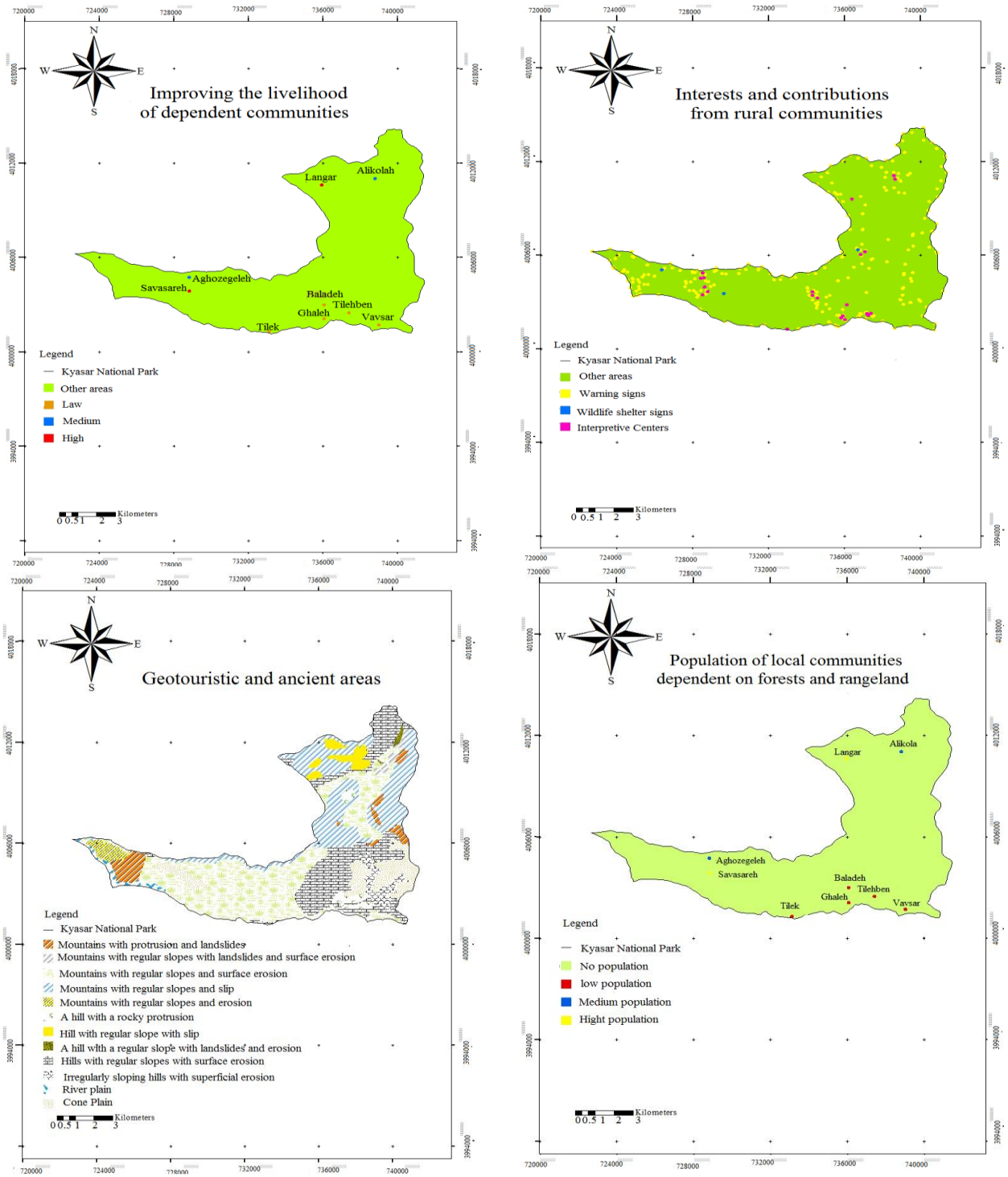



**Figure 3 (A). Assessing indicators of social services NEKNP to rural communities**

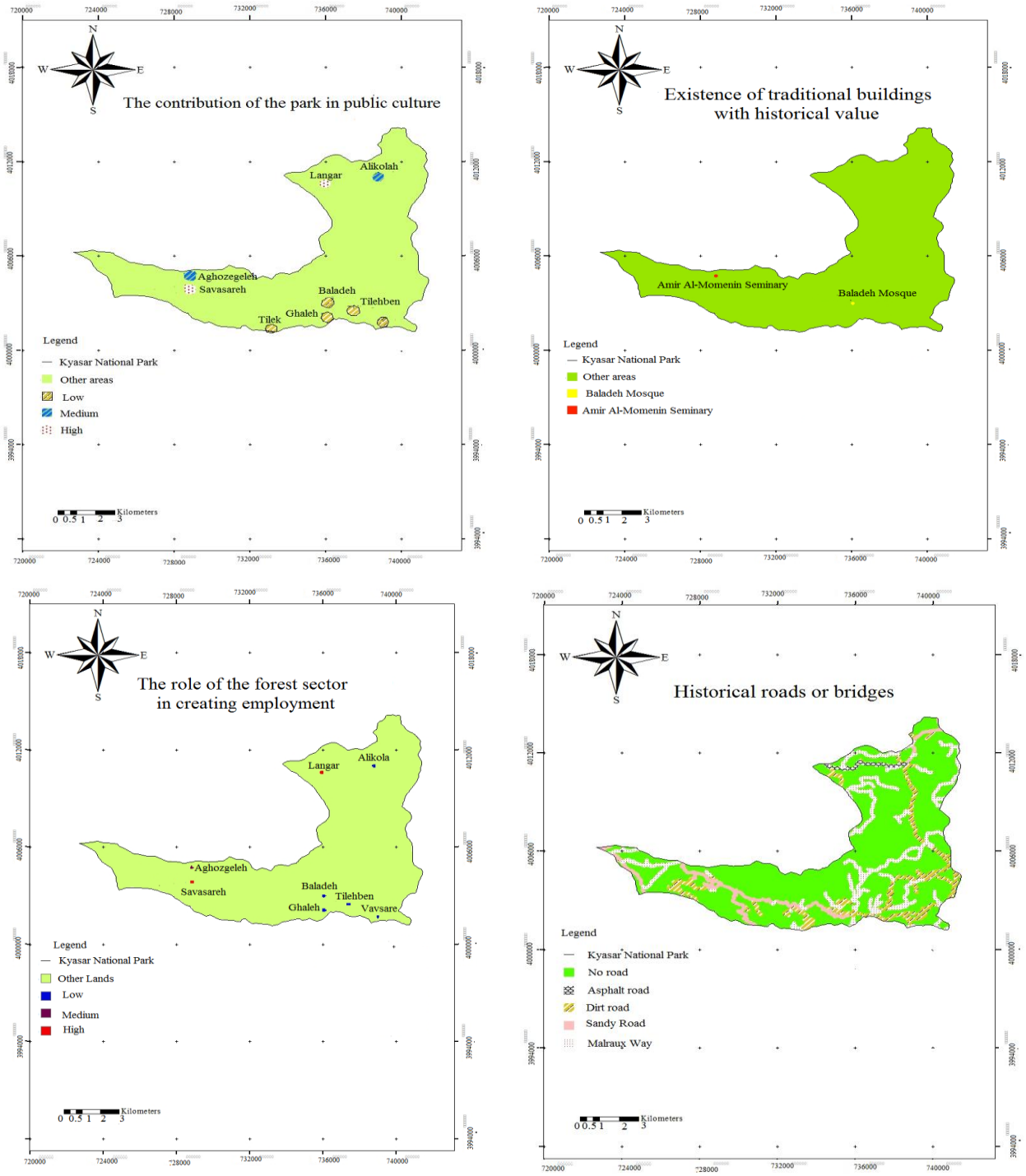



**Figure 3 (B). Assessing indicators of social services NEKNP to rural communities**

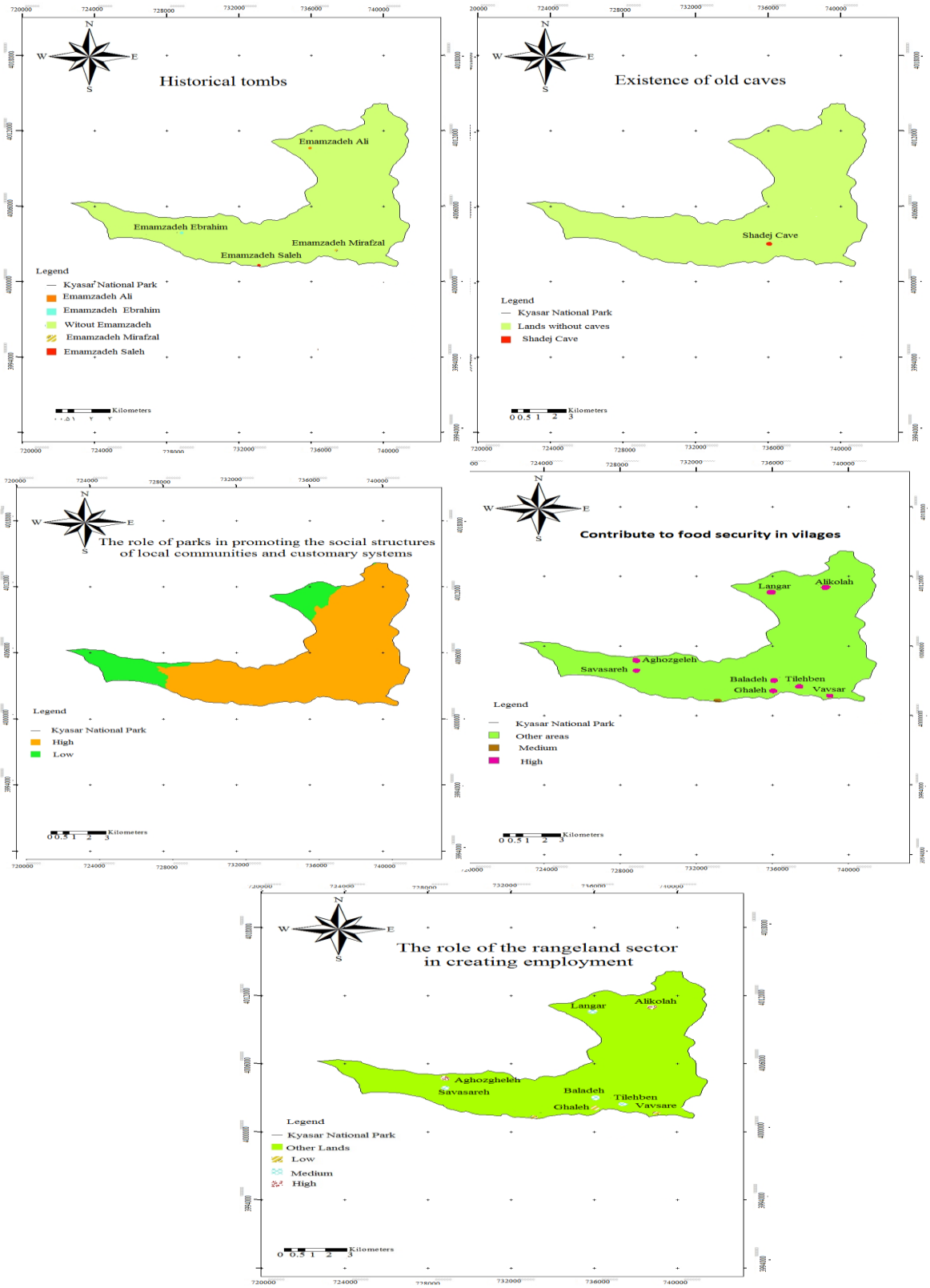



**Figure 3 (C). Assessing indicators of social services NEKNP to rural communities**

**- Capability map (Potential map) of economic and social services of NEKNP**

Capability map (Potential map) of economic and social services of NEKNP indicated at the 4 and 5 figures. The capability map was prepared in four categories: unsuitable, very unsuitable, very suitable and suitable for evaluation. The capability map indicated the frequency distribution of economic and social services of NEKNP.

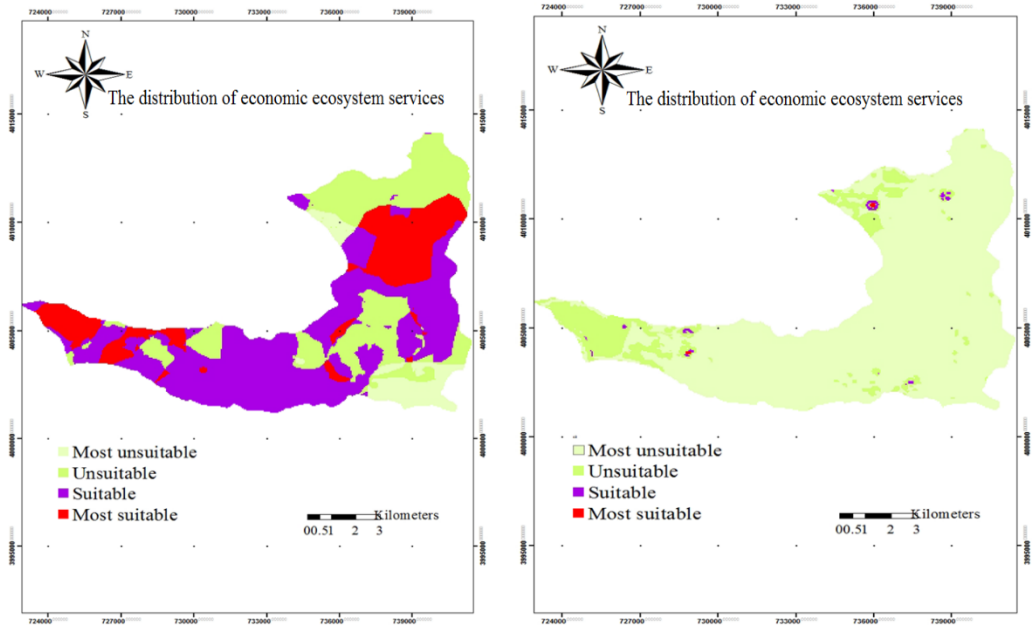
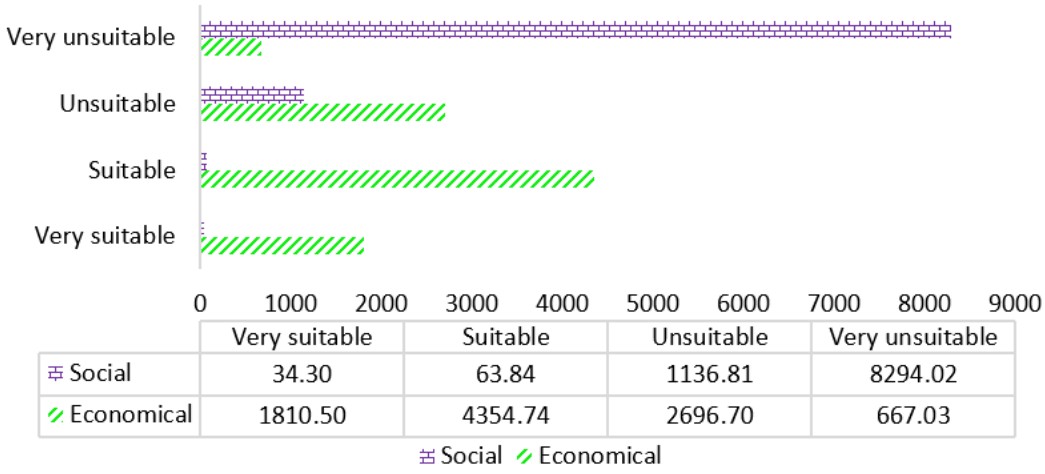



**Figure 4. Assessing of social and economic ecosystem services of KNP (Capability map KNP) for rural communities**

The results of assessing capability map KNP showed that from an economic perspective, 1810.50 ha park is located in the very suitable class and 34.30 ha park is located in very suitable class from a social perspective for utilization rural communities from social services of the park.




| | Very suitable | Suitable | Unsuitable | Very unsuitable |
|---|---|---|---|---|
| Social | 34.30 | 63.84 | 1136.81 | 8294.02 |
| Economical | 1810.50 | 4354.74 | 2696.70 | 667.03 |

**Figure 5. The distribution of economic ecosystem services in the KNP for rural communities**

## 5. Discussion and Conclusion

Today, agriculture in rural areas faces significant challenges, including production costs, food security, climate change, volatility in agricultural commodity markets, and other environmental issues and demands. Therefore, there is an urgent need to adopt innovative approaches in the agricultural and forestry sectors in order to increase the production of raw materials for food, energy, and other industrial purposes (Hosseini et al., 2021; Kalogiannidis et al., 2022).

The rural system should be considered as the most important basis for rural development to improve the situation of agriculture, which is not hidden from anyone; but from another perspective, there are also complementary solutions that can be very effective in their own right. When we talk about urban depopulation, especially in metropolitan areas, the most important solution to this problem is prevention, meaning we must be able to prevent rural migration to cities and small-town residents from migrating to large cities and metropolitan areas, and all planners know that this goal is not easily achievable. Now, rural tourism areas that are close to popular attractions such as national parks and protected areas have good potential for rural development. Forest and rangeland ecosystems of national parks and protected areas have a variety of services in this regard for the development of rural communities that need to be identified.

The Delphi method is one of the proper methods to identify indicators and criteria for assessing natural ecosystems services (Hai et al., 2009; Ludwig and Star, 2005). The results of the study identified and classified 22 indicators from the socio-economic perspective as effective indicators on the assessing of economic and social services of national park ecosystems for rural communities by specialists (Table 1). According to a specialist's viewpoint, national parks are protected areas where any harvesting or interference is prohibited. The result indicated that only seven indicators economic are suitable for assessing the natural ecosystems of national parks (NEKNP) (Table 1). This result showed that, today's societies do not see NEKNP such as forest and rangeland for harvesting wood and other production. This result indicates that from an economic perspective, the national park has an important role in preserving natural ecosystems for today's communities. In this regard, Hadadnia and Danehkar (2012) in their studies, out of 12 criteria that they identified for the assessment of protected areas, only 6 main criteria were selected for the choice of protected areas.

Among the intangible and valuable services of the forest and rangeland ecosystems of national parks is the provision of a suitable place for tourism, which is defined as the spiritual, aesthetic and recreational exploitation of nature (Sgroi, 2020). Tourism and visiting protected areas such as national parks directly and indirectly contribute to income and employment, and the expansion of this industry provides indicators of sustainable development in rural areas and is considered from various perspectives. Economically, tourism creates employment and wealth in the region. Socially, it increases vitality in society, and culturally, it also causes cultural exchange and the proximity of different cultures to each other (You et al., 2022).

Increasing tourist visits to forest areas of national parks and protected areas in developing countries, by generating income and economic justification, can play an important role in the protection of biodiversity and natural resources (Thapa et al., 2022). Therefore, in recent decades, tourism has become an important phenomenon in the economic, social and cultural fields, and new concepts have been proposed in the field of organizing and managing tourism destinations that emphasize sustainability and social responsibility. In the meantime, natural spaces such as forests have gained a special place because they play a role not only as physical spaces but also as dynamic platforms for social and economic transformations (Mäntymaa et al., 2021).

The findings indicated (Table 1) recreational value and national and universal values from an economic perspective had the first priority between other indicators for assessing natural ecosystems services for rural communities. It expressed, paying attention to these criteria in assessing the NEKNP will lead to the sustainable development of urban ecosystems. In other words, natural ecosystems are one of the main sources of landscape that attract ecotourism. The results of Hosseini et al., 2024; the Nemec and Raudsepp-Hearne (2013) and Masoudi et al. (2021) studies confirm present results.

Forest and rangeland products are the source of livelihood for many rural communities around the world, and significantly affect the livelihoods of

communities that rely on forests and rangelands. It is estimated that 1.6 billion people, or 25 percent of the world's population, rely on forests for their livelihoods, employment, income, and other livelihood needs (Soe & Yeo-Chang, 2019). Today, efforts to protect, improve, and restore forest and rangeland ecosystems in national parks with the participation of local and indigenous communities as a documented management plan are a fundamental step towards sustainable development. The success of these projects depends on the level of public participation in decision-making, implementation, and conservation. Various assessments show that projects in which people have been involved in various stages or have been designed and implemented with the different needs of rural people and stakeholders in mind have been more successful and sustainable (Mosaffaie and SalehpourJam, 2020). They introduced public participation in national park conservation projects due to the reduction of administrative costs and more effective implementation of executive projects. The most logical solution for preserving natural resources is comprehensive public participation. This will reduce administrative costs and guarantee the success and more effective implementation of the plans (Ghahari et al., 2021).

The economic benefits of protected areas have attracted increasing attention in recent years, and methodologies in this field are advancing. Numerous studies have shown that protected areas such as national parks are a powerful land-use strategy for generating multiple and direct economic benefits and conserving natural ecosystems (Siltanen et al., 2023). According to the result of Table 1, the interests and contributions from rural communities to protect and develop the park and improve the livelihood of dependent communities had the highest final weight. It showed the ability of the ecosystem to provide economic services and allowe people have a better chance of deciding on the conservation of natural ecosystems because it plays a role in their well-being. In other words, ecosystem services help the economic and social development of rural households. It is in contrast with the findings of Seidzadeh et al., 2022; Mohammadian et al. (2021); Pribadi et al. (2023).

The important purpose of assessing and mapping ecosystem services is to demonstrate the potential of natural ecosystems in providing ecosystem services. Because our ability to estimate the social and economical services of the ecosystem is low. In this study, GIS approaches and models were used for assessing and mapping ecosystem services. Our result for assessing the contribution of ES based on capability map KNP in figure 5 showed the contribution of ES is different in KNP. The results showed that the number of services varies among natural ecosystems. The ES assessment showed from an economic perspective, 4354.74 ha (45.70%) of the NEKNP are in the suitable class for using rural communities. It is constant whit study results Masoudi et al. (2021) and Krzanowski et al. (2024).

National parks not only protect natural resources, but also provide a variety of cultural ecosystem services and serve rural areas as important locations for the provision of rural recreation services (RRS). Spatial quantification of the supply and use of RRS will help ensure the protection and promotion of human health in national parks (Chen and Wu, 2025). These results indicated that the natural ecosystems of KNP have sufficient potential to provide ecosystems services such as recreational value, national and universal values and aesthetic value, etc. In this regard, Mahmoudi and Danehkar (2002), evaluated the recreational capacity for forest park planning in the forests of Lordegan of Iran using AHP and GIS. Their result showed that economic criteria have main role in assessing parks. Also, Chen and Wu, (2025), evaluated rural recreational services of Zhejiang national parks using MaxEnt software. The result showed that, national parkshave recreational service in the different zone.

The Millennium Ecosystem Assessment (MEA) has classified ecosystem services into four types, of which cultural ecosystem services (CES) are one of the important categories, defined as the non-material benefits that humans derive from ecosystems, including spiritual satisfaction, reflection, aesthetic experience, recreation, and cognitive development (Reid et al., 2005). CES can enhance human well-being and encourage environmental action (Schirpke et al., 2018) and link society, ecology, and landscape (Chan et al., 2012). While preserving the ecological and cultural characteristics of protected areas, national parks simultaneously provide opportunities for recreation and ecotourism to the public. Although the social services of national parks enable conservation and economic development, they can also lead to the

loss of forests and rangelands as they stimulate economic development (Brandt and Buckley, 2018). Because, the ecology of national parks is sensitive. The increasing demand for recreational activities is placing significant pressure on the natural ecosystems of national parks.

Figure 5 showed that 63.84 ha of the park is suitable (These areas are mostly in virgin park ecosystems) based on social indicators and 8294.02 ha of the park is most unsuitable for supplying services to rural communities. The result indicated that the ecosystem services had decreased due to human activities like population growth, construction sites, pollution, etc. This factor destroyed natural ecosystems and prevents the production of important ecosystem services. As result, the benefits and services that we receive directly or indirectly from ecosystem performance are decreased. The studies result of Costanza et al. (2014) for estimating total value of world ecosystem services and Najmizadeh and Yavari (2005) about the assessment of the environmental potential of Khabar National Park consistent with the present results.

The result experienced assessment and ecosystem mapping services can stay important of ES for humans. Based on the research findings, it is suggested that the relevant organizations consider the above indicators as important indicators in the assessing of natural ecosystems of national parks.

Indicate of the interests and contributions of rural communities to the protection and development of the park are important indicators in evaluating national parks. Therefore, it is suggested that the interests and contributions of the general public, especially indigenous people, be considered for the protection and development of national parks, and that their opinions and experiences be used in protection activities and management decisions.

- Our result showed that the natural ecosystems of national parks can provide services based on economic indicators for rural communities, it is suggested that in macro planning, the budget be considered to protect these parks.

The result indicated the assessment of natural ecosystem services by combining GIS layers and multi-attribute decision making (MCDM) data is efficient and useful because it involves the simultaneous use of weights and priority indicators and their geographic layers. GIS and Multiple Attribute Decision Making (MCDM) such as Entropy and TOPSIS models are a useful technique that contain the use of geographic layers, weights, and an aggregation function that incorporates spatial data and weights of criteria to assess areas for suitability evaluating.

- It is suggested that more advanced, more efficient and newer techniques such as ELECTER, LINMAP, artificial neural network, etc. be used simultaneously to weight and prioritize the criteria and indicators for evaluating national parks.

- Considering that reliable data for evaluating national parks is very difficult, it is suggested that reliable and high-precision terrestrial data and satellite image be used for mapping and assessing the ecosystem services.

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**Authors′ contributions**

Sareh Hosseini: Conceptualization, Methodology, Software, Writing - Original draft, Visualization; Jafar Oladi and Hamid Amirnejad: Supervision, Conceptualization, Methodology; Reviewing, Editing, and Validation.

**Conflict of interest**

The authors declare no conflict of interest.

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**Original Article**

# شناسایی و ارزیابی خدمات اقتصادی و اجتماعی اکوسیستم‌های طبیعی به جوامع روستایی

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**چکیده مبسوط**

## ۱. مقدمه

مناطق حفاظت‌شده مکان‌هایی با مدیریت مؤثر می‌باشند که به حفظ بلندمدت تنوع‌زیستی و ارزش‌های طبیعی، همراه با ارائه خدمات اکوسیستمی و ارزش‌های فرهنگی اختصاص دارند. پارک‌های ملی به‌عنوان یکی از مهم‌ترین انواع مناطق حفاظت‌شده با هدف حفظ اکوسیستم‌های طبیعی، تنوع‌زیستی، منابع ژنتیکی، چشم‌اندازهای زیباشناختی و سایر خدمات فرهنگی ایجاد می‌شوند و تحت مدیریت سازمان حفاظت محیط‌زیست قرار دارند. اکوسیستم‌های طبیعی این پارک‌ها شامل حیاتی‌ترین بستر توسعه پایدار محیط‌زیست و پدیده‌های اکولوژیک محسوب می‌شوند. اهمیت و نقش اکوسیستم‌های طبیعی پارک‌های ملی به عنوان بهترین مناطق تحت مدیریت در سطح ملی و جهانی در همه کشورها به رسمیت شناخته شده است. این اکوسیستم‌های طبیعی، طیف گسترده‌ای از خدمات زیست‌محیطی، اقتصادی و اجتماعی را به جوامع انسانی ارائه می‌دهند و ذینفعان متعددی از آن بهره‌مند می‌شوند. یکی از مهم‌ترین ذینفعان این خدمات، جوامع روستایی واقع در حاشیه اکوسیستم‌های طبیعی از قبیل جنگل‌ها و مراتع می‌باشند که نقش مهمی در توانمندسازی این جوامع و بهبود وضعیت اجتماعی-اقتصادی آن‌ها و در مقابل مشارکت اجتماعی جوامع روستایی در حفاظت از این منابع‌طبیعی می‌شود. در سال‌های اخیر جهت حفاظت و حمایت اکوسیستم‌های طبیعی توجه زیادی به پارک‌های ملی و سایر مناطق تحت حفاظت شده است. زیرا با شکل‌گیری این مناطق روند کاهش سطح جنگل‌ها و مراتع کند شده و سیاست‌های مناسبی جهت حفاظت از منابع‌طبیعی کشور اتخاذ شده است و در اثر فعالیت‌های ترویجی متصدیان امور حفاظت، انس و الفت بیشتری بین دولت‌ها و مردم این مناطق برقرار گشته و نحوه نگرش و تلقی جوامع مختلف از مفهوم و اهمیت پارک‌های ملی و مناطق حفاظت شده تغییر کرده است با این حال، عدم استفاده مناسب از این مناطق و عدم ارزیابی دقیق خدمات اکوسیستمی آنها، تهدیدی جدی برای بقای این مناطق محسوب می‌شود. از این‌رو، ارزیابی علمی خدمات اقتصادی و اجتماعی اکوسیستم‌های طبیعی با استفاده از ابزارهای نوین مانند می‌تواند گامی مؤثر در جهت مدیریت پایدار این منابع باشد.

## ۲. روش تحقیق

در این پژوهش، اکوسیستم‌های جنگلی و مرتعی پارک ملی کیاسر در شمال ایران به‌عنوان منطقه مطالعاتی جهت ارزیابی خدمات اقتصادی و اجتماعی اکوسیستم‌های طبیعی برای جوامع روستایی انتخاب شد. برای دستیابی به اهداف تحقیق، از پرسشنامه دلفی شامل مجموعه‌ای از شاخص‌های استخراج‌شده از منابع مختلف استفاده گردید. در این مطالعه با استفاده از نظرات ۳۶ نفر از کارشناسان و متخصصان پارک‌های ملی، شاخص‌های مهم اقتصادی و اجتماعی مرتبط بر اساس طیف لیکرت امتیازدهی شدند. سپس از روش‌های تصمیم‌گیری چندمعیار شامل تکنیک آنتروپی (Entropy) برای وزن‌دهی شاخص‌ها و تکنیک ترجیحات بر اساس شباهت به راه‌حل ایده‌آل (TOPSIS) برای اولویت‌بندی شاخص‌ها استفاده شد. در ادامه، سامانه اطلاعات جغرافیایی (GIS) برای تهیه نقشه ارزیابی خدمات اقتصادی و اجتماعی اکوسیستم‌های طبیعی پارک ملی کیاسر برای جوامع روستایی در چهار طبقه به‌کار گرفته شد.

## ۳. یافته‌های تحقیق

در این تحقیق، ۳۸ شاخص شامل ۲۰ شاخص اجتماعی و ۱۸ شاخص اقتصادی شناسایی شد که در نهایت ۷ شاخص اقتصادی و ۱۱ شاخص اجتماعی برای ارزیابی خدمات اکوسیستم‌های طبیعی پذیرفته و بومی‌سازی گردید. نتایج نشان داد که شاخص‌هایی مانند ارزش تفریحی، منافع و مشارکت جوامع روستایی در حفاظت و توسعه پارک بالاترین اولویت را در بین سایر شاخص‌های ارزیابی به خود اختصاص دادند. همچنین نتایج حاصل از نقشه ارزیابی خدمات اقتصادی و

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اجتماعی اکوسیستم‌های طبیعی پارک ملی کیاسر نشان داد که از جنبه اقتصادی و اجتماعی به ترتیب ۱۸۱۰/۵۰ و ۳۴/۳۰ هکتار از اکوسیستم‌های طبیعی پارک در طبقه بسیار مناسب برای بهره‌مندی جوامع روستایی از خدمات قرار دارند. این تفاوت نشان‌دهنده آن است که ظرفیت اقتصادی پارک ملی کیاسر در ارائه خدمات اکوسیستمی به‌مراتب بالاتر از ظرفیت اجتماعی آن است.

## ۴. بحث و نتیجه‌گیری

طبق نتایج، اکوسیستم‌های طبیعی پارک ملی کیاسر از جنبه اقتصادی سطوح بیشتری از طبقات مناسب را نسبت به جنبه اجتماعی به خود اختصاص داده است. این نشان از آن است که اکوسیستم‌های طبیعی پارک دارای ظرفیت بالایی در ارائه خدمات اقتصادی اکوسیستمی است، به‌عبارت دیگر، اکوسیستم‌های طبیعی پارک ملی کیاسر توان بالقوه بالایی در ارائه خدمات اقتصادی اکوسیستمی دارند که می‌تواند در صورت مدیریت صحیح، به رشد اقتصادی منطقه و بهبود معیشت جوامع محلی منجر شود. در مقابل، از منظر اجتماعی، به‌ویژه در زمینه‌هایی مانند مشارکت فعال جوامع روستایی در فرآیندهای حفاظت، مدیریت از اکوسیستم‌های طبیعی پارک، خلأهایی مشاهده می‌شود که نیازمند توجه و برنامه‌ریزی دقیق‌تری از سوی نهادهای ذی‌ربط است. همچنین نتایج پژوهش نشان داد استفاده از روش‌های تصمیم‌گیری چندمعیاره مانند دلفی، آنتروپی و تاپسیس در کنار ابزارهای تحلیلی مانند سامانه اطلاعات جغرافیایی، امکان تحلیل دقیق، علمی و چندبُعدی داده‌ها را فراهم می‌سازد. این ترکیب روش‌شناختی نه‌تنها موجب افزایش اعتبار و دقت نتایج ارزیابی می‌شود، بلکه می‌تواند به‌عنوان الگویی کاربردی برای ارزیابی سایر پارک‌های ملی، مناطق حفاظت‌شده و زیست‌بوم‌های حساس در سطح کشور مورد استفاده قرار گیرد. در نهایت، چنین ارزیابی‌هایی نقش کلیدی در بهبود مدیریت منابع طبیعی ایفا می‌کنند. افزون بر این، نتایج حاصل از این نوع مطالعات می‌تواند در توانمندسازی جوامع محلی، ارتقاء سطح آگاهی زیست‌محیطی، افزایش مشارکت اجتماعی، و بهبود کیفیت زندگی ساکنان مناطق پیرامونی پارک‌ها مؤثر واقع شود. بنابراین، توجه به ابعاد اجتماعی در کنار ظرفیت‌های اقتصادی، ضرورتی اجتناب‌ناپذیر در مسیر توسعه پایدار و حفاظت مؤثر از اکوسیستم‌های طبیعی به‌شمار می‌رود.

**کلید واژه‌ها:** ذینفعان، خدمات اقتصادی و اجتماعی اکوسیستم، تصمیم‌گیری چندمعیاره، روش دلفی، پارک ملی کیاسر.

## تشکر و قدرانی

پژوهش حاضر برگرفته از رساله دکتری نویسنده اول (ساره حسینی)، گروه علوم و مهندسی جنگل دانشکده منابع طبیعی، دانشگاه علوم کشاورزی و منابع طبیعی ساری (SANRU) است که نویسندگان از حمایت مالی این دانشگاه و از همکاری سازمان حفاظت محیط‌زیست جمهوری اسلامی ایران در فرآیند گردآوری داده‌ها قدردانی می‌کنند.

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**Original Article**

# The Role of Agricultural Tourism in Sustainable Rural Development (Case Study: Mazandaran Province)

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**Abstract**

**Purpose-** Agritourism provides a sustainable substitute that supports international initiatives to address environmental issues and the increasing depletion of natural resources. The aim of this research is to investigate the role of agricultural tourism in sustainable rural development.

**Design/methodology/approach** - The present study is a mixed research (qualitative-quantitative) type that was designed in two stages. In the first stage, In order to identify and extract the factors affecting the role of agricultural tourism in sustainable rural development, 18 semi-structured interviews were conducted with experts in this field using purposive sampling method and considering the theoretical saturation index of data. Second stage: In the second stage, in order to ensure the accuracy of the first stage process and observe changes, exploratory factor analysis was performed without any initial division for the factors extracted from the first stage. Exploratory factor analysis and confirmatory factor analysis were used in data analysis. The statistical population of the study at this stage was villages with agricultural tourism potential in the four cities of Tonekabon, Nowshahr, Sari, and Babol, which were selected based on a stratified random sampling method with proportional assignment, with a total of 320 people.

**Findings**- The results of the second-order confirmatory factor analysis also showed that among the second-order factor loadings, the economic and infrastructure structure (0.94) has the greatest impact, followed by the political and institutional structure (0.87), the social and educational structure (0.76), and the human and climatic structure (0.69) respectively, which have the least impact on the main structure (the role of agricultural tourism in sustainable rural development).

**Practical Implications**- Since Mazandaran province has high tourism potential, the results of this study can help policymakers to formulate an appropriate program in the field of agritourism in line with the sustainability of rural communities.

**Originality/Value**- This study works towards sustainable development by providing a complete strategy for the development of agricultural tourism, and this study has attempted to fill the gaps and gaps in previous studies.

**Keywords:** Agricultural Tourism, Sustainable, Rural Community, Mixed Research, Mazandaran Province.

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## 1. Introduction

Agritourism is an important element of sustainable development and rural transformation. (Sakharam Kale, 2025). The integration of agriculture and tourism has significantly advanced the application and promotion of agricultural technologies, such as intelligent greenhouses, precision agriculture, and other technical innovations. These developments have enhanced the intelligence and precision of agricultural production, thereby fostering the growth of green agriculture (Wang et al., 2023).

Moreover, this integration promotes the diversification and efficiency of agricultural development by leveraging the synergies between agriculture and tourism resources. Through this process, agricultural resources are utilized more fully and efficiently. To meet the demands of tourists, agricultural producers increasingly prioritize the quality and safety of their products, adopting green and organic production methods. This includes reducing the use of fertilizers and pesticides, which, in turn, mitigates agricultural non-point source pollution. Additionally, the integration of agriculture and tourism facilitates the extension and expansion of the agricultural value chain, such as the processing of agricultural products and the development of rural tourism offerings, further advancing the green and sustainable development of agriculture (Ayyildiz and Koc, 2024).

Rural areas' distinctive recreational value is being diminished by the unregulated effects of human activity, fast urbanization, and massive infrastructure expansion, which are all destroying the natural and social landscapes of rural areas (Fong et al., 2017). Agritourism provides a sustainable substitute that supports international initiatives to address environmental issues and the increasing depletion of natural resources (Paniccia and Baiocco, 2021). Despite being a 1elatively new tourism market, agritourism has expanded significantly in most developed countries, while agricultural attractions continue to gain popularity in developing nations (Baipai et al., 2022). Agritourism, which is a subset of rural tourism, is an innovative strategy that transforms farms into tourism destinations or diversifies farming activities to offer entertainment, education, recreation, hospitality, and on-farm product sales (van Zyl and van Der Merwe, 2021). Agritourism significantly contributes to sustainable rural development by safeguarding indigenous knowledge and traditional practices while also stimulating economic growth and preserving agricultural heritage. Additionally, it fosters fair and equitable relationships within local communities (Baipai et al., 2024; Ciolac et al., 2019). Beyond these benefits, agritourism aligns with key United Nations Sustainable Development Goals (SDGs), such as zero hunger (SDG2), climate action (SDG 13), and responsible consumption and production (SDG 12), by merging agriculture with tourism (Dionizi and Kercini, 2025; Yusuf and Wulandari, 2023).

While agritourism holds significant potential, it often faces early-stage development challenges, such as limited support from national tourism policies and inadequate coordination of various stakeholders, facilities, and resources (Pérez-Olmos and Aguilar-Rivera, 2021).Pérez Moreover, in many tourism-related areas, short-term profit usually takes precedence over long-term sustainability and strategic planning, which might have negative consequences (Kazlouski et al., 2020).

Agritourism presents both opportunities and challenges on the path to sustainable tourism. Lately, researchers have been paying closer attention to it, recognizing its potential to address global challenges (Kataya, 2021; Popescu et al., 2023). However, major research gaps exist, notably concerning how to create and operate sustainable models of agritourism and how these models may sustain themselves (Paniccia and Baiocco, 2021). Essentially, agritourism farms form a vibrant tapestry of rural stakeholders−including non-profits, local enterprises, and governmental bodies−and the tourists who seek authentic rural engagements (Jamshidi et al., 2017; Ammirato et al., 2020).

In addition, agritourism creates various benefits for private farm households and provides a source of increased diversification and sustainability in rural areas (Ciolac et al., 2019; Adamov et al., 2020, Karampela and Kizos, 2018). This activity can provide an additional source of income for farms, allow to reduce farms' exposure to risk, and to create jobs opportunities and multifunctional production systems providing various benefits for society. In addition, agritourism can be one of the factors contributing to sustainable development

(Ciolac et al., 2019) and is of large and increasing policy relevance all over Europe (Streifeneder and Dax 2020). Agritourism is widely acknowledged to be highly developed in Austria (Dax et al., 2019), Italy (Galluzzo 2018), Poland (Germinario et al., 2023), Romania (Adamov et al., 2020), Switzerland (Lal et al., 2023), and various other countries (Grillini et al., 2022; Hegarty and Przezborska 2005).

Rural tourism and Agricultural tourism are recognized as one of rural areas' most crucial pillars of sustainable development. This form of tourism, with an emphasis on leveraging the cultural and natural attractions of rural regions, plays a vital role in creating employment and income opportunities for local communities while also preserving rural heritage and enhancing the quality of life for residents (Torabi et al, 2025).

The rural areas of Mazandaran Province are considered one of the most important agricultural hubs of the country due to its many capabilities and capacities, including fertile land and vast plains, suitable climate, and sufficient water resources. The province is also known as one of the most important and most visited tourist destinations in the country. However, the predominant type of tourism activity in this destination is both leisure and accommodation tourism; while this region, due to its numerous potentials and capacities, is susceptible to the development of countless types of tourism with special interests, including agricultural tourism. The increase in the urban population and their interest in experiencing traditional livelihoods, as well as the desire to escape from everyday life and connect with nature, has also created the best opportunity for this type of tourism in rural areas. Therefore, this research was conducted with the main aim of investigating the role that agricultural tourism can play in the sustainability of rural communities in Mazandaran province.

## 2. Research Theoretical Literature

Tourism is a rapidly growing and expanding activity with various impacts on different industries, serving as a significant factor in the economic and socio-cultural development of various regions (Dehghani et al, 2024). One of the ways to attract tourists is agricultural tourism. Agricultural tourism refers to visiting a farm for educational or recreational purposes. Agricultural tourism is related to family farms and depends on the activities of farmers who seek to diversify their income and create resilience against economic instabilities in the field of agricultural markets and climate change (Whitt, 2019). Also, the development of agricultural tourism means diversifying tourist attractions in tourist destinations and increasing the resilience of these destinations against the risks of tourism markets. Agricultural tourism increases farmers' income by providing recreational, educational services and selling agricultural products in farm markets (Mohammadi and Yaqoubinia, 2024).

The literature (Meraner et al., 2015, 2018; Germinario et al., 2023) highlights that agritourism diversifies farm activities, reducing risks and increasing profitability. In developing economies, small farms, susceptible to climate change, face potential issues with yield, investment, and competition from agricultural holdings (Addinsall et al., 2017). Also, diversified farms are more flexible in responding to future consumer needs in order to maximize profits (Meraner et al., 2015). A farm is considered diversified if its main resources are also used for activities other than core agricultural production (Meraner and Finger, 2019). In addition, agritourism (along with the provision of certain social services by farms, services for the production of energy from alternative sources, horse business and direct sales of produced products) is one of the directions of diversification of farm activities (Meraner et al., 2018). At the same time, agritourism (as well as the rental of land and buildings) is classified as structural diversification (Van der Ploeg and Roep 2003). Farm diversification is an important aspect of agricultural and rural development policy in Europe (Vroege et al., 2020).

Factors that influence the non-agricultural diversification of farms identified in the literature include environmental considerations, the characteristics of the farmer and the farm itself, the type of farm, and the consideration of risk (Meraner et al., 2018). In addition, a higher diversification of farms in a specific region can be favourable for the development of agritourism at other farms in the region too as there are positive spillover effects (Vroege et al., 2020). We can obtain a positive result for the country agricultural development through achieving the goals of sustainable development by combining the efforts of various sectors of the country economy, in

particular agriculture and tourism (Ambelu et al., 2018). In its turn, agritourism is considered to be one of the most affordable types of tourism (Lazarieva 2017). Overall, tourism ranks among the most profitable global industries and is a key driver of socio-economic development, also in rural regions.

One of the main factors enhancing sustainable development in regions is the value attached to cultural and natural heritage of rural areas which in its turn can encourage rational and systematic use of agricultural resources. In rural areas, agritourism is seen as an opportunity to diversify farm activities, a profitable channel to sell local agricultural produce/craft goods/services, and a possibility of employment on the farm for local residents, which contributes to the restoration of sustainable rural development (Ammirato and Felicetti 2014). The Tourism as a multidisciplinary industry is one of the key drivers of regional development (Plzakova 2022).

Agritourism policy development differs across nations, and this shapes the sustainability of the industry within the region. Mangwiro et al (2025), demonstrate the differences in policy development and implementation across six Southern African countries. They emphasize important factors like infrastructure, institutional support, stakeholder engagement, national policy frameworks, and monitoring systems. The authors advocate for a more cooperative strategy, including private-sector-led agritourism groups and interministerial taskforces to improve governance and spur industry growth.

Similar challenges exist in Tamil Nadu, where Sennimalai et al (2025), point out that limited public awareness and weak licensing laws are holding agritourism back. They propose the establishment of a dedicated agritourism development committee, alongside educational initiatives and training programs, to formalize governance and equip local stakeholders.

A more structured governance approach is evident in Austria, as analyzed by Quendler (2018), who examine the country's adherence to global agritourism values while maintaining a distinct local identity. The incorporation of quality standards, marketing strategies, and cross-sector collaboration into the national policy framework demonstrates the importance of aligning global standards with locally adapted regulations. These studies emphasize the importance of institutional support, regulatory frameworks, and policy development in ensuring the viability of agritourism. While some regions face policy gaps in agritourism, others have well-structured governance systems that drive rural development. For long-term success, a combination of clear licensing mechanisms, stakeholder-driven governance, and alignment with broader agricultural and tourism policies is essential.

Quendler et al (2024), examine Austria's incorporation of global agritourism principles, as promoted by the Global Agritourism Network Committee, to maintain a unique local identity in accordance with international norms. The nation successfully strikes a balance between national policies and international frameworks by promoting agricultural diversity, showcasing local resources, and offering authentic experiences. The study highlights the importance of structured guidelines, strategic marketing, and cross-sector synergies in ensuring the sustainability of agritourism.

The results of the research studies show that there are many diverse and numerous factors that are effective in the development of agricultural tourism. Some of these factors are general and are the same in most regions, but some other factors differ depending on the region under study and the characteristics of the region. Therefore, considering the very high potential of Mazandaran, as mentioned earlier, and the capacity of this province for all types of tourism, especially agricultural tourism, it is necessary to first identify the factors that affect the development of agricultural tourism in order to achieve sustainability in this province, and ultimately develop a sustainable agricultural tourism model for this province. This study works towards sustainable development by providing a complete strategy for the development of agricultural tourism, and this study has attempted to fill the gaps and gaps in previous studies.

## 3. Research Methodology

The present study is Applied in terms of purpose and paradigm, mixed research (qualitative-quantitative) with an exploratory approach, which aims to identify factors affecting the development of agricultural tourism and its role in the sustainable development of rural communities. In the first stage, in order to identify and extract the factors affecting the development of agricultural tourism in line with sustainable development, 18

semi-structured interviews were conducted with experts in this sector, including faculty members, researchers, managers, and experts in the tourism sector in the Agricultural Jihad Organization and the Cultural Heritage and Tourism Organization in Mazandaran Province, using the purposeful sampling method and taking into account the theoretical data saturation index. The criteria for selecting interviewees were work experience, as well as studies in the field of agricultural tourism, and familiarity with Mazandaran province and its tourism and agricultural potential. After conducting interviews, factors affecting the development of agricultural tourism were identified using content analysis methods during open and focused coding stages.

Interviews with each of the experts studied continued until the theoretical saturation point of data and the main goal of the research was achieved, the duration of the interviews was between 60 and 120 minutes. The validity of the research was achieved by examining different perspectives in a way that the study was conducted at different times and places and with experts from different groups. Attention to different times and places was to avoid any bias in data collection, and considering people from different groups was also done in order to achieve more reliable data (Hariri, 2006). To increase the reliability of the research, an audit trail was prepared. To strengthen the validity of the research, an effort was made to use peer-to-peer discussions (researchers who had experience conducting qualitative research) in the data analysis process as much as possible and to avoid the involvement of personal judgments and values in the content analysis of the interview texts (Panahi et al, 2018). Thematic analysis was used to analyze and process the data obtained from the interviews. In the present study, the expert panel members were a group of university professors, researchers, managers, and experts in agritourism, rural tourism, and rural development, including 18 people nationwide.

Second stage: In this stage, the components extracted from the previous stage were re-evaluated by experts in the form of a questionnaire to ensure whether the extracted components had the necessary capability to measure the research objectives or not. For this purpose, to ensure the validity of the research tool, the opinions of some expert experts were received. In this way, the content and face validity of the questionnaire was confirmed. Since these people were experienced experts, the content validity of the questionnaire was ensured and its reliability was calculated using Cronbach's alpha coefficient of 0.82, which indicates the high and desirable reliability of the research tool.

The questionnaire used had closed-ended answers that were scored on a Likert scale (five-choice) from 1 to 5 (Nazaripour & Zakizadeh, 2022). Therefore, in the second stage, in order to ensure the accuracy of the first stage process and observe changes, exploratory factor analysis was performed without any initial division for the factors extracted from the first stage. Exploratory factor analysis and confirmatory factor analysis were used in data analysis. This means that first, the main components of the research were identified through exploratory factor analysis, then the significance of the relationship between the latent variables and the items was tested using first-order confirmatory factor analysis, and then, using second-order factor analysis, the ranking of these variables was examined based on their effect on the formation and explanation of the main structure (the role of agricultural tourism in sustainable rural development). To test the model fit, indices such as the incremental fit index, the adaptive fit index, the goodness of fit index, and the root mean square error of estimation index are used. The statistical population of the study at this stage was villages with agricultural tourism potential in the four cities of Tonekabon, Nowshahr, Sari, and Babol, which were selected based on a stratified random sampling method with proportional assignment, with a total of 320 people.

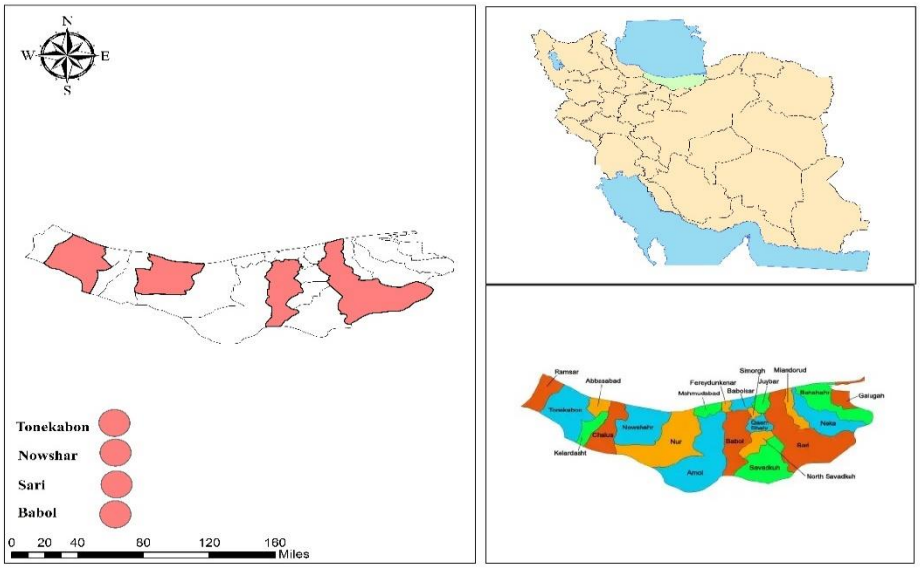


**Figure 1. Map of the Study Area**

## 4. Research Findings

The characteristics of the panel of experts are given in Table 1. As shown in the table, out of the total of 18 panel members, 10 were faculty members, 2 were managers of the agricultural tourism sector in Mazandaran province, 3 were experts in the agricultural tourism sector, and 3 were researchers in this sector. Also, in terms of education level, 13 people had a PhD and 5 had a master's degree. The fields of study of the subjects studied were tourism, agricultural management, agricultural development, rural development, tourism management, management, economics, and sociology.

**Table 1: Profile of the expert panel members**

| Organizational Position | Education | Work Experience | Organizational Position | Education | Work Experience |
|---|---|---|---|---|---|
| Faculty member | PhD | 20 | Faculty member | PhD | 28 |
| Faculty member | PhD | 22 | Manager | PhD | 25 |
| Faculty member | PhD | 18 | Manager | Masters | 27 |
| Faculty member | PhD | 15 | Expert | Masters | 12 |
| Faculty member | PhD | 25 | Expert | Masters | 10 |
| Faculty member | PhD | 12 | Expert | Masters | 14 |
| Faculty member | PhD | 15 | Researcher | PhD | 8 |
| Faculty member | PhD | 20 | Researcher | PhD | 10 |
| Faculty member | PhD | 10 | Researcher | Masters | 6 |

After initially summarizing the data and removing redundant and repetitive sentences from the interview sentences regarding factors affecting agricultural tourism in the direction of sustainable rural development, the initial concepts were recorded in the interviews and case documents. After that, the initial concepts were summarized in the open coding stage, which resulted in 4 subcategories, which are presented in Table 2. In this stage, more than 46 concepts and ultimately 4 subcategories were extracted.

**Table 2- Data summarization process in the open coding stage of factors affecting agricultural tourism in line with sustainable rural development**

| Central components (dimensions) | Concepts |
|---|---|
| Natural and climatic factors | The possibility of exploiting agricultural attractions throughout the year, the diversity of agricultural products, religious possibilities, historical possibilities, natural attractions, the location of the region in terms of proximity and access to population centers, its prominence as an agricultural hub in the region, the attention of local people to sustainable development and preservation of the environment and natural resources, the degree of interference of tourism activities with agricultural operations, the creation of pristine and natural environments in the village for the development of agricultural tourism, |
| Human and socio-cultural factors | The possibility of participating in agricultural and livestock activities (direct experience of agricultural activities), the presence of educated farmers familiar with tourism, farmers' willingness to educate, farmers' willingness to provide recreational services to tourists, having handicrafts, having special customs and traditions, the level of awareness and information provided by farmers in the field of agricultural tourism and entrepreneurship, the spirit of hospitality and friendliness of the residents of the region, educating tourists by distributing educational packages in order to preserve the environment of the village, farm and natural resources by providing solutions, educating farmers in the field of preserving and restoring pastures and natural resources in various ways |
| Economic and infrastructure factors | Travel costs due to communication routes, the possibility of purchasing cheaper products, the possibility of purchasing agricultural products, the existence and abundance of tourist accommodations, the existence of shopping and entertainment centers, the region's susceptibility to investment and planning of agricultural tourism, farmers' financial resources for investing in tourism, increasing the number of agricultural tourism tours, providing facilities for cultivating new agricultural and garden products and medicinal plants, the excessive growth of second homes in villages, land speculation and increasing prices of agricultural land, the supply of local foods and livestock products, Asphalt road or highway access |
| Management and institutional factors | The existence of health and medical services, the level of attention paid by the (local) government to planning and investing in the tourism sector, informing and advertising about the many touristic capabilities and attractions of the region, creating a suitable platform for the participation and investment of the private sector in agricultural tourism activities, holding agricultural festivals and events, cooperation and coordination between institutions and organizations involved in agriculture, tourism and rural development, resolving the problems of farmers on national lands, transferring and issuing licenses for wasteland with agricultural potential and talent, introducing quality agricultural tourism sites and suitable facilities to tourists, compiling a booklet in the form of introducing the region's agricultural tourism attractions to promote |

### *4.1. Exploratory factor analysis of factors affecting agricultural tourism towards sustainable rural development*

Data for factor analysis are used that have the necessary qualifications for this task. For this purpose, Bartlett's test with KMO coefficient is used, if the KMO value is higher than 0.5, factor analysis can be used with confidence. This coefficient in the present studies is equal to 0.763, which is a suitable figure, Bartlett's test is also significant at the 99% level (Table 3).

**Table 3: KMO coefficient value and Bartlett's test for the studied samples**

| Test Name | |
|---|---|
| KMO | 0.763 |
| Bartlett's Test | 9846.245 |
| Sig | 0.000 |

After ensuring that the data were suitable for factor analysis, Varimax rotation was used to obtain significant factors. The extracted factors are listed in Table (4). These factors collectively explain 61.05 percent of the variance related to the variables affecting factors affecting agricultural tourism in the direction of sustainable rural development. In simpler terms, paying attention to these six factors can explain 61.05 percent of the factors affecting the development of agricultural tourism in the direction of sustainable development. It is necessary to clarify that out of the total variables under study, 5 variables were excluded from the factor analysis process due to low factor loading and lower impact.

**Table 4: Number of extracted factors along with eigenvalues, variance percentage, and cumulative percentage**

| Priority | Factor Name | Total Value | Percent Variance | Cumulative Percentage |
|---|---|---|---|---|
| 1 | Economic and infrastructure factors | 6.98 | 13.97 | 13.97 |
| 2 | Political and institutional factors | 5.78 | 11.56 | 25.54 |
| 3 | Social factors | 5.77 | 11.54 | 37.08 |
| 4 | Natural and climatic factors | 4.99 | 9.98 | 47.07 |
| 5 | Educational factors | 3.65 | 7.31 | 54.38 |
| 6 | Human factors | 3.33 | 6.67 | 61.05 |

The factor loading status after rotation based on the inclusion of variables with factor loadings greater than 0.5 is shown in Table (5). As can be seen, there are six key factors that influence agricultural tourism in sustainable rural development.

**Table 5: Variables related to each of the factors affecting the development of agricultural tourism in line with sustainable rural development and the amount of factor loadings obtained from the rotation matrix.**

| Priority | Factor Name | Variables | Factor Loading |
|---|---|---|---|
| 1 | Economic and infrastructure factors | Travel costs due to communication routes | 0.685 |
| | | the possibility of purchasing cheaper products | 0.714 |
| | | the existence and abundance of tourist accommodations | 0.621 |
| | | the existence of shopping and entertainment centers | 0.587 |
| | | the region's susceptibility to investment and planning of agricultural tourism | 0.715 |
| | | farmers' financial resources for investing in tourism | 0.698 |
| | | increasing the number of agricultural tourism tours | 0.710 |
| | | providing facilities for cultivating new agricultural and garden products and medicinal plants | 0.633 |
| | | Asphalt road or highway access | 0.642 |
| 2 | Political and institutional factors | Availability of health and medical services | 0.701 |
| | | The level of attention paid by the (local) government to planning and investing in the tourism sector | 0.621 |
| | | Providing information and advertising about the region's many tourism capabilities and attractions | 0.521 |
| | | Creating a suitable platform for private sector participation and investment in agricultural tourism activities | 0.589 |
| | | Holding agricultural festivals and events, cooperation and coordination between | 0.554 |

| Priority | Factor Name | Variables | Factor Loading |
|---|---|---|---|
| | | institutions and organizations involved in agriculture, tourism and rural development | |
| | | Solving the problems of farmers on national lands | 0.632 |
| | | Releasing and issuing licenses for wasteland with agricultural potential and talent | 0.694 |
| | | Introducing quality agricultural tourism sites with appropriate facilities to tourists | 0.645 |
| 3 | Social factors | Possibility to participate in agricultural and livestock activities (direct experience of agricultural activities) | 0.635 |
| | | Having crafts | 0.666 |
| | | Having special customs and traditions | 0.521 |
| | | The hospitality and friendliness of the residents of the region | 0.597 |
| | | Supply of local foods and livestock products | 0.529 |
| 4 | Natural and climatic factors | Possibility of exploiting agricultural attractions throughout the year | 0.625 |
| | | The existence of a variety of agricultural products | 0.712 |
| | | Having natural attractions | 0.664 |
| | | Being known as an agricultural hub in the region | 0.512 |
| | | Attention of local people to sustainable development and preservation of the environment and natural resources, | 0.598 |
| 5 | Educational factors | Creating a booklet introducing the region's agricultural tourism attractions for promotion | 0.564 |
| | | The level of awareness and information of farmers in the field of agricultural tourism and entrepreneurship | 0.645 |
| | | Educating tourists by distributing educational packages to preserve the village environment, farms, and natural resources by providing solutions | 0.711 |
| | | Training farmers in the preservation and restoration of pastures and natural resources in various ways | 0.632 |
| 6 | Human factors | The existence of educated farmers familiar with tourism | 0.551 |
| | | Farmers' willingness to provide recreational services to tourists | 0.682 |
| | | The location of the region in terms of proximity and access to population centers | 0.646 |

### *4.2. First order confirmatory factor analysis*

In order to develop a model of factors affecting agricultural tourism in line with sustainable development, the identified latent variables (exploratory factor analysis stage) were analyzed using AMOS software through confirmatory factor analysis. The results are reflected in Figure 2 and Table 6. Based on the information obtained, the factor loadings of all observed variables were more than 0.5 and the variance between the relevant constructs and indicators was greater than the variance of their measurement error, resulting in acceptable reliability of the measurement model (Figure 2).

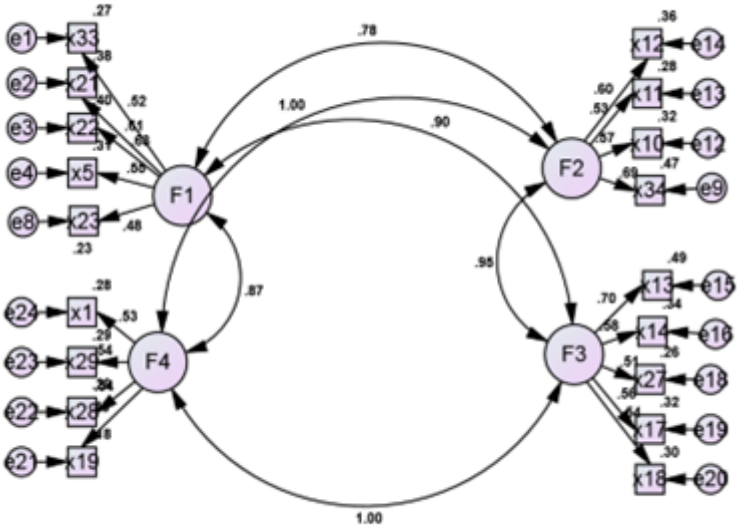


**Figure 2: Fitted measurement model (first-order confirmatory factor analysis) based on standard coefficients**

The research findings regarding the model fit test and various fit indices are reflected in Table 6. It is worth noting that if at least 3 to 4 of the fit-related indices are at an appropriate level, the model in question has a good fit.

**Table 6: Model fit test using different fit indices**

| Index | $X^2/df$ | P | IFI | CFI | GFI | RMSEA |
|---|---|---|---|---|---|---|
| Criteria | <3 | >0.05 | >0.090 | >0.090 | >0.090 | <0.08 |
| Calculated | 1.628 | 0.072 | 0.92 | 0.94 | 0.91 | 0.051 |
| Interpretation | Desirable | Desirable | Desirable | Desirable | Desirable | Desirable |

**Second-order confirmatory factor analysis-**
After conducting the first-order confirmatory factor analysis, in this section, considering the causal effects in the conceptual model of the research and in order to examine the significance of the effect of each of the main latent variables and also to rank these variables based on their impact on the formation and explanation of the main structure (the role of agricultural tourism in sustainable rural development), a second-order confirmatory factor analysis was used, the results of which are shown in Figure 3.

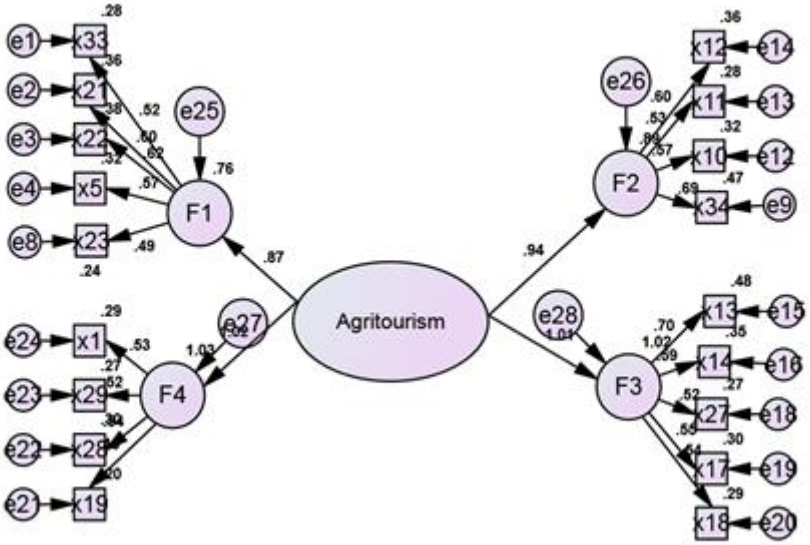


**Figure 3: Fitted measurement model (second-order confirmatory factor analysis) based on standard coefficients**

According to Figure 3, among the second-order factor loadings, the economic and infrastructure structure (0.94) has the greatest impact, followed by the political and institutional structure (0.87), the social and educational structure (0.76), and the human and climatic structure (0.69) respectively, which have the least impact on the main structure (the role of agricultural tourism in sustainable rural development).

Based on the results in Table 7, it is clear that the critical ratio (C.R.) values calculated for all four latent variables studied are more than 2.58 and, as a result, these latent variables have a positive and significant effect in explaining/forming the main structure of the research (the role of agricultural tourism in sustainable rural development). In other words, the four latent variables selected to measure the main structure of the research are correct and confirm the validity of the theoretical foundations used. On the other hand, based on the size/intensity of the standard coefficient values, which are the same as the beta values (or standardized regression coefficient) in regression analysis, it can be stated that the latent variables in order of influence in explaining/forming the main structure of the research are: economic and infrastructure structure, political and institutional structure, social and educational structure, and human and natural structure.

**Table 7: Summary of results obtained from second-order confirmatory factor analysis**

| | B | S.E | Beta | C.R | P |
|---|---|---|---|---|---|
| economic and infrastructure structure | 0.418 | 0.084 | 0.94 | 4.85 | 0.000 |
| political and institutional structure | 0.367 | 0.071 | 0.87 | 3.46 | 0.000 |
| social and educational structure | 0.294 | 0.063 | 0.76 | 3.24 | 0.008 |
| human and climatic structure | 0.235 | 0.073 | 0.69 | 2.98 | 0.003 |

According to Figure 3 and Table 7, since the critical statistic value of all four relationships is greater than 2.58, it can be stated that firstly, the questionnaire questions have high coherence for measuring the concepts in question, and secondly, at a confidence level of 99 percent, it can be expected that economic and infrastructural, political and institutional, social and educational, and human and natural factors are effective variables in sustainable rural development.

## 5. Discussion and Conclusion

Previous research indicates that the development of tourism in general and agritourism in particular are

significant elements which can boost the local and regional economic growth in rural areas (Grillini et al., 2022; Hegarty and Przezborska 2005). Moreover, in many countries around the world, agritourism is viewed in terms of its positive impact on reducing rural population migration, increasing employment rates in rural areas, enhancing their economic attractiveness, and serving as a means of preserving cultural heritage and traditions (Germinario et al., 2023; Lal et al., 2023; Galluzzo 2018; Adamov et al., 2020). Policy can support that these opportunities are untapped. For example, Austria and other regions of the Alps supported successfully the widespread uptake of agritourism activities (Dax et al., 2019).

Agri tourism is a niche market where a small segment of customers from within the larger marketplace who have similar demographic, interests, buying behavior, and/or lifestyle characteristics. Also Agri tourism is a hybrid concept that merges elements of two complex industries—agriculture and travel/tourism—to open up new profitable markets for farm products & services as well provide a market for rural tourists and travelers. It is important to consider these factors in planning and developing agri tourism as a rural business.

This research sought to investigate the effects and role of agricultural tourism on sustainable rural development. The results of exploratory factor analysis showed that six key factors are influential as the effects of agricultural tourism on sustainable rural development. These factors collectively explain 61.05 percent of the variance related to the variables affecting factors affecting agricultural tourism in the direction of sustainable rural development. In simpler terms, paying attention to these six factors can explain 61.05 percent of the factors affecting the development of agricultural tourism in the direction of sustainable development. It is necessary to clarify that out of the total variables under study, 5 variables were excluded from the factor analysis process due to low factor loading and lower impact.

The results of the second-order confirmatory factor analysis also showed that among the second-order factor loadings, the economic and infrastructure structure (0.94) has the greatest impact, followed by the political and institutional structure (0.87), the social and educational structure (0.76), and the human and climatic structure (0.69) respectively, which have the least impact on the main structure (the role of agricultural tourism in sustainable rural development). Based on the results, it is clear that the critical ratio (C.R.) values calculated for all four latent variables studied are more than 2.58 and, as a result, these latent variables have a positive and significant effect in explaining/forming the main structure of the research (the role of agricultural tourism in sustainable rural development). In other words, the four latent variables selected to measure the main structure of the research are correct and confirm the validity of the theoretical foundations used. On the other hand, based on the size/intensity of the standard coefficient values, which are the same as the beta values (or standardized regression coefficient) in regression analysis, it can be stated that the latent variables in order of influence in explaining/forming the main structure of the research are: economic and infrastructure structure, political and institutional structure, social and educational structure, and human and natural structure.

The results of this study are consistent and consistent with the results of other researchers in various areas. In the section on the role of policy-making in the development of agricultural tourism towards sustainable development, the results of this research are consistent with the results of Mangwiro's et al (2025) research. In the economic and infrastructure sector, the results of this research are consistent with the results of the Sennimalai et al research in 2025. Regarding other identified factors, including social, educational, climatic, and natural factors, the results of this study are also consistent with the results of various researchers, including Ohorodnyk & Finger (2024), Mutanga (2025) and Chen (2025).

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**Authors contributions**

The authors equally contributed to the preparation of this article.

**Conflict of interest**

The authors declare no conflict of interest.

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**Original Article**

# نقش گردشگری کشاورزی در توسعه پایدار روستایی (مورد مطالعه: استان مازندارن)

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## چکیده مبوسط

### ۱. مقدمه

در دهه‌های اخیر و به‌دنبال کاهش درآمد و اشتغال در بخش کشاورزی در مناطق روستایی، فعالیت‌های اقتصادی در مناطق روستایی رو به افول بوده است. عللی از قبیل پایین بودن قیمت محصولات کشاورزی، هزینه رو به افزایش ستانده‌های تولید کشاورزی، جهانی سازی و عوامل دیگر منجر به نزول درآمد و کاهش اشتغال در بستر روستا به‌ویژه بخش کشاورزی گردیده است، از سوی دیگر در شرایطی که در پایان قرن بیستم است، هنوز توسعه روستایی با مسائل و چالش‌های متعددی مواجه است؛ چراکه راهبردهای گذشته درزمینه توسعه روستایی موفقیت آمیز نبوده و نتوانسته مسائلی همچون فقر، اشتغال، بهداشت، امنیت غذایی و پایداری محیط‌زیست را تأمین کند. یکی از مهمترین رویکردهای مطرح شده در طی سالیان گذشته برای توسعه پایدار جوامع روستایی و همچنین ایجاد جریان مهاجرت معکوس به مناطق روستایی توسعه بوم‌گردی و گردشگری کشاورزی در نواحی روستایی است که می‌تواند به‌عنوان فعالیت اقتصادی مکمل باعث بازتوانی اقتصاد روستا شود. بنابراین این پژوهش با هدف بررسی نقش گردشگری کشاورزی در توسعه پایدار روستایی (مورد مطالعه: استان مازندارن) انجام شده است.

### ۲. مبانی نظری تحقیق

گردشگری کشاورزی یکی از جذاب‌ترین شاخه‌های صنعت گردشگری است که از اواخر قرن بیستم فعالیت‌های گردشگری به طور قابل ملاحظه‌ای در منطقه‌های روستایی همه کشورهای توسعه یافته افزایش یافته و توانسته نقش کلیدی در توسعه این مناطق بازی کند. گردشگری کشاورزی به عنوان یک راهبرد مهم برای فقرزدایی و ارتقای توسعه پایدار در جوامع روستایی پدیدار شده است. ادغام گردشگری کشاورزی در راهبردهای توسعه روستایی می‌تواند مزایای چند جانبه‌ای از جمله تنوع اقتصادی، حفظ فرهنگ محلی و بهبود روش‌های کشاورزی را به همراه داشته باشد. یکی از مزایای اصلی گردشگری کشاورزی، پتانسیل آن برای فقرزدایی در مناطق روستایی است. گردشگری کشاورزی همچنین از دیدگاه زیست‌محیطی منجر به حفاظت از زیستگاه‌های طبیعی و بوم نظام‌ها، حفظ منابع آب، بهبود دورنمای روستاها و زیرساخت‌ها می‌شود، از بعد فرهنگی باعث بهبود کیفیت زندگی، حفظ میراث فرهنگی روستا، آداب ورسوم اقلیت‌ها و فرهنگ‌سازی می‌گردد، ازنظر اقتصادی نیز یک فرصت سرمایه‌گذاری برای جامعه‌های محلی، افزایش درآمد، افزایش سهم در توسعه روستایی، اشتغال، تنوع فعالیت‌های اقتصادی، ایجاد ارزش افزوده و درنهایت موجب توسعه پایدار می‌گردد.

### ۳. روش تحقیق

پژوهش حاضر از نظر هدف و پارادایم، کاربردی و از نوع تحقیقات آمیخته (کیفی-کمی) با رویکرد اکتشافی است که با هدف شناسایی عوامل مؤثر بر توسعه گردشگری کشاورزی و نقش آن در توسعه پایدار جوامع روستایی انجام شده است.بنابراین پژوهش حاضر در دو مرحله طراحی شده است، در مرحله اول، به منظور شناسایی و استخراج عوامل مؤثر بر نقش گردشگری کشاورزی در توسعه پایدار روستایی، با استفاده از روش نمونه‌گیری هدفمند و با در نظر گرفتن شاخص اشباع نظری داده‌ها، ۱۸ مصاحبه نیمه ساختاریافته با متخصصان این حوزه انجام شد. مرحله دوم: در این مرحله، مؤلفه‌های استخراج‌شده از مرحله قبل، در قالب پرسشنامه توسط متخصصان مجدداً ارزیابی شدند تا اطمینان حاصل شود که آیا مؤلفه‌های استخراج‌شده قابلیت لازم برای سنجش اهداف تحقیق را دارند یا خیر. در این مرحله، به منظور اطمینان از صحت فرآیند مرحله اول و مشاهده تغییرات، تحلیل عاملی اکتشافی بدون هیچ تقسیم‌بندی اولیه برای عوامل

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استخراج شده از مرحله اول انجام شد .در تجزیه و تحلیل داده‌ها از تحلیل عاملی اکتشافی و تحلیل عاملی تأییدی استفاده شد. جامعه آماری مطالعه در این مرحله، روستاهای دارای پتانسیل گردشگری کشاورزی در چهار شهرستان تنکابن، نوشهر، ساری و بابل بودند که بر اساس روش نمونه‌گیری تصادفی طبقه‌ای با انتساب متناسب، در مجموع ۳۲۰ نفر از کشاورزان این شهرستان‌ها انتخاب شدند.

## ۴. یافته‌های تحقیق

پس از جمع‌بندی اولیه داده‌ها و حذف جملات زائد و تکراری از جملات مصاحبه در خصوص عوامل مؤثر بر گردشگری کشاورزی در راستای توسعه پایدار روستایی، مفاهیم اولیه در مصاحبه‌ها و اسناد موردی ثبت شدند. پس از آن، مفاهیم اولیه در مرحله کدگذاری باز خلاصه شدند، در این مرحله بیش از ۴۶ مفهوم و در نهایت ۴ زیرمقوله استخراج شد. نتایج تحلیل عاملی تأییدی مرتبه دوم نیز نشان داد که در بین بارهای عاملی مرتبه دوم، سازه اقتصادی و زیرساختی (۰/۹۴) بیشترین تأثیر و پس از آن به ترتیب سازه سیاسی و نهادی (۰/۸۷)، سازه اجتماعی و آموزشی (۰/۷۶) و سازه انسانی و اقلیمی (۰/۶۹) کمترین تأثیر را بر سازه اصلی (نقش گردشگری کشاورزی در توسعه پایدار روستایی) دارند.

## ۵. بحث و نتیجه‌گیری

تحقیقات قبلی نشان می‌دهد که توسعه گردشگری به طور کلی و گردشگری کشاورزی به طور خاص، عناصر مهمی هستند که می‌توانند رشد اقتصادی محلی و منطقه‌ای را در مناطق روستایی افزایش دهند، علاوه بر این، در بسیاری از کشورهای جهان، گردشگری کشاورزی از نظر تأثیر مثبت آن بر کاهش مهاجرت جمعیت روستایی، افزایش نرخ اشتغال در مناطق روستایی، افزایش جذابیت اقتصادی آنها و به عنوان وسیله‌ای برای حفظ میراث فرهنگی و سنت‌ها در نظر گرفته می‌شود. گردشگری کشاورزی یک مفهوم ترکیبی است که عناصر دو صنعت پیچیده - کشاورزی و سفر/گردشگری - را با هم ادغام می‌کند تا بازارهای سودآور جدیدی را برای محصولات و خدمات کشاورزی ایجاد کند و همچنین بازاری را برای گردشگران و مسافران روستایی فراهم کند. در نظر گرفتن این عوامل در برنامه‌ریزی و توسعه گردشگری کشاورزی به عنوان یک کسب و کار روستایی مهم است. در کنار عوامل مثبتی که گردشگری کشاورزی می‌تواند داشته باشد توجه به جنبه‌های پایداری محیط روستایی نیز می‌تواند بسیار موثر باشد و گردشگری کشاورزی می‌تواند سبب پایداری جوامع روستایی در مناطقی شود که به عنوان مقصد گردشگری کشاورزی شناخته می‌شوند. در این پژوهش این عوامل شناسایی شدند و نقش هریک مشخص گردید.

**کلیدواژه‌ها:** گردشگری کشاورزی، پایداری، جامعه روستایی، پژوهش ترکیبی، استان مازندران

## تشکر و قدردانی

این مقاله حاصل بخشی از طرح پسادکتری با همکای معاونت پژوهش و فناوری دانشگاه مازندران با شماره قرارداد ۳۳/۸۴۳۷۸ می‌باشد لذا نویسندگان از حمایت‌های مالی و معنوی آن دانشگاه کمال تشکرو قدردانی را دارند.

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**Original Article**

# The Role of Protected Area Tourism in Sustainable Rural Development (A Qualitative Study: The Khartouran Region)

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**Abstract:**
**Purpose-** Protected Area Tourism, despite its economic potential, can pose threats to natural resources and disrupt the balance of rural regions if not properly managed. This study aims to propose strategies for achieving sustainable rural development through tourism while simultaneously conserving environmental values in the Khartouran protected area. The village of Qaleh Bala in Shahrud was selected as the case study.
**Design/methodology/approach-** This research employed a qualitative approach using thematic analysis based on nine semi-structured interviews with tourism stakeholders. Participants were selected through purposive sampling until theoretical saturation was reached. Data analysis followed Braun and Clarke's six-phase framework, and the process was conducted using MAXQDA software.
**Findings-** The results reveal that the impacts of tourism on rural development fall into three dimensions: economic, sociocultural, and environmental. Economically, tourism has contributed to diversifying the local economy, creating jobs, and increasing income. However, it has also raised the cost of living, generated unstable employment, and intensified the village's economic dependency on nearby cities. In the sociocultural dimension, interactions between tourists and residents have revived handicrafts, strengthened local identity, and enhanced social interactions. Yet, they have also led to cultural clashes, lifestyle changes, and the weakening of traditional values. Environmentally, tourism has raised ecological awareness and reduced pressure on natural resources by decreasing reliance on agriculture and livestock. Nevertheless, the high volume of tourists has increased stress on water and soil resources, resulting in ecosystem degradation. For sustainable management of tourism in protected areas, effective strategies include developing comprehensive plans, educating local communities and tourists, enforcing strict environmental regulations, improving sustainable infrastructure, promoting ecotourism, diversifying rural livelihoods, and ensuring continuous monitoring of tourism activities.
**Originality / Value-** By adopting a qualitative approach and focusing on one of Iran's most ecologically sensitive regions, this study provides an in-depth, multidimensional analysis of tourism impacts in protected areas. Its innovation lies in simultaneously identifying both the positive and negative effects of tourism across economic, sociocultural, and environmental dimensions and in offering realistic, context-specific management strategies to foster sustainable rural development within the framework of environmental conservation.
**Keywords-** Sustainable tourism, Responsible tourism, Ecotourism, Tourism impacts, Local community participation, Khartouran National Park.

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## 1. Introduction

In recent years, tourism in protected areas has emerged as a prominent branch of ecotourism, attracting increasing scholarly and policy attention (Pérez-Calderón et al., 2024). Anchored in the dual objectives of conserving natural resources and enhancing the livelihoods of local communities, this form of tourism has become a strategic pillar in rural development and environmental conservation agendas worldwide (Sezerel & Karagoz, 2023). Protected areas—encompassing ecologically valuable ecosystems and pristine natural heritage—offer significant potential for visitor attraction. However, rural communities located in or adjacent to these areas frequently face persistent challenges, including unemployment, outmigration, economic instability, and resource depletion (Soltani Moqadas & Taleshi, 2020). In this context, well-managed tourism has the potential to function as an integrated strategy, simultaneously generating economic opportunities and fostering conservation outcomes (Mohammadimehr et al., 2022). Conversely, poorly planned or inadequately regulated tourism development can place excessive pressure on fragile ecosystems, leading to environmental degradation and socio-economic disruption (Rezaei, 2019).

Owing to its direct engagement with both natural environments and resident communities, tourism in protected areas can produce substantial economic benefits while also generating complex environmental and socio-cultural repercussions (Talebifard et al., 2021). Although prior studies have examined specific economic and environmental impacts of such tourism (Jehan et al., 2023; Majewski, 2024), they have often neglected the dynamic interrelationships among these impacts and their collective influence on the sustainability of host communities. Moreover, the interaction between tourists and host populations—central to the sustainable tourism paradigm—can produce both beneficial and adverse effects on rural development trajectories (Mtapuri et al., 2022). Despite its importance, the social and cultural dimensions of these interactions remain underexplored in the context of protected areas (Thapa et al., 2022). Given the multi-layered nature of these interactions, further empirical investigation is required to understand their implications for long-term sustainability.

Addressing these gaps, the present study examines the impacts of tourism in protected areas on sustainable rural development through a holistic, multi-dimensional lens. The research focuses on the Khar Turan Protected Area, located in Semnan Province, Iran—one of the country's largest and most biodiverse conservation zones, renowned for its rich assemblage of plant and animal species. The village of Ghaleh Bala in Shahrud County, situated within this protected area, was selected as the case study site due to its direct exposure to tourism-related changes. The study's primary aim is to identify and critically analyze the economic, socio-cultural, and environmental consequences of protected area tourism for rural sustainability, and to propose context-specific strategies for its effective and sustainable management. Employing thematic analysis of in-depth interviews with tour guides, residents, and sector experts, this research seeks to provide a comprehensive, evidence-based understanding of tourism's role in shaping the future of rural communities in ecologically sensitive landscapes.

## 2. Research Theoretical Literature

### *2.1. Tourism in Protected Areas*

The global tourism industry, with its rapid and sustained growth, has become a cornerstone of economic development and employment generation in many countries (Hosseini et al., 2024; Movahedi & Amiri, 2023). Its diversification into multiple forms—cultural, nature-based, historical, sports, health, and film tourism—reflects its ability to respond to diverse visitor motivations and destination attributes (Afshardoost & Eshaghi, 2020; Moussavi Neghabi et al., 2021). Among these, ecotourism has gained particular prominence as a form of tourism that emphasizes environmental protection and sustainable development. Ecotourism aims to conserve natural resources while simultaneously raising awareness among tourists and local communities about the ecological and cultural value of ecosystems (Xu et al., 2023).

A significant subset of ecotourism is protected area tourism, defined by visitors' interest in experiencing and observing distinctive species and ecosystems within their natural habitats (Zhang et al., 2022). The International Union for Conservation of Nature (IUCN) defines protected

areas as "terrestrial and/or marine zones designated for the protection and maintenance of biodiversity and natural resources, managed through legal or other effective means." These areas are recognized as possessing high conservation value and are intended to safeguard and restore native vegetation and wildlife habitats (Satumanatpan et al., 2014). However, their ecological sensitivity and biological uniqueness necessitate careful and adaptive management to prevent habitat degradation and biodiversity loss (Sobhani et al., 2022).

Tourism is now one of the most common uses of protected areas, offering opportunities to connect visitors with conservation goals and to promote sustainable development. It is widely acknowledged as a mechanism for enhancing public awareness of natural heritage and mobilizing support for conservation efforts (Gross et al., 2023). Yet, if left unmanaged, rapid growth in protected area visitation can exert unsustainable pressure on natural resources, contribute to habitat destruction, and undermine the ecological integrity of these fragile landscapes (Piñeiro-Chousa et al., 2021). These risks highlight the importance of sustainable management frameworks that balance visitor use with the long-term conservation of biodiversity.

### *2.2. Rural Development and the Role of Tourism*

Rural development is inherently multidimensional, encompassing improvements across economic, social, and environmental dimensions to enhance residents' quality of life (Abrishami et al., 2020). In many resource-rich countries, tourism has been positioned as a central driver of rural development. Through job creation, income diversification, and the stimulation of local enterprises, tourism can play a pivotal role in revitalizing rural economies (Madani, 2022). However, the sustainability of these outcomes remains a central challenge. As defined in the Brundtland framework, sustainability refers to meeting present needs without compromising the capacity of future generations to meet their own (Ruggerio, 2021). In tourism, this translates into the delicate balancing of economic, socio-cultural, and environmental benefits. Consequently, rural tourism development strategies must ensure that economic returns not only benefit local communities but also reinforce the preservation of indigenous culture and the protection of natural capital (Zargham & Asadi zarch, 2024).

A growing body of empirical research has explored the implications of tourism for sustainable rural development, identifying both positive and negative outcomes (Hu et al., 2025). In the Iranian context, studies highlight that the primary positive effects include, economically, the creation of employment opportunities and enhanced income levels, and socially, the strengthening of community participation, safeguarding intangible cultural heritage, fostering place attachment, maintaining traditions, and improving education and awareness (Dehghani et al., 2024; Eskandari Shahraki et al., 2023). Parallel findings from international studies suggest that rural tourism is a vital strategy for economic regeneration, the creation of recreational spaces, the preservation of indigenous cultures, and environmental protection (Tang & Xu, 2023).

Despite these benefits, the negative externalities of rural tourism are equally well-documented. These include environmental degradation, increased waste generation, and overcrowding, all of which—if inadequately managed—can lead to resource depletion, ecological stress, and a deterioration in local residents' quality of life (Khademhosseini et al., 2024; Sorrell & Plante, 2021). This duality underscores the need for context-sensitive tourism planning that maximizes positive outcomes while mitigating risks, ensuring that rural tourism functions as a genuine pathway toward sustainable development.

### *2.3. Research Background*

Protected area tourism, as one of the prominent forms of nature-based tourism, has consistently faced the dual challenge of fostering local economic development while conserving natural resources. Numerous studies have examined this interplay. For instance, Parvaresh and Beyrami Bastam (2020), using a multi-criteria decision-making approach in the Geno region, emphasized the necessity of zoning, community participation, and continuous monitoring to achieve sustainable tourism. Similarly, Sobhani et al. (2019) identified carrying capacity as a vital tool for managing visitor numbers and preventing resource degradation in the Alvand protected hunting zone. Other research, such as Sobhani et al. (2024) and Mododi Arkhudi et al. (2021), explored the negative impacts of nature-based tourism in

protected areas, including land-use change, vegetation degradation, and increased poaching, while also proposing management strategies to mitigate these effects. In a case study of the Touran Protected Area, Behravesh et al. (2020) highlighted the pivotal role of biodiversity in ecotourism development, while pointing to tourists' low levels of awareness and the pressing need for planning and education. Within the Khartouran region itself, studies have shown that tourists' environmental attitudes and knowledge significantly shape their conservation behaviors. Nonetheless, limited local awareness and weak management infrastructure remain key challenges for the sustainable development of tourism in this region (Najjarzadeh et al., 2018).

At the international level, Bhammar et al. (2021) proposed a comprehensive framework for the green recovery of protected area tourism in the aftermath of the COVID-19 pandemic, underscoring the link between biodiversity conservation and local economic benefits. Stojanović et al. (2024), employing the Prism of Sustainability (PoS) model in Serbia, examined how natural and socio-cultural factors influence visitor and resident satisfaction, emphasizing the importance of cultural motivations alongside natural attractions.

In another significant contribution, Pegler et al. (2025) systematically reviewed the literature on Environmental Impact Assessment (EIA) as a tool for predicting and managing tourism impacts in protected areas, positioning it as a critical complement to existing planning models. Conversely, Pérez-Calderón et al. (2024) demonstrated that overly stringent regulations in Spanish national parks can restrict tourism development and undermine local quality of life, whereas geoparks—due to their greater flexibility—provide a more balanced interpretation of sustainable development.

From a tourism branding perspective, Tajer and Demir (2024), applying multi-criteria decision-making methods (AHP and BWM) in Golestan National Park, identified strategies for branding ecotourism in Iran's protected areas. Their findings indicated that protected natural features and ecological values are pivotal determinants of a sustainable tourism brand.

In terms of environmental consequences, Ramaano (2024) investigated the relationship between ecotourism activities and climate change in South Africa, showing that if sustainability principles are neglected, such activities may exacerbate environmental and climatic deterioration. However, when properly managed, they can significantly contribute to sustainable development goals. In a longitudinal study in an Iranian village, Rastegar et al. (2024) found that while residents' general environmental attitudes remained largely unchanged over time, their perspectives on protected area management improved significantly. The study also identified a persistent gap between environmental attitudes and actual behaviors.

Stakeholder analysis and community engagement have also been central to several studies. For example, Drage et al. (2024), through a qualitative study in Denali National Park, Alaska, revealed that the rapid growth of air tourism created management challenges both within the park and in nearby gateway communities, thereby necessitating regional-level planning. Likewise, Esparza-Huamanchumo et al. (2024), in a study in Peru, highlighted weak entrepreneurship and the lack of business management tools among local stakeholders as barriers to sustainable ecotourism management. With regard to private management, Denny et al. (2024) demonstrated that delegating protected area management in Africa to private non-governmental organizations improved wildlife conservation and tourism growth, though it also raised concerns about community security in conflict-prone regions.

### *2.4. Synthesis of Previous Research and the Position of the Present Study*

A review of the existing literature indicates that extensive research has been conducted on protected area tourism, examining aspects such as the economic and environmental impacts of tourism (Majewski, 2024; Ramaano, 2024), the role of community and stakeholder participation in sustainable development (Esparza-Huamanchumo et al., 2024; Liburd et al., 2024), institutional and management challenges (Denny et al., 2024; Drage et al., 2024), and the development of decision-making models and frameworks for tourism planning (Pegler et al., 2025; Tajer & Demir, 2024). Research in Iran (Rastegar et al., 2024) and in other regions with similar ecological and social features has also examined community attitudes toward conservation and tourism.

Despite these valuable contributions, several important research gaps remain:

- Many studies adopt macro-level, policy-oriented, or quantitative approaches, with fewer addressing the qualitative, experiential, and multi-stakeholder dimensions of tourism within specific geographical contexts.
- In Iran, protected area tourism research has primarily focused on modeling capacities or ecological functions, with limited attention to the actual interplay between tourism development, environmental conservation, and local livelihoods in specific protected areas.
- Notably, the Khartouran Protected Area—despite its exceptional biodiversity and rich cultural and natural assets—has been largely overlooked in the literature on sustainable tourism development. To date, no comprehensive study has centered on the lived experiences and perceptions of local actors in this region.

Overall, the reviewed literature underscores that sustainable tourism in protected areas requires an integrated, participatory, and community-centered approach. While theoretical and empirical progress has been made, clear gaps persist in qualitative analyses of stakeholder perceptions, participation, and lived experiences, particularly in the Iranian context.

Against this backdrop, the present study adopts a qualitative, stakeholder-centered approach, drawing on the lived experiences of local communities and the expertise of environmental and tourism specialists. By focusing on the unique ecological and socio-cultural characteristics of the Khartouran Protected Area, this research seeks to generate new insights into the opportunities, challenges, and requirements of sustainable tourism development in Iran's protected areas. Furthermore, it aims to propose policy and practical recommendations for a localized model of sustainable tourism that simultaneously conserves natural resources and strengthens the social and economic capital of local communities.

## 3. Research Methodology

### *3.1 Geographical Scope of the Research*

One of the most valuable regions in Iran for ecotourism (nature-based tourism) is the Khartouran or Touran National Park. According to the classification of the International Union for Conservation of Nature (IUCN), a national park falls under Category II of protected areas, defined as: *"a large natural area designated to protect ecological processes at a large scale, along with characteristic species and ecosystems, while also providing opportunities for environmental education, scientific research, and environmentally compatible recreation"* (Dudley, 2008). Within this category, public use—including responsible and controlled tourism—is permitted, provided that such activities do not compromise conservation objectives. As such, tourism activities in these areas are not contradictory to conservation but are considered integral to protective management programs, particularly when conducted with local community participation and within the framework of sustainable development strategies.

The Touran Protected Area, covering 1,464,992 hectares, is the largest protected area in Iran. It is located in the southern part of Meyami County, Semnan Province. The name *Touran* derives from a village situated at the center of the protected area and bears no relation to the term *Turan* used for the arid and semi-arid steppes of Central Asia east of the Caspian Sea (Karami & AMeri, 2003). The general location of Touran National Park is illustrated in Figure 1.

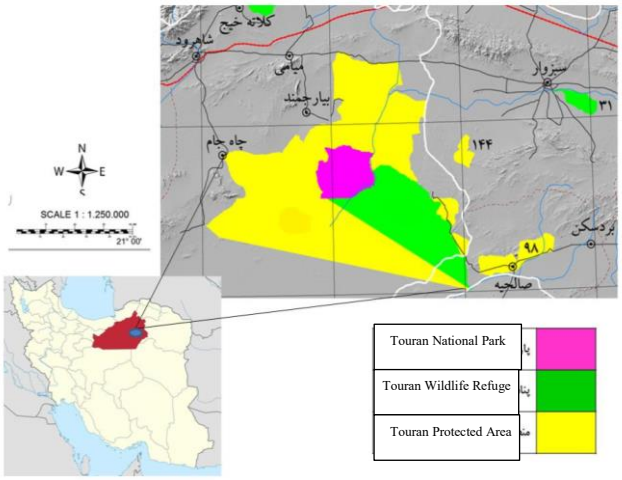


**Figure 1. General map of the Touran Protected Area**

**Vegetation and Wildlife of the Khartouran Protected Area-** The Khartouran Protected Area is recognized as one of the most important biosphere reserves in both Iran and the world. With an area exceeding 1,400,000 hectares, it holds particular significance due to its biodiversity, pristine desert and semi-desert ecosystems, and the presence of rare plant and animal species (Khosrogerdi et al., 2025).

Vegetation in the region consists of a diverse range of shrubs, bushes, and rangeland plants adapted to its arid and semi-arid climate. Dominant plant species include *Haloxylon*, *Calligonum*, *Tamarix*, *Salsola*, and various types of grasses. This vegetation plays a critical role in soil protection, wildlife nourishment, and reduction of wind erosion (Kermani et al., 2022).

In terms of wildlife, Khartouran serves as a vital habitat for rare and endangered species such as the Asiatic cheetah, Persian onager, goitered gazelle, leopard, caracal, and sand cat. Additionally, bird species such as the Iranian ground jay, houbara bustard, and golden eagle are also observed in this region (Yousefi et al., 2023).

The unique natural features and biodiversity of Khartouran make it one of Iran's most important environmental hotspots, highlighting the necessity for careful management of human activities, including tourism. Therefore, due to the high conservation value of this protected area, responsible and participatory tourism planning aimed at protecting its vegetation and wildlife is imperative (Behravesh et al., 2020).

The most scenic, temperate, and accessible village in proximity to the park is Qaleh Bala, often referred to as the "gateway to Touran's wildlife." Located on the northeastern edge of Khartouran, the village is built on a mountainside in a style reminiscent of Masuleh. Administratively, Qaleh Bala belongs to the Biarjemand District of Shahrud County, situated 140 kilometers southeast of the county center. Its location relative to the town of Biarjemand is shown in Figure 2.

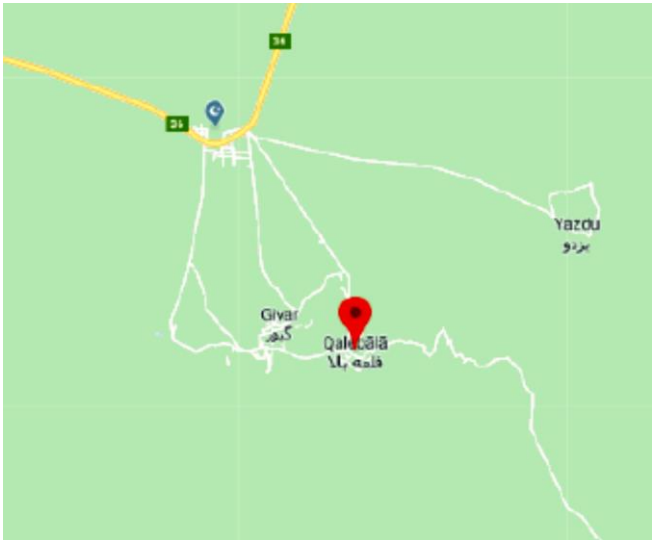


**Figure 2. General map of Qaleh Bala village in southeastern Biarjemand**

### *3.2. Research Method*

This research employed a qualitative approach based on thematic analysis, aiming to provide an in-depth understanding of stakeholders' experiences and perceptions of tourism impacts in protected areas. The study population included all stakeholders associated with tourism in Qaleh Bala village, located in the Khartouran Protected Area—specifically knowledgeable residents, tourists, local guides, experts from the Department of Environment, and tourism practitioners.

A purposive judgmental sampling technique was used, with sample size determined by the principle of theoretical saturation. Accordingly, interviews continued until no new categories or concepts emerged, and it was determined that additional interviews would not yield further insights (Hennink & Kaiser, 2022). Ultimately, nine semi-structured interviews were conducted, after which data repetition indicated that further interviews were unnecessary.

Data analysis followed the six-phase framework of Braun and Clarke (2006):

1. Familiarization with the data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes (Figure 3).

The analyses were conducted using MAXQDA software, and a thematic network was constructed to illustrate the findings (Christou, 2022).

To ensure the validity and reliability of the qualitative data, several strategies were employed in addition to participant validation and peer debriefing. These included thick contextual description, maintaining an audit trail of the research process, and continuous researcher reflexivity. Moreover, the analysis included the consideration of negative cases to avoid one-sided interpretations and unwarranted generalizations (Nowell et al., 2017).

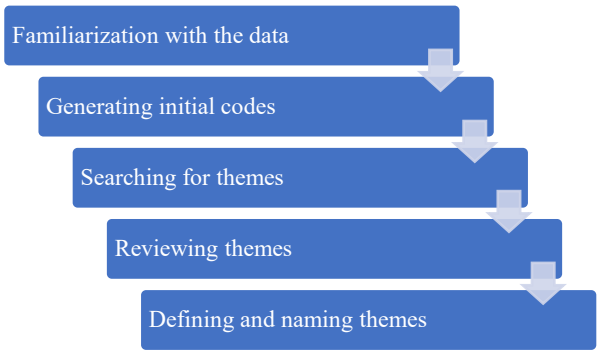


**Figure 3. Thematic analysis procedure for interviews**

## 4. Research Findings

This study was designed and implemented to answer the question: How can protected area tourism influence sustainable rural development in Qaleh Bala village, Shahrud?

The results of interview analysis revealed 87 initial codes. The word cloud derived from these codes, presented in Figure 4, shows that the most frequent codes emerging from the data analysis were: diversification of the rural economy, job creation, increased household income, environmental awareness, and attention to local culture by the locals.


**Figure 4. Word cloud of initial codes**

The initial codes were further reviewed to identify broader themes. Through axial coding, conceptually related codes were grouped under overarching first-order themes. Some codes, however, remained as stand-alone codes, as they could not be meaningfully aggregated into higher-order categories (Braun & Clarke, 2006). Table 1 presents the first-order themes resulting from the analysis of initial codes.

**Table 1. First-order themes of the effects of protected area tourism on sustainable rural development in Qaleh Bala**

| First-order Themes | Initial Codes | Frequency |
|---|---|---|
| Inflation | Rising land and housing prices | 2 |
| | Increased consumer prices | 1 |
| | Higher local living costs | 3 |
| Wealth Creation | Sale of surplus rural products | 1 |
| | Growth in household income | 7 |
| Economic Diversification | Expansion of handicraft production (quantity) | 1 |
| | Growth in handicraft markets | 1 |
| | Improvement in handicraft quality | 1 |
| | Emergence of new economic groups | 1 |
| | Diversified rural economy | 7 |
| Job Creation | Seasonal and unstable jobs | 3 |
| | Stable employment opportunities | 5 |
| – | Economic-centered development | 2 |
| – | Economic dependence on urban centers | 2 |
| Cultural Revitalization | Valuing local traditions and culture | 3 |
| | Economic valorization of culture | 1 |
| | Cultural identity reinforcement | 1 |
| Conflict and Inequality | Reduced income disparities | 1 |
| | Perceived social inequality | 1 |
| Participation & Social Capital | Environmental responsibility | 1 |
| | Community security | 2 |
| | Improved local quality of life | 2 |
| | Local participation in decision-making | 1 |
| | Community engagement in security | 1 |
| Normative & Value Systems | Value conflicts between tourists and hosts | 1 |

| First-order Themes | Initial Codes | Frequency |
|---|---|---|
| | Emergence of new social values | 1 |
| | Normative and cultural transformation | 1 |
| Connectivity | Improved communication infrastructure | 1 |
| | Inter-village relations | 1 |
| | Urban-rural linkages | 1 |
| Demographic | Reduced rural-to-urban migration | 2 |
| | Balanced demographic structure | 1 |
| Environmental Culture | Environmental awareness | 5 |
| | Local environmental sensitivity | 4 |
| Pressure on Resources | Resource overexploitation | 3 |
| | Reduced agricultural and livestock pressure | 1 |
| | Biodiversity decline | 2 |
| | Environmental degradation | 3 |
| | Waste generation and pollution | 5 |

Although one stage of analysis was conducted on the initial codes, it appeared that the first-order themes themselves could be abstracted to an even higher level. At this stage, the first-order themes were analyzed and ultimately reduced into three main themes:

1. Economic dimensions
2. Socio-cultural dimensions
3. Environmental dimensions

This abstraction is depicted in Figure 5.

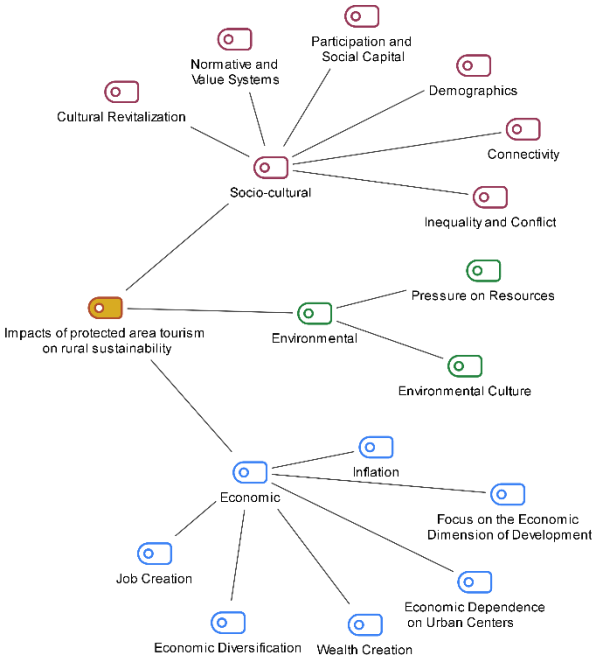


**Figure 5. Second-level analysis of themes**

It must be emphasized that the first-order and overarching themes were derived from the initial codes, meaning that interviews and textual sources only revealed those codes, and the higher-order themes were generated through abstraction.

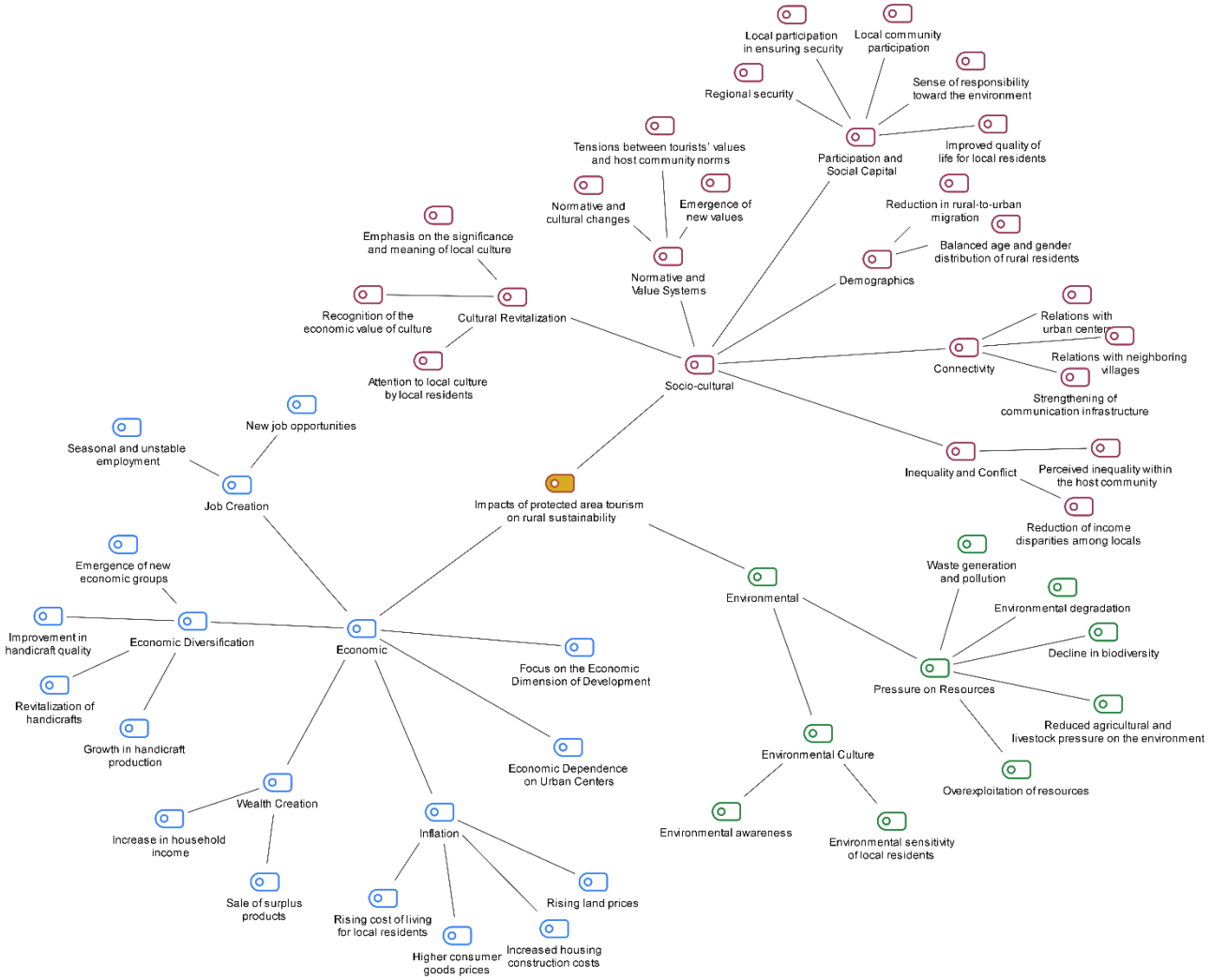


**Figure 6. Thematic mapping of protected area tourism impacts on rural sustainability**

### *4.1. Socio-Cultural Role*

One of the three main themes concerning the effects of protected area tourism on sustainable rural development relates to socio-cultural impacts. Table 3 presents the conceptual statements of socio-cultural effects along with illustrative excerpts from analyzed interviews.

**Table 3. Socio-cultural impacts of protected area tourism on rural sustainability**

| First-Order Themes / Initial Codes | Analyzed Interviews |
|---|---|
| **Cultural Revitalization**<br>• Attention to local culture by local residents<br>• Recognition of the economic value of culture<br>• Emphasis on the significance and meaning of local culture | One notable outcome has been the growing awareness among local residents regarding their cultural and social heritage. This stems from the realization that such heritage can be both attractive to outsiders and a source of income. Some villagers previously assumed that valuable heritage was confined to cities and that rural areas lacked such assets; tourism has the potential to shift this perception. Rural tourism can strengthen local initiatives to more carefully preserve indigenous and regional values. When new jobs are created in rural areas and locals achieve better economic conditions, they increasingly value their cultural heritage and actively safeguard it. Many cultural elements that attract tourists are considered mundane by locals, who may overlook them. However, once tourists express interest, these same elements—whether part of traditional customs or daily life—gain renewed recognition and legitimacy among the community. |

| First-Order Themes / Initial Codes | Analyzed Interviews |
|---|---|
| **Inequality and Conflict**<br>• Reduction of income disparities among locals<br>• Perceived inequality within the host community | The wealth creation and rising incomes of local residents can reduce class divisions, particularly when those engaged in agriculture or livestock benefit indirectly through tourism. Nonetheless, lifestyle differences between tourists and villagers may also intensify perceptions of inequality. Witnessing higher standards of living among visitors can cause local residents to feel disadvantaged. |
| **Participation and Social Capital**<br>• Sense of responsibility toward the environment<br>• Regional security<br>• Improved quality of life for local residents<br>• Local community participation<br>• Local participation in ensuring security | Tourism has enhanced residents' collective sense of responsibility for their environment. In local communities, responsibility is often communal, and tourism reinforces this by demonstrating its economic and social importance. Improved roads and infrastructure for tourism access have also strengthened security. A road with frequent traffic provides greater safety than one rarely used, and residents report feeling more secure on such main routes. Infrastructure development has been accompanied by community engagement in maintenance and security. Since tourism generates income, locals are more willing to contribute to safeguarding both the environment and infrastructure. Protected area tourism thus enhances residents' overall well-being and quality of life, with strengthened economic conditions serving as a key driver. |
| **Normative and Value Systems**<br>• Tensions between tourists' values and host community norms<br>• Emergence of new values<br>• Normative and cultural changes | Responsible tourism is essential, as cultural and value differences between hosts and guests can at times be difficult to reconcile. Tourists must act thoughtfully to avoid creating tension or conflict. Large cultural gaps can weaken local traditions, particularly among younger generations, leading to the emergence of new norms and values. Such transformations, while noteworthy, may erode the authenticity of the host community and diminish its cultural appeal, which is itself a key component of the tourism brand. Observable changes in lifestyle, dress, and food habits are partly attributable to tourism. While broader societal transformations and virtual communications play a role, interactions with urban visitors also drive shifts in rural life. These exchanges introduce new cultural elements into local daily life, underscoring the need for responsible tourism practices to minimize disruptive cultural divides. |
| **Connectivity**<br>• Strengthening of communication infrastructure<br>• Relations with neighboring villages<br>• Relations with urban centers | Tourism has spurred the development of rural infrastructure, particularly in transportation. Wildlife tourism has also improved social relations, both quantitatively and qualitatively, with surrounding villages and nearby cities. A sense of interdependence has emerged, as residents recognize the necessity of establishing constructive relationships with both urban visitors and neighboring communities to sustain tourism. |
| **Demographics**<br>• Reduction in rural-to-urban migration<br>• Balanced age and gender distribution of rural residents | Tourism-generated income reduces rural-to-urban migration, curbing urban sprawl and informal settlements. Villages once at risk of aging populations are now retaining their youth, as improved livelihoods encourage young people to remain. While out-migration persists to some degree, especially among young men, tourism provides a strong counterbalance, revitalizing local communities and maintaining demographic diversity. |

Based on thematic analysis, the socio-cultural impacts of protected area tourism in Qaleh Bala can be divided into positive and negative effects.

Key positive impacts include:

- Cultural revitalization: Tourism enhances local awareness of cultural values and heritage, leading to revitalization and greater willingness to preserve them. It also highlights the economic value of culture, encouraging locals to see cultural assets as both meaningful and income-generating.
- Participation and social capital: Tourism fosters stronger social responsibility among locals, enhances infrastructure and security due to economic growth, and thereby improves quality of life and local well-being.
- Demographic change: Tourism reduces rural-to-urban migration by improving livelihoods

and generating employment opportunities, maintaining demographic balance.
- Communication: Tourism strengthens local infrastructure and social ties with neighboring villages and cities, improving overall connectivity and well-being.

Key negative impacts include:
- Inequality and conflict: Economic and lifestyle disparities between tourists and locals may lead to perceptions of inequality and social tension.
- Normative and value systems: Cultural differences between hosts and guests can weaken local cultural values and norms, contributing to long-term cultural erosion and reducing destination attractiveness.

In sum, protected area tourism has diverse socio-cultural effects: while it can foster cultural revival, social participation, and improved quality of life, it can also create inequalities and cultural disruptions. Effective management is required to mitigate negative effects and strengthen positive contributions.

### *4.2. Economic Role*

The economic impacts of protected area tourism on sustainable rural development in the Khartouran region were highly anticipated. Indeed, one of the most significant effects of tourism—particularly in protected areas—occurs in the economic and livelihood domains. Table 4 provides the conceptual statements of economic effects with supporting excerpts from analyzed interviews.

**Table 4. Economic impacts of protected area tourism on rural sustainability**

| First-Order Themes / Initial Codes | Analyzed Interviews |
|---|---|
| **Inflation**<br>• Rising land prices<br>• Increased housing construction costs<br>• Higher consumer goods prices<br>• Rising cost of living for local residents | With the expansion of tourism, demand for land has increased, driving up prices significantly. Some frequent visitors have purchased land and built villas, which has drastically raised land and housing prices in villages, making it difficult for local residents—especially younger generations—to afford property. Not only land prices, but also the cost of consumer goods has risen, contributing to an overall increase in the cost of living. While tourism has generated notable benefits, this issue remains: living expenses for all residents have increased. Although income levels have risen for some, the higher cost of living affects the entire community. |
| **Wealth Creation**<br>• Sale of surplus products<br>• Increase in household income | Tourism creates opportunities to market local products and handicrafts. Farmers and artisans can sell directly to consumers, which motivates them and generates additional income. One of the most significant economic benefits of tourism is providing financial support to rural areas by raising household income and creating new employment opportunities. |
| **Economic Diversification**<br>• Growth in handicraft production<br>• Revitalization of handicrafts<br>• Improvement in handicraft quality<br>• Emergence of new economic groups | The presence of tourists has revived certain handicrafts, such as weaving, which were at risk of disappearing. Women, in particular, play a major role in handicraft-based employment. Tourism has motivated residents to pursue constructive activities, many of which revolve around handicrafts and related industries. Increased handicraft sales have led producers to improve product quality, aligning with tourists' preferences. Tourism has gradually shifted underemployed rural labor from agriculture toward services and self-employment, creating opportunities especially for women. Some locals now guide tours, sell surplus agricultural and livestock products, and produce handicrafts, contributing to a more diverse local economy. |
| **Job Creation**<br>• Seasonal and unstable employment<br>• New job opportunities | Tourism generates employment opportunities in these areas; however, most of these jobs are seasonal and lack stability, as they depend on tourist inflows during certain times of the year. Despite these limitations, protected area tourism plays a significant role in boosting rural economic activities and creating new jobs for local residents, making it a valuable driver of rural development. |
| **Focus on the Economic Dimension of Development** | Development should be understood not merely as economic growth but as *sustainable development*. Tourism's impacts must be evaluated across economic, social, cultural, and environmental dimensions. Overemphasis on economic benefits risks undermining local cultural values or causing ecological harm. Tourism, like any other industry, carries specific consequences that must be addressed within a sustainability framework. |

| First-Order Themes / Initial Codes | Analyzed Interviews |
|---|---|
| **Economic Dependence on Urban Centers** | Rural economies are becoming increasingly dependent on urban markets, while many tourism-related jobs remain seasonal. This dependency is risky, as illustrated during the COVID-19 pandemic, when the absence of visitors severely harmed communities reliant on tourism. Tourism has also diversified local needs: new products and services introduced through tourism often cannot be met by local production alone, further increasing reliance on urban centers. Even in areas such as clothing, this dependency has become more evident. |

Overall, the economic impacts of protected area tourism in Qaleh Bala can also be divided into positive and negative dimensions.

Positive impacts include:

- Wealth creation and household income growth: Tourism enables the direct sale of local products (handicrafts, agricultural goods), boosting local motivation and earnings.
- Economic diversification: Tourism revives traditional crafts such as weaving, supports women's economic participation, and fosters new business activities (e.g., tour guiding, local sales).
- Job creation: Tourism creates new employment opportunities that can substantially contribute to rural livelihoods.

Negative impacts include:

- Inflation: Increased demand for land, housing, and consumer goods raises local living costs, particularly harming those not directly benefiting from tourism.
- Urban dependency: Rural economies become more reliant on urban markets and external services, making them vulnerable to crises (e.g., COVID-19).
- Seasonal and unstable employment: Many tourism-related jobs are temporary, operating only during peak visitor periods, reducing job security.

Thus, while tourism in protected areas can generate wealth, diversify the economy, and create jobs, overemphasis on economic growth alone risks producing inflation, dependency, and precarious livelihoods. Sustainable development requires integrating economic, social, cultural, and environmental considerations simultaneously.

### *4.3. Environmental Role*

Undoubtedly, one of the key impacts of tourism on rural and sustainable development concerns the environment. While tourism has long been considered a "clean industry," recent decades have brought increased attention to both its positive and negative ecological consequences—especially in protected areas. Table 5 presents the conceptual statements of environmental effects alongside selected interview excerpts.

**Table 5. Environmental impacts of protected area tourism on rural sustainability**

| First-Order Themes / Initial Codes | Analyzed Interviews |
|---|---|
| **Environmental Culture**<br>• Environmental awareness<br>• Environmental sensitivity of local residents | Tourism development should not lead to the destruction of natural resources. In recent years, both tourists and local residents have shown greater environmental awareness, partly as a result of increased interactions within protected areas. The tourism industry can promote environmental values through cultural exchange and the dissemination of information. This process has fostered a stronger sense of environmental responsibility among locals, which is highly significant. Tourism in protected areas not only raises awareness but also cultivates sensitivity among local communities toward the importance of their ecosystems. This heightened sensitivity is one of the positive outcomes of tourism in these areas. |
| **Pressure on Resources**<br>• Overexploitation of resources<br>• Reduced agricultural and livestock pressure on the environment<br>• Decline in biodiversity | Although tourism in the studied region is still emerging and has not yet reached levels that pose severe risks, there is potential for excessive use of natural resources, such as water depletion, land degradation, and overexploitation of other local resources. The shift from agriculture and livestock-based livelihoods to tourism-related employment has, to some extent, reduced pressure on rangelands and water resources traditionally overused by these sectors. However, tourism can also negatively impact biodiversity due to the direct presence of visitors in natural habitats. The construction of accommodation facilities and related infrastructure has contributed to environmental |

| First-Order Themes / Initial Codes | Analyzed Interviews |
|---|---|
| • Environmental degradation<br>• Waste generation and pollution | degradation. In addition, large-scale vegetation removal and wildfires are often associated with tourist activities, creating serious challenges across the country. Even in Qaleh Bala—where most visitors are environmentally conscious—issues such as litter accumulation and improper waste disposal persist. Tourist flows inevitably generate various forms of pollution (air, water, soil), with waste volumes often exceeding the capacity of local ecosystems, eventually turning into a critical environmental concern. |

The environmental effects of protected area tourism in Qaleh Bala can be summarized as both positive and negative.

Positive impacts include:

- Environmental awareness: Tourism increases ecological knowledge among locals and visitors through cultural interaction, enhancing conservation attitudes.
- Environmental responsibility: Greater engagement in tourism fosters stronger environmental stewardship among locals, encouraging sustainable practices.
- Reduced agricultural pressure: By shifting livelihoods from farming and herding to tourism, pressure on rangelands and agricultural resources is alleviated.

Negative impacts include:

- Overuse of resources: Increased water, land, and natural resource consumption may threaten ecological balance and reduce biodiversity.
- Pollution and waste generation: Tourism often leads to waste accumulation and multiple forms of pollution (air, water, noise, visual), exceeding the destination's capacity and creating environmental risks.

In conclusion, protected area tourism exerts complex environmental effects. While it can strengthen awareness, responsibility, and conservation, unmanaged growth risks overexploitation and environmental degradation. Achieving sustainable rural development thus requires careful management to balance positive and negative impacts through responsible planning.

## 5. Discussion and Conclusion

The findings of this study demonstrate that protected area tourism significantly influences sustainable rural development, with impacts observable across three major dimensions: economic, socio-cultural, and environmental. While protected area tourism offers substantial opportunities for rural development, it simultaneously generates challenges that must be addressed through targeted and comprehensive planning.

### *5.1. Economic Dimension*

Protected area tourism has contributed to increasing rural household income through the sale of local products, revitalization of handicrafts, and the creation of new employment opportunities. One of the most important positive outcomes is the diversification of the rural economy, which has reduced dependence on agriculture and livestock as the primary livelihoods, while simultaneously creating new opportunities in services and handicraft-based industries. Nevertheless, challenges such as land and commodity price inflation, rising living costs for local residents, and the prevalence of seasonal and unstable employment threaten the economic sustainability of these areas. Employment in the tourism sector is particularly vulnerable, as it is often seasonal, short-term, and heavily reliant on tourist flows, making it an insufficiently stable source of income. Furthermore, economic dependence on urban centers for emerging needs represents another critical challenge that undermines rural economic sustainability.

This study provides new insights into the economic effects of tourism in protected areas, expanding upon findings of prior research. Studies such as Jamshidzehi Shahbakhsh and Moradi (2021), *He et al. (2021), Dehghani et al. (2024), Liu et al. (2023), and Soleimani and Momeni (2022)* have largely emphasized positive economic impacts such as job creation, income generation, handicraft development, and infrastructure improvement. A novel finding of this study is the role of tourism in enhancing economic equity by reducing income disparities among local residents and fostering new economic groups and initiatives—an issue rarely addressed in earlier research. At the same time, the

present study identifies economic challenges that were underexplored in prior work, particularly employment instability and economic dependency on urban centers. In contrast to earlier studies, our results show that tourism-related employment is predominantly seasonal and cannot serve as a fully sustainable source of livelihood. Moreover, reliance on urban centers for emerging needs—driven by cultural change—can further destabilize rural economies. Compared to previous literature, this article places greater emphasis on economic instability stemming from seasonal tourism, rising living costs, and urban dependency. These findings highlight the necessity of precise planning and integrated management to ensure long-term economic sustainability in rural and protected areas.

### *5.2. Socio-Cultural Dimension*

Protected area tourism also generates substantial socio-cultural impacts. On the positive side, interactions between tourists and local residents foster greater cultural awareness, strengthen local identity, and revitalize traditional handicrafts. These processes enhance community self-confidence, contribute to the continuity of traditions, and support the preservation of indigenous arts. Additional positive outcomes include increased responsibility and participation of local people in development initiatives and security provision, improved road safety, and reduced outmigration. However, tourism-induced cultural changes may also erode traditional values, alter lifestyles, and weaken social cohesion. Such changes can generate cultural tensions and amplify feelings of alienation among local communities.

Previous studies such as *Dehghani et al. (2024), Widawski et al. (2023), (Shafieisabet & Haratifard, 2019),* and *Singh et al. (2023)* have identified positive socio-cultural impacts including reduced migration, enhanced community participation, safeguarding intangible heritage, fostering place attachment, and preserving traditions. The present study confirms these outcomes while also introducing new findings: the economic value of local culture and customs, improved road and regional security particularly along tourist routes, and enhanced social interactions between rural communities and neighboring villages or towns. On the other hand, this study highlights negative socio-cultural consequences that have received less attention in earlier research, such as cultural clashes between host communities and tourists, and the transformation of local cultural values and traditions through tourist interactions.

### *5.3. Environmental Dimension*

In terms of the environment, protected area tourism has dual effects. On one hand, it contributes to environmental protection by raising awareness and fostering a sense of responsibility among both tourists and local residents. Moreover, by diversifying rural livelihoods, tourism can reduce reliance on agriculture and livestock, thereby lessening environmental pressure. On the other hand, high volumes of tourist presence exert significant stress on natural resources such as water, soil, and vegetation, while increasing waste generation, pollution, and habitat degradation. Tourism-related infrastructure development and the intensification of human presence in ecologically sensitive areas further threaten biodiversity and ecosystems.

Earlier studies have also underlined the destructive impacts of unregulated tourism, including waste accumulation, overexploitation of water and soil, ecosystem degradation, and biodiversity loss (Nasiri Hendehkhaleh et al., 2022; Ramaano, 2023; Saputro et al., 2023). However, the present study emphasizes not only these negative effects but also the positive contributions of tourism. Specifically, tourism can enhance environmental awareness and sensitivity among both locals and visitors, while creating new employment opportunities in tourism and handicraft sectors that alleviate pressure from agriculture and livestock on natural resources. Findings from Qaleh Bala village indicate that, due to the relatively high level of environmental awareness among both tourists and local communities, negative ecological effects have not yet reached a critical level. This contrasts with previous studies that reported more widespread negative environmental consequences, suggesting that such differences may stem from local contexts and varying levels of community and tourist awareness.

Table 6 presents a synthesized summary of the positive and negative impacts of protected area tourism on sustainable rural development.

**Table 6. Positive and Negative Impacts of Protected Area Tourism on Sustainable Rural Development**

| Positive Impacts of Protected Area Tourism on Sustainable Rural Development | Negative Impacts of Protected Area Tourism on Sustainable Rural Development |
|---|---|
| **Economic Impacts**<br>• Increases household income<br>• Creates employment opportunities<br>• Diversifies the rural economy<br>• Facilitates the sale of surplus rural products<br>• Enhances the quantitative growth of handicrafts<br>• Improves the quality of handicrafts<br>• Fosters new entrepreneurial groups (notably women)<br>• Reduces local income disparities | **Economic Impacts**<br>• Raises the price of consumer goods.<br>• Increases land and housing prices in rural areas.<br>• Raises the overall cost of living for local residents.<br>• Tourism-related jobs are largely seasonal and unstable.<br>• Strengthens economic dependency on urban centers.<br>• prioritizes economic gains at the expense of broader sustainability. |
| **Socio-Cultural Impacts**<br>• Enhances local residents' appreciation of their culture<br>• Highlights the symbolic and economic value of local culture<br>• Strengthens residents' sense of responsibility toward their living environment.<br>• Improves road and regional security.<br>• Enhances the quality of life of local residents.<br>• Encourages local participation in development programs.<br>• Increases local involvement in maintaining community security.<br>• Contributes to infrastructure and communication development.<br>• Expands social relations with neighboring villages.<br>• Strengthens connections with urban centers.<br>• Reduces rural-to-urban migration.<br>• Promotes demographic balance in terms of age and gender. | **Socio-Cultural Impacts**<br>• Differences in lifestyle between hosts and tourists intensify perceptions of social inequality.<br>• Generates cultural tensions between host communities and tourists.<br>• Introduces new cultural values into rural settings.<br>• alters traditional norms and lifestyles. |
| **Environmental Impacts**<br>• Increases environmental awareness among local residents.<br>• Enhances environmental sensitivity within the host community.<br>• Reduces pressure on natural resources by shifting livelihoods away from agriculture and livestock. | **Environmental Impacts**<br>• Promotes overuse of natural resources<br>• Accelerates biodiversity loss<br>• Causes habitat degradation<br>• Generates waste and pollution. |

### *5.4. Managerial and Practical Strategies*

To ensure the sustainable management of tourism in protected areas and to achieve sustainable rural development, it is essential to adopt a set of managerial and practical strategies:

- Formulating Sustainable Tourism Management Plans: Policymakers should design strategies that simultaneously maximize the economic benefits of tourism while safeguarding environmental resources and cultural values. Such strategies must be comprehensive and inclusive, addressing all three dimensions of sustainable development—economic, socio-cultural, and environmental.
- Capacity Building and Education: Enhancing public awareness among both local communities and tourists regarding the importance of protecting natural and cultural resources is crucial. This can be achieved through targeted education and awareness-raising programs. Training local residents in sustainable and environmentally friendly occupations can reduce resource degradation while strengthening the foundations of a resilient rural economy.
- Enforcement of Strict Regulations for Resource Protection: Implementing local regulations that limit the number of visitors, safeguard ecologically sensitive areas, and prevent uncontrolled construction is vital to reducing pressure on natural resources. Equally important are effective waste management regulations and measures aimed at reducing pollution in tourism destinations.
- Development of Sustainable Infrastructure: Tourism infrastructure must be designed and constructed in compliance with environmental standards and through the use of eco-friendly materials and technologies. Such infrastructure should be planned

to minimize negative impacts on ecosystems and natural resources.

- Prioritizing Ecotourism and Responsible Tourism: Promoting ecotourism as a sustainable tourism model offers a viable approach to reducing environmental degradation while preserving cultural values. Ecotourism, with its emphasis on education, conservation, and empowerment of local communities, should be prioritized as a key pathway for sustainable tourism development.
- Diversification of Income Sources and Sustainable Employment: To mitigate overdependence on tourism and seasonal employment, policies should encourage diversification of the rural economy through the promotion of local industries, sustainable agriculture, and alternative livelihood sources. Such measures can help ensure year-round employment and income stability.
- Continuous Monitoring and Evaluation: Sustainable development requires ongoing monitoring and evaluation of tourism activities and their outcomes. This should include systematic assessment of economic, socio-cultural, and environmental impacts to allow for timely corrective measures in the event of emerging challenges.

By adopting these managerial strategies, tourism in protected areas can be developed in a way that not only safeguards natural and cultural resources but also contributes meaningfully to the long-term sustainability of rural communities.

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**Authors contributions**

The authors equally contributed to the preparation of this article.

**Conflict of interest**

The authors declare no conflict of interest.

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# نقش گردشگری مناطق حفاظت شده در توسعه پایدار روستایی
# ( مطالعه کیفی: منطقه خارتوران)

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## چکیده مبسوط

### ۱. مقدمه

در دهه‌های اخیر، گردشگری در مناطق حفاظت‌شده به‌عنوان یکی از شاخه‌های کلیدی اکوتوریسم، اهمیت فزاینده‌ای یافته است. این نوع گردشگری علاوه بر ارتقای حفاظت از منابع طبیعی، می‌تواند به‌عنوان ابزاری برای بهبود معیشت جوامع محلی نیز عمل کند. با این حال، توسعه بی‌برنامه آن می‌تواند آثار منفی بر محیط‌زیست و فرهنگ محلی برجای گذارد. در ایران، منطقه حفاظت‌شده خارتوران به‌عنوان یکی از بزرگ‌ترین و ارزشمندترین ذخیره‌گاه‌های زیستی کشور، ظرفیت بالایی برای توسعه اکوتوریسم دارد. این مقاله با تمرکز بر روستای قلعه بالای شاهرود در محدوده خارتوران، به بررسی تأثیرات چندوجهی گردشگری بر توسعه پایدار روستایی می‌پردازد. هدف اصلی پژوهش، شناسایی ابعاد اقتصادی، اجتماعی–فرهنگی و زیست‌محیطی گردشگری و تحلیل پیامدهای آن در راستای دستیابی به توسعه پایدار است.

### ۲.مبانی نظری پژوهش

گردشگری در مناطق حفاظت‌شده بخشی از اکوتوریسم محسوب می‌شود که با هدف مشاهده، تجربه و تعامل با زیستگاه‌های طبیعی شکل می‌گیرد. این مناطق با ارزش اکولوژیکی بالا، علاوه بر کارکرد حفاظتی، فرصت‌های مناسبی برای توسعه گردشگری پایدار فراهم می‌کنند. پژوهش‌های پیشین نشان داده‌اند که گردشگری می‌تواند از یک‌سو موجب افزایش اشتغال و درآمد و حفظ میراث فرهنگی شود و از سوی دیگر تهدیداتی چون تخریب زیستگاه‌ها و تغییرات فرهنگی نامطلوب ایجاد کند. در حوزه توسعه روستایی نیز گردشگری به‌عنوان یکی از ابزارهای مهم متنوع‌سازی اقتصاد و ارتقای کیفیت زندگی شناخته شده است. با این حال، عدم مدیریت اصولی موجب وابستگی اقتصادی، ناپایداری شغلی و فشار بر منابع طبیعی خواهد شد. بررسی شکاف‌های موجود در ادبیات نشان می‌دهد که کمتر پژوهشی به تعامل همزمان و چندبعدی آثار اقتصادی، اجتماعی و زیست‌محیطی گردشگری مناطق حفاظت‌شده بر توسعه پایدار روستایی پرداخته است. این مقاله درصدد پرکردن این خلأ از طریق یک مطالعه موردی در منطقه خارتوران است.

### ۳. روش تحقیق

این پژوهش به روش کیفی و مبتنی بر تحلیل مضامین انجام شده است. جامعه آماری شامل ذی‌نفعان مرتبط با گردشگری در روستای قلعه بالا شامل ساکنان محلی، راهنمایان گردشگری، کارشناسان محیط‌زیست و فعالان حوزه گردشگری بود. نمونه‌گیری به شیوه هدفمند و قضاوتی صورت گرفت و تعداد ۹ مصاحبه نیمه‌ساختاریافته تا رسیدن به اشباع نظری انجام شد. داده‌ها با استفاده از الگوی شش‌مرحله‌ای براون و کلارک کدگذاری و تحلیل شدند. اعتبار نتایج از طریق بازبینی مشارکت‌کنندگان، توصیف غنی زمینه‌ای و بازاندیشی مستمر پژوهشگر تضمین شد. کدهای اولیه به مضامین سطح اول و در نهایت به سه مضمون اصلی اقتصادی، اجتماعی–فرهنگی و زیست‌محیطی انتزاع شدند.

### ۴. یافته‌های تحقیق

**تأثیرات اجتماعی–فرهنگی**- گردشگری در روستای قلعه بالا پیامدهای اجتماعی–فرهنگی متنوعی به همراه داشت. از جنبه مثبت، گردشگری موجب افزایش آگاهی مردم محلی نسبت به ارزش‌های فرهنگی، احیای صنایع‌دستی، تقویت هویت محلی و افزایش مشارکت

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اجتماعی شد. همچنین، کاهش مهاجرت جوانان و بهبود زیرساخت‌های ارتباطی از دیگر آثار مثبت آن بود. در مقابل، برخی چالش‌ها همچون تضاد ارزش‌ها میان گردشگران و جامعه میزبان، ایجاد شکاف اقتصادی و تغییرات در هنجارهای فرهنگی مشاهده شد. این دوگانگی نشان می‌دهد که اگرچه گردشگری می‌تواند به تحکیم سرمایه اجتماعی کمک کند، اما بدون مدیریت صحیح، خطر فرسایش فرهنگی را نیز در پی خواهد داشت.

**تأثیرات اقتصادی**- یافته‌ها نشان دادند که گردشگری به‌طور چشمگیری به افزایش درآمد خانوارهای روستایی از طریق فروش صنایع‌دستی، محصولات کشاورزی و خدمات گردشگری کمک کرده است. علاوه بر این، اشتغال‌زایی مستقیم و غیرمستقیم به‌ویژه برای زنان و جوانان، موجب تنوع‌بخشی به اقتصاد روستا شد. اما، آثار منفی همچون افزایش قیمت زمین و کالاهای مصرفی، اشتغال فصلی و وابستگی اقتصادی به شهرها نیز شناسایی گردید. این امر بیانگر آن است که گردشگری، هرچند به‌عنوان موتور محرک توسعه اقتصادی عمل می‌کند، اما در صورت نبود سیاست‌های کنترلی، می‌تواند پایداری اقتصادی روستا را تهدید کند.

**تأثیرات زیست‌محیطی**- در بُعد زیست‌محیطی، گردشگری موجب افزایش آگاهی زیست‌محیطی ساکنان و گردشگران و ارتقای مسئولیت‌پذیری آنان شد. تغییر الگوی معیشت از کشاورزی و دامداری به فعالیت‌های گردشگری، فشار بر مراتع و منابع طبیعی را کاهش داد. با این حال، مشکلاتی مانند افزایش زباله، مصرف بی‌رویه منابع و تهدید اکوسیستم‌ها نیز مشاهده شد. برخلاف برخی مطالعات گذشته، نتایج نشان داد که در روستای قلعه بالا، سطح بالای آگاهی زیست‌محیطی تا حد زیادی مانع بروز آثار مخرب گسترده شده است.

## ۵. بحث و نتیجه‌گیری

نتایج این مطالعه نشان می‌دهد که گردشگری مناطق حفاظت‌شده، همچون خارتوران، تأثیرات چندوجهی بر توسعه پایدار روستایی دارد. در بُعد اقتصادی، هرچند گردشگری موجب تنوع‌بخشی به اقتصاد و افزایش درآمد شد، اما وابستگی به گردشگری فصلی و تورم محلی از چالش‌های مهم آن به شمار می‌روند. در بُعد اجتماعی–فرهنگی، اگرچه احیای فرهنگ و افزایش مشارکت اجتماعی به‌عنوان پیامدهای مثبت برجسته شدند، اما تقابل ارزشی و تغییر هنجارهای محلی از تهدیدهای جدی محسوب می‌شوند. در بُعد زیست‌محیطی نیز ضمن ارتقای آگاهی زیست‌محیطی، خطر بهره‌برداری بیش‌ازحد از منابع طبیعی وجود دارد. به‌طور کلی، این پژوهش نشان داد که برای دستیابی به توسعه پایدار، مدیریت هوشمندانه و برنامه‌ریزی جامع ضروری است. تقویت آموزش زیست‌محیطی، حمایت از صنایع‌دستی، ایجاد مشاغل پایدار، کنترل ساخت‌وساز و مشارکت فعال جامعه محلی می‌تواند به کاهش آثار منفی و تقویت آثار مثبت گردشگری در مناطق حفاظت‌شده کمک کند. مطالعه حاضر با شناسایی ابعاد مثبت و منفی گردشگری در خارتوران، الگویی عملی برای سایر مناطق حفاظت‌شده ایران ارائه می‌دهد و تأکید می‌کند که تنها با رویکردی متوازن میان ابعاد اقتصادی، اجتماعی و زیست‌محیطی می‌توان به توسعه پایدار روستایی دست یافت.

**کلیدواژه‌ها:** گردشگری پایدار، گردشگری مسئولانه، اکوتوریسم، اثرات گردشگری، مشارکت جامعه محلی، پارک ملی خارتوران.

## تشکر و قدردانی

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**Original Article**

# Analyzing the Pattern of Creative Rural Tourism in the Target Villages of Kermanshah Province

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## Abstract

**Purpose-** In today's world, where the trend of tourism has changed from mass to individualistic patterns and tourists give more priority to flexibility and meaningful experiences, creative tourism is a new and interesting aspect in the field of tourism, where more attention is paid to tangible heritage to intangible heritage. From the point of view of the villagers, creative tourism means that the residents are passionate and proud of the cultural, natural, and physical environment of the village, evaluate the effects of tourism positively, and accept participation in tourism development programs, to finally be a suitable host in the relationship. To achieve this kind of tourism, various factors are effective in realizing this. The purpose of this study is to investigate the role of behavioral and environmental factors in villagers' hospitability in tourism target villages of Kermanshah province with the structural equation analysis approach.

**Design/methodology/approach-** Questionnaires were randomly distributed among residents. The statistical population of the research is 14 tourism target villages of Kermanshah province, which according to the census of 2016 (According to the latest population and housing census in Iran) has a population equal to 10039 people, and the size of the studied sample was estimated to be 380 people based on the Cochran formula. Also, an average of 10 domestic and foreign tourists from each village filled out questionnaires, resulting in a total of 140 questionnaires.

**Finding-** The results showed that the effect of the behavioral factor on hosting was greater. In the sense that the perception, attitude, and participation of villagers will be good predictors for the realization of creative hosting. Also, the results showed that the highest average acceptance of host was in the villages Considering the geographical and environmental conditions and tourism of Shamshir, Harir and Hajij, which had the best condition.

**Keywords-** Creative tourism, Villagers' hospitability, Target village for tourism, Kermanshah Province.

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## 1.Introduction

The initial definitions related to creative tourism were formed based on learning experiences in areas with cultural backgrounds and traditions and residents' creative attractions. More recent definitions have looked at tourism from a collection perspective in which residents, tourists, policymakers, and scientific communities also play a role (Sangchumnong, 2018). Concerning creative tourism from the point of view of tourists, the common definition is that the visitor, while experiencing pleasant moments in the creative tourism space, concludes that he intends to revisit the destination (Chen and Chou, 2019, Zhang and Xie, 2019, Ali et al,2016, Hung et al., 2016). Creative tourism was expressed in such a way that if there are creative characteristics such as identity, attraction, and uniqueness in the architecture of the place, it will cause the pleasant perception of the visitors and provide their satisfaction. This issue makes a person feel a sense of belonging and attachment to that space and decide to travel there again (Chen and Chou 2019). In another definition, the creative tourism experience has multiple dimensions such as going through everyday life, unique experiences, interaction with residents, and learning, which leads to recording memories and traveling again (Hung et al., 2016). There is also the definition that in creative tourism, the sense of external desirability leads to the sense of internal desirability, which is achieved by features such as landscape and perspective, the experience of creative participation, local heritage, and service quality. (Zhang and Xie, 2019). In the case of creative tourism from the villagers' point of view, the common definition is achieved in such a way that the residents are fanatical and proud of the creative atmosphere of the village, accept active participation in tourism development programs, and finally host properly about tourism. (Li et al., 2020; Gannon et al., 2020; Erul et al., 2020). The purpose of this point of view is not to look at the residents as the target of tourism and not to assume that only tourists can get a thoughtful evaluation of the local creative space. Rather, the residents should be considered as a group that has their understanding of the originality of the creative space of their residence, and this will explain their attitude toward the environment and ultimately make them more suitable hosts for tourists. In other words, the tourist destination should not be viewed as a commercial package that is sold to tourists and destroys space in other words, running out of goods (Vazin & Zamani Alavijeh, 2023). Rather, in this package, the cultural and legal discourse should also be considered, and the attitude and perception of the residents should be considered (Zhou et al., 2015). In Iran, one of the concerns of residents in villages targeted for tourism is to preserve the natural environment where they live (Torabi et al., 2025), and tourists tend to pay more attention to creative tourism such as cultural tourism and village tourism at the same time as nature tourism (Aliyari et al. 2020). So that the natural environment is not destroyed, and other aspects of tourism are taken into consideration (Rahimi et al., 2020). In the target villages of Kermanshah province with 14 towns visited by many tourists, issues like what hosting is and which areas have better reception become important. In this regard, the central question of the present research is: What are the factors affecting creative tourism on rural residents and tourists?

## 2. Research Theoretical Literature

Any conceptualization of a place should include the meanings and values that residents attribute to it (Tuan, 1977). The attitude and perception of the tourist place and the image that is drawn in the mind have been the topics of interest in tourism studies (Cherifi et al., 2014, Fu et al., 2016, Sun et al., 2015). which expresses the importance of examining the mental image of residents of their area of residence. The mental image of the residents of the place where they live is valuable for understanding the goals and behavioral attitude, such as supporting the development of tourism in the region. In addition, the perception and evaluation of the residents and the behavioral goals related to them, are significantly effective in the decision-making and behavior of tourists (Stylidis et al., 2016). A group of researchers argue that tourism and improving economic conditions play a role in revitalizing the cultural and physical environment (Grunewald, 2002, Li, 2006) and turning this environment into a tourist product and marketing it is powerful for maintaining and supporting communities and rebuilding identity (Yang & Wall, 2009).

However, Cole, 2007 states that commoditization is a double-edged sword. From another point of

view, the tourism environment that is offered to tourists as a commodity leads to the loss of the authenticity of the environment, and the homogenization and standardization of the village environment according to the urban environment will not leave a suitable space for native individuality and identity, and therefore mass tourism is unlikely to lead to authenticity among hosts (Reisinger and Steiner, 2006). Creative development strategies are related to tourism, because "creative space" makes places attractive not only to the creative class but also to others. This indicates the need for better design of creative places to ensure that they maintain their creativity and distinction (Richards, 2020). Also, modern society is increasingly oriented towards services, and the reason for this is that tourism is a tool for development. On the other hand, the growth of the tourism industry always leads to employment creation in a large amount directly and indirectly, and the current era has also changed of the business model in the tourism industry based on start-ups. This business model has changed various types of tourism services from online travel agencies to cooking.

Therefore, since it is very important to create a competitive advantage for businesses and destinations, especially in the tourism sector, innovative opportunities can create a competitive advantage by developing tourism products and services. In this way, the intense competition between cities and villages as tourist destinations has forced villages and cities to find solutions to differentiate themselves from other villages, cities, and tourist destinations, and one of these solutions is to pay attention to creative tourism. The goal of creative tourism is achieved by acquiring memorable tourism experiences. Creative tourism has a positive effect on the cohesion of the local community, and it is effective in the interaction between the tourist and the host and ultimately leads to the tourist's intention to travel again (Richards et al., 2020: 6). Lopes (2022) In a study titled (Products related to creative tourism in Iberian regions): concluded that local agricultural and food products are one of the most important assets that distinguish rural areas of Portugal and Spain and are a source of tourism that provides visitors and also it provides an opportunity to develop their creative potential through active participation in courses and learning experiences. Duxbury et al. (2021) In a study titled (Creative Tourism Development Models Towards Sustainable and Regenerative Tourism), they. concluded that creative tourism initiatives can generate new ideas and ways to operate by strengthening distinctive elements of local identity. Stimulate inter-local flows and connections and create platforms for creating cultural vitality, cooperation, exchange, and local development. Huhmarniemi (2021) in the Sustainable future for creative tourism in Lapland. In Creative Tourism has presented practical ideas and potential strategies for the development of the use of art-based methods in creative tourism and states that in the fields of art education and social and cultural arts, the impact of art-based methods on human growth and well-being, sense of belonging, increasing kinship, empowerment and the ability to create meaningful symbols will be effective.

Chen (2021) in the Antecedents and consequences of perceived coolness for Generation Y in the context of creative tourism-A case study of the Pier 2 Art Center in Taiwan, concludes that creative workforce, entrepreneurs, and organizations play a significant role in formulating appropriate management and marketing strategies and creative industries play an important role in the service sector by making it possible to upgrade value-added activities to the activities that are currently being offered sustainably.

Zhou et al. (2015) proposed the model of Figure 1 for hosting Chinese villagers in support of creative tourism. In this model, the variable of economic benefits from tourism was considered as an independent variable, the variables of cultural benefits of tourism, cultural attitude, physical authenticity, and identity authenticity were considered as mediators, and finally, villagers' support for tourism was considered as a dependent variable. The economic benefits of tourism were in the sense of how the income is for the rural person and his family and relatives. Cultural interests were defined as how much a rural person likes the happy atmosphere of tourism and also enjoys communicating with tourists and feels important and proud in this regard. Cultural attitude refers to the village's view and adherence to local culture and civilization. Physical originality mainly deals with the physical space and architecture.

In identity authenticity, a person's spiritual sense of historical and ancient identity and the sense of

pride resulting from it were measured, and finally, in the variable of support for tourism, the level of support of a rural person for tourism and his decision to continue this support in the future were examined. The interesting thing that was obtained from this model was that villagers focus on physical authenticity more than identity authenticity and Zhou et al., 2015 stated that local ethnic tourism in China has become superficial.

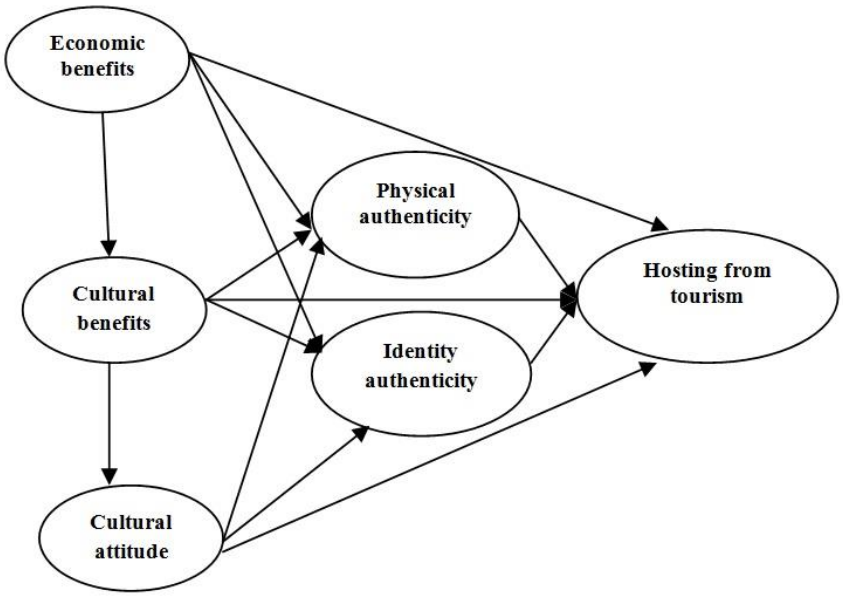


**Figure 1. A model of hosting villagers from creative tourism**
(Source: Zhou et al, 2015)

Li et al. (2020) explained four variables in presenting a model of the willingness of Chinese villagers to participate in creative tourism. The variable of perception was considered as an independent variable, the variables of spatial identity and spatial attachment were considered as mediating variables, and the variable of willingness to participate in tourism was considered as a dependent variable. The perception variable had three components: economic perception, socio-cultural perception, and environmental perception. Economic awareness means that the villagers felt the effect of tourism on employment, income, and development of the village. Socio-cultural perception means the village's perception of the promotion of social culture resulting from interaction with tourists, and environmental perception refers to the positive impact of tourism on the appearance and entertainment environment of the residents' lives. The variable definition of place identity was such that the residents felt that their hometown was special and had a sense of common bond with it and the rural community. Place dependence was defined in such a way that the villagers preferred their hometown to other areas and had a special respect for their place of residence. Finally, the dependent variable, willingness to participate, was defined as a villager intending to invest in tourism projects and encouraging others to do so (Li et al., 2020).
Overall, the results represented in Figure 2 show that the perceived effects of rural tourism on the new generation of farmers had a significant positive effect on their willingness to participate in the development of rural tourism.

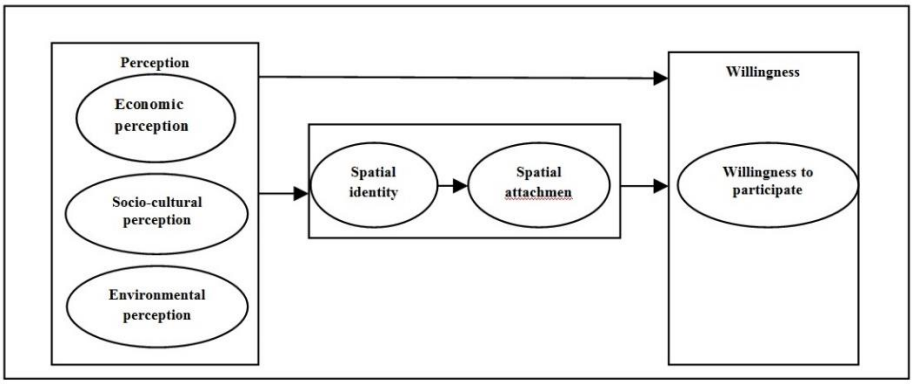


**Figure 2. The model of the willingness of villagers to participate in creative tourism**
(Source: Li et al, 2020)

Ganon et al. (2020) studied the modeling of tourism support in Iran in two cities Kashan and Tabriz. In this model, five variables: dependence on society, environmental attitude, cultural attitude, economic benefits, and sense of participation are considered independent variables. Residents' perceptions and tourism support are introduced as dependent variables depicted in Figure 3.

Dependence on society is a positive feeling (belonging). The environmental attitude is defined in such a way that according to the residents, cultural heritage is valuable and should be preserved. Cultural attitude refers to the preservation of local lifestyle and tradition. The economic benefit is the income from tourism, and the feeling of participation refers to the cooperation of residents in tourism development planning. Residents' perception of the effects of tourism on economic, cultural, and environmental perceptions was measured, which ultimately led to support for tourism programs.

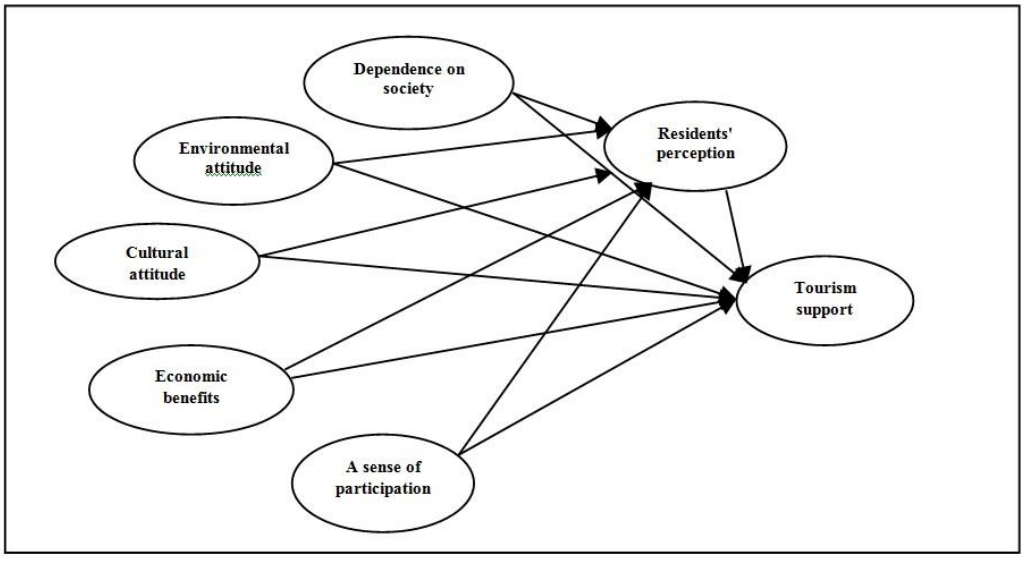


**Figure 3. model of villagers' support for tourism**
(Source: Gannon et al, 2020)

Eral et al. (2020) expanded the theory of planned behavior in the model they presented in connection with the acceptance of tourism in Turkey represented in Figure 4. The model was designed in such a way that three variables, namely a good feeling of welcome, a feeling of trust, and a feeling of friendship with the tourist, affected the individual's attitude as a background. In the next

step, the attitude towards tourism along with two variables called perceived behavioral control and mental norm were effective in the acceptance of tourism. In this model, perceived behavioral control was the concept of what skills and talents a person has to welcome tourists. The subjective norm variable was also interpreted as the rural person being under the influence of his relatives and friends about the promotion and support of tourism. Finally, the findings showed that the better a person's attitude towards tourism is, the better the person's ability and talent in hosting, and, the more hospitable the villagers are, it will lead to the behavior of accepting tourists and supporting the development of tourism.

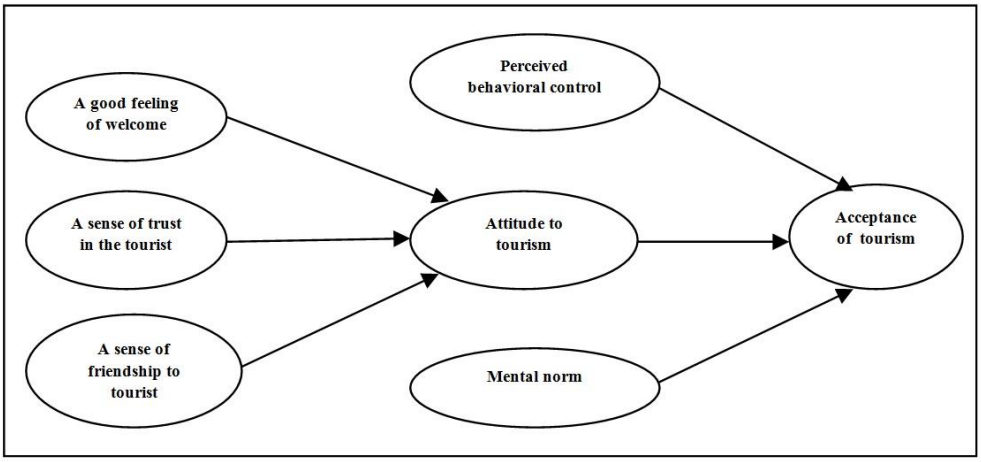


**Figure 4. Tourism Acceptance Model**
(Source: Erul et al, 2020)

In this study, the behavioral factor is measured with the variables "villagers' attitude", "villagers' participation" and "villagers' perception". The attitude of the villagers has been in the concept that the residents, in addition to the sense of belonging to the local culture and identity, have hospitality and warmth towards the tourists and also have a good sense of creative tourism with the approach of preserving the environment. In this sense, they should also have a conscious approach to the rural natural environment in tourism (Erul et al., 2020).
The host's perception of tourism has two dimensions. First, the perception resulting from positive interaction with tourists and second, the negative perception towards the effects of tourism, in which the host considers tourists as a group that restricts and destroys the cultural and natural environment (Wang, 2007, Chhabra, 2010). Also, the perception of the villagers is the concept of their evaluation of the effects of tourism. For example, in the economic evaluation of the impact of tourism on the employment and development of the village, the concept will be obtained of what the villagers understand about the employment and increase of income of themselves, their families, and relatives. In social evaluation, the impact of tourism on improving the social relations of villagers is investigated, which is obtained from interaction with tourists, and in environmental evaluation, the impact of tourism on improving the atmosphere and landscape of the village is measured (Li et al., 2020).
Participation in tourism includes the concepts of how villagers participate in preserving the environment, culture, and native heritage. What role do they play in guiding and interacting with tourists and the level of their participation in planning and promoting tourism projects? **Figure 5** .The conceptual model of the research showed.
Based on this, the first question is raised: *Is the behavioral factor of villagers effective in hosting tourism?*
Also, in this research, the environmental factor is measured with the variables "cultural environment", "natural environment" and "infrastructural physical environment". The cultural environment in creative tourism includes several concepts. Tourism space related to food creativity, creative space with handicrafts, local art, and identity authenticity, and attractive ceremonies, traditions, and rituals that make tourists want to visit and stay and renew the trip

(Isa et al., 2020, Zhou et al., 2015). The natural environment in creative tourism is described by features such as beaches, lakes, weather conditions, deserts, and mountains. The importance of the natural environment in tourism has been shown as a factor that determines tourist satisfaction and quality of life. Also, the natural environment is an important factor in the intention of tourists to visit again. For example, ambient weather has a great influence on tourists' intention to visit during the rainy season (Kim et al., 2017). The physical infrastructure environment in creative tourism has concepts such as places of interest, accommodation, shopping, sports, and transportation. About the place of residence, the issue of rural identity is raised. That the place is unique, eye-catching, and not comparable to other places that he has seen, and that the viewer gets an emotional attachment to it and, finally, feels a sense of peace from the beauty of its architecture (Isa et al., 2020). The sense of apparent desirability of seeing a place and its architecture means that the place has local characteristics and a suitable structure that leads to the tourist's sense of internal desirability and connection with the place and the feeling of pleasure (Zhang and Xie, 2019). Also, from another point of view in creative tourism, the physical environment has three dimensions: uniqueness, identity, and attractiveness.

Therefore, the second question is raised as follows: *Is the environmental factor of the village effective in hosting tourism?* According to the mentioned studies and models, tourism host is successful when the residents are satisfied with the current hosting and also see the intention of hosting tourists again in their plan (Zhou et al., 2015). Based on the mentioned concepts, the conceptual model of the research is drawn as follows (Rahimi et al., 2020).

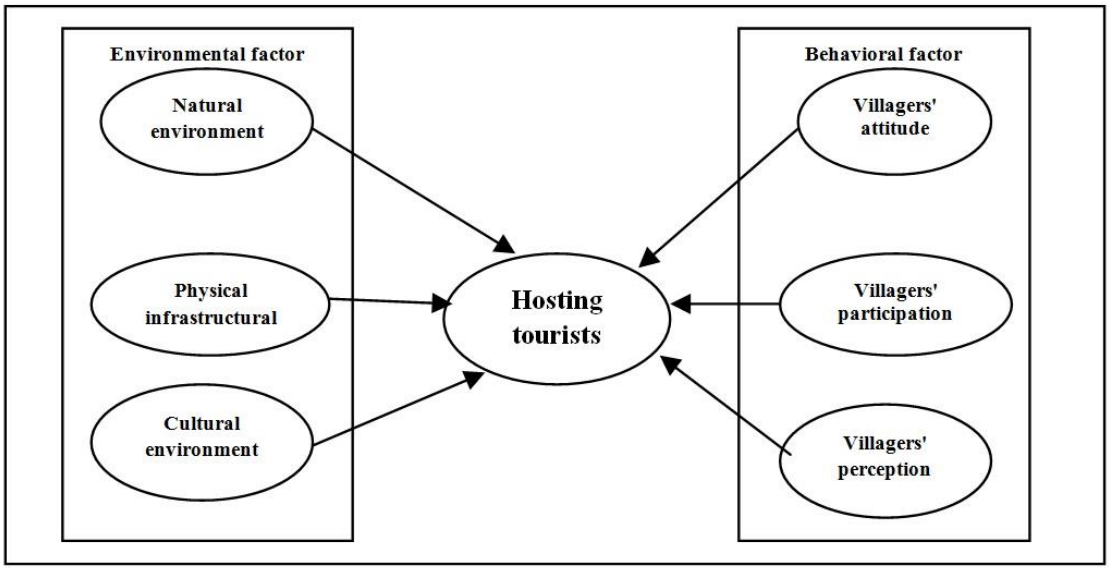


**Figure 5 .The conceptual model of the research**

## 3. Research Methodology

Kermanshah province is located in the western part of Iran, which has an internal border on three sides and an international border with Iraq on one side. Its geographical coordinates are between 33-36 degrees to 15-35 degrees north and 24-45 degrees to 30-48 degrees east longitude. According to the last census of Iran in 2015, the population of the province was 1,954,227 people, which has 14 cities, 27 districts, 26 cities, 83 villages, and 3,172 villages. And the reason for selecting 14 tourism target villages is that they are nationally registered tourism target villages in Iran.( These 14 villages are tourism targets based on the approval and registration of the Kermanshah Provincial Heritage and Tourism Organization, which have been selected for the present study)( Figure 6 )This research is applied in terms of purpose and based on a descriptive and analytical nature, and the approach that governs it is quantitative, which was done by using library and survey methods using questionnaires. The

statistical population of the research is 14 tourism target villages of Kermanshah province, which according to the census of 2016 has a population equal to 10039 people, and the size of the studied sample was estimated to be 380 people based on the Cochran formula. Also, an average of 10 domestic and foreign tourists from each village filled out questionnaires, resulting in a total of 140 questionnaires. The sample selection in the studied villages was proportional to the population of each village, and the distribution method of the questionnaire (The questionnaires are designed as closed-ended questionnaires with a 5-point Likert scale.) Was stratified randomly are shown in Table 1.

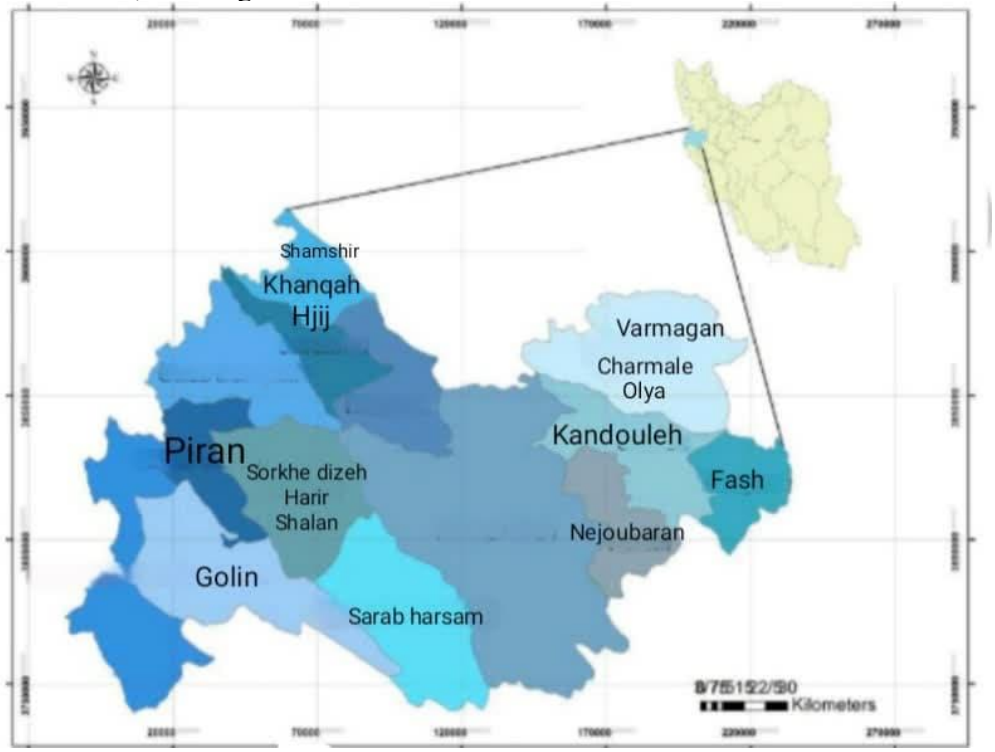


**Figure 6 . Location of the studied villages in Kermanshah province**

**Table 1: Statistical population and sample size**
(Source: Statistical Yearbook 2022)

| Village | Shalan | Kandouleh | Goleen | Nejobaran | Varmaqan | Charmeleolya | Fash | Sarab harsam | Sorkhe dizeh | Harir | Hajij | Shamshir | Khangah | Piran |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| population | 285 | 815 | 94 | 377 | 200 | 384 | 1700 | 473 | 168 | 847 | 571 | 2189 | 1414 | 522 |
| Sample size | 11 | 30 | 10 | 13 | 8 | 14 | 62 | 21 | 10 | 31 | 21 | 78 | 52 | 19 |
| Tourists | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |

Amos software was used for modeling and k-means clustering was used to
separate the target villages and the data was displayed in a scatter diagram. The results of measuring the validity of the variables in Table 2 show that the Cronbach's alpha (CA) coefficients were higher than 0.7, which showed the reliability of the variables, and the average variance extracted (AVE) and composite reliability (CR) were respectively high. 0.5 and 0.8 were reported, which

makes the convergence validity of the variables acceptable.

**Table 2- the results of measuring the validity of the variables**

| Factor | Variables | CA | CR | AVE | reference |
|---|---|---|---|---|---|
| behavioral | Rural attitude | ۰/۹٤ | ۰/۹٥ | ۰/۸۲ | Erul et al., 2020 |
| | participation | ۰/۹۲ | ۰/۹٦ | ۰/۷۸ | Rasoolimanesh et al. 2017; Gannon et al., 2020 |
| | perception | ۰/۸۷ | ۰/۹٥ | ۰/۷٥ | Li et al., 2020 |
| environmental | *Infrastructural-physical* | ۰/۸۷ | ۰/۹۲ | ۰/۷۹ | Asmelash and Kumar, 2019 |
| | *cultural* | ۰/۸٥ | ۰/۸٦ | ۰/۸۲ | Zhou et al., 2015; Isa et al., 2020 |
| | natural | ۰/۸٦ | ۰/۸۸ | ۰/۸۰ | Kim et al., 2017 - Li et al., 2020 |
| The dependent variable | host | ۰/۸۹ | ۰/۹٦ | ۰/۸۰ | Zhou et al., 2015 |

## 4.Research Findings

The findings of the research showed that the variables related to two behavioral and environmental factors had a good average and the weight of the items was reported above 0.5 in Table 3. The items related to the variable "villagers' attitude" had a higher-than-mean average. In the "participation variable ", all items got a good average. In the "physical infrastructure" variable, the condition of the target villages was acceptable. Finally, the villagers were satisfied with the hosting.

**Table 3: Descriptive statistics of research variables and weight of items**

| Factor | Variables | items | Average | standard deviation | Weight of items |
|---|---|---|---|---|---|
| behavioral | **Rural attitude** | AT1: A sense of belonging to the local indigenous culture and identity | 4.15 | 0.66 | 0.88 |
| | | AT2: A sense of hospitality and rural warmth to tourists | 4.07 | 0.82 | 0.85 |
| | | AT3: Good sense of creative tourism with an environmental protection approach | 4.05 | 0.59 | 0.73 |
| | **participation** | PA1: Participation in preserving the environment native culture and heritage | 3.91 | 0.55 | 0.71 |
| | | PA2: Participation in guiding and interacting with tourists | 3.76 | 0.43 | 0.7 |
| | | PA3: Participation in planning and promotion of tourism projects | 3.71 | 0.41 | 0.75 |
| | **perception** | EV1: Economic evaluation of the impact of tourism on employment and village development | 4.35 | 0.15 | 0.82 |

| Factor | Variables | items | Average | standard deviation | Weight of items |
|---|---|---|---|---|---|
| | | EV2: Social evaluation of the impact of tourism on improving social relations | 3.93 | 1.11 | 0.87 |
| | | EV3: Environmental assessment of the impact of tourism on the improvement of space and landscape | 3.77 | 1.08 | 0.73 |
| environmental | *Infrastructural-physical* | PE1: Proper access of the village to places of interest and rest | 3.9 | 0.49 | 0.78 |
| | | PE2: Proper access of the village to road and transportation | 3.72 | 0.44 | 0.78 |
| | | PE3: Acceptable security for residents and tourists | 4.09 | 0.45 | 0.86 |
| | | PE4: The desirability of leisure and entertainment infrastructures | 4.02 | 0.8 | 0.81 |
| | | PE5: Appearance and eye-catching architecture and physical originality | 3.95 | 1.16 | 0.89 |
| | | PE6: Communication and sanitary facilities of the village | 3.9 | 1.05 | 0.94 |
| | *cultural* | CE1: Food creativity-related tourism space | 3.73 | 1.16 | 0.84 |
| | | CE2: Creative space with crafts, music, and local art | 4.01 | 1.22 | 0.85 |
| | | CE3: identity authenticity and attractive ceremonies, traditions, and rituals | 3.96 | 1.23 | 0.87 |
| | **natural** | NE1: Nature and farm tourism space | 4.4 | 0.41 | 0.65 |
| | | NE2: green tourism space with unique natural landscape | 4.47 | 0.41 | 0.7 |
| | | NE3: Weather suitable for tourists | 3.75 | 1.16 | 0.76 |
| | **Hosting tourists** | HO1: Satisfaction with the current hosting of tourists | 4.33 | 0.4 | 0.86 |
| | | HO2: Intention to host tourists again in the future | 4.19 | 0.32 | 0.83 |

### *4.1. Descriptive Statistics by Gender*

The descriptive statistics of the variables based on gender are represented in Table 4 in which the median of the variables for females is compared with males. Based on the p-values it can be concluded that every 5 variables in this study is significantly higher for the females.

**Table 4: Descriptive statistics of the variables by gender**

| Variable | gender | Mean | StDev | Median | H-value | P-Value |
|---|---|---|---|---|---|---|
| Attitude | Female | 4.40 | 0.58 | 4.4000 | 259.99 | 0.00 |
| | Male | 3.63 | 0.52 | 3.4000 | | |
| Perception | Female | 4.75 | 0.30 | 5.0000 | 271.99 | 0.00 |
| | Male | 3.57 | 0.77 | 4.0000 | | |
| Participation | Female | 4.89 | 0.22 | 5.0000 | 306.14 | 0.00 |
| | Male | 3.79 | 0.57 | 4.0000 | | |
| Cultural | Female | 4.92 | 0.14 | 5.0000 | 301.41 | 0.00 |
| | Male | 3.89 | 0.70 | 4.2500 | | |
| Natural | Female | 4.67 | 0.23 | 4.5000 | 259.20 | 0.00 |
| | Male | 4.00 | 0.31 | 4.0000 | | |
| Infrastructure | Female | 4.46 | 0.16 | 4.5714 | 285.17 | 0.00 |
| | Male | 3.39 | 0.48 | 3.5714 | | |

### *4.2. Descriptive Statistics by Age Groups*

The plot in Figure 7 shows the age distribution in the sample. It can be seen that around half of the sample is between 40 and 60. The minority is related to the group of people younger than 20 years old.

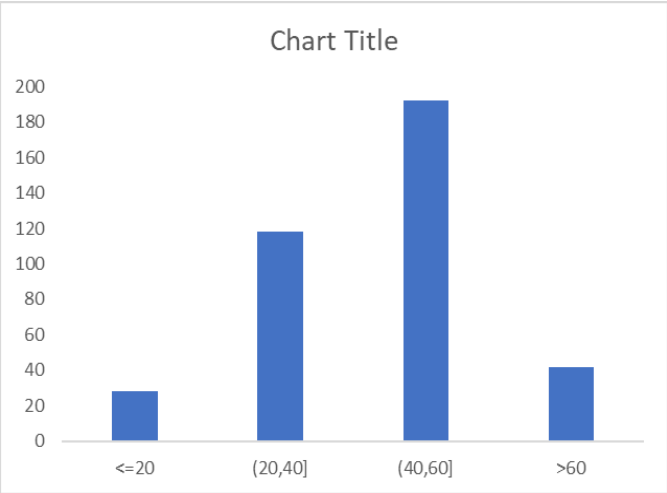


Figure 7: The bar chart of the age groups, Source

The Spearman correlation coefficient indicates the positive and significant correlation between age and five variables. The highest correlation is for environmental factors which is 0.93 followed by the attitude factor which is 0.91. It means the variables increase as the villagers get older. This indicates that as villagers and tourists age, the level of attention to the factors mentioned above also increases, which should be taken into account more.

**Table 5: Descriptive statistics of the variables by age groups**

| Variable | age | Mean | StDev | Median | Spearman Correlation Coefficient | P-value |
|---|---|---|---|---|---|---|
| attitude | <=20 | 2.92 | 0.38 | 3.00 | 0.91 | 0.00 |
| | (20,40] | 3.58 | 0.32 | 3.40 | | |
| | (40,60] | 4.39 | 0.037 | 4.40 | | |
| | >60 | 4.40 | 0.00 | 4.40 | | |
| perception | <=20 | 2.00 | 0.59 | 2.00 | 0.89 | 0.00 |
| | (20,40] | 3.75 | 0.32 | 4.00 | | |
| | (40,60] | 4.59 | 0.33 | 4.75 | | |
| | >60 | 5.00 | 0.00 | 5.00 | | |
| participation | <=20 | 2.59 | 0.55 | 2.50 | 0.88 | 0.00 |
| | (20,40] | 3.94 | 0.10 | 4.00 | | |
| | (40,60] | 4.75 | 0.33 | 5.00 | | |
| | >60 | 5.00 | 0.00 | 5.00 | | |
| cultural | <=20 | 2.4 | 0.56 | 2.50 | 0.88 | 0.00 |
| | (20,40] | 4.06 | 0.30 | 4.25 | | |
| | (40,60] | 4.82 | 0.22 | 5.00 | | |
| | >60 | 5.00 | 0.00 | 5.00 | | |
| environmental | <=20 | 3.50 | 0.38 | 3.50 | 0.93 | 0.00 |
| | (20,40] | 4.00 | 0.00 | 4.00 | | |
| | (40,60] | 4.55 | 0.20 | 4.50 | | |
| | >60 | 5.00 | 0.00 | 5.00 | | |
| Infrastructure | <=20 | 2.47 | 0.26 | 2.57 | 0.89 | 0.00 |
| | (20,40] | 3.46 | 0.24 | 3.57 | | |
| | (40,60] | 4.31 | 0.27 | 4.42 | | |
| | >60 | 4.64 | 0.07 | 4.71 | | |

As represented in the bar chart of Figure 8, it can be seen that most of the rural education level is high school followed by undergraduate and graduate, in order. It verifies the high level of education in the area.

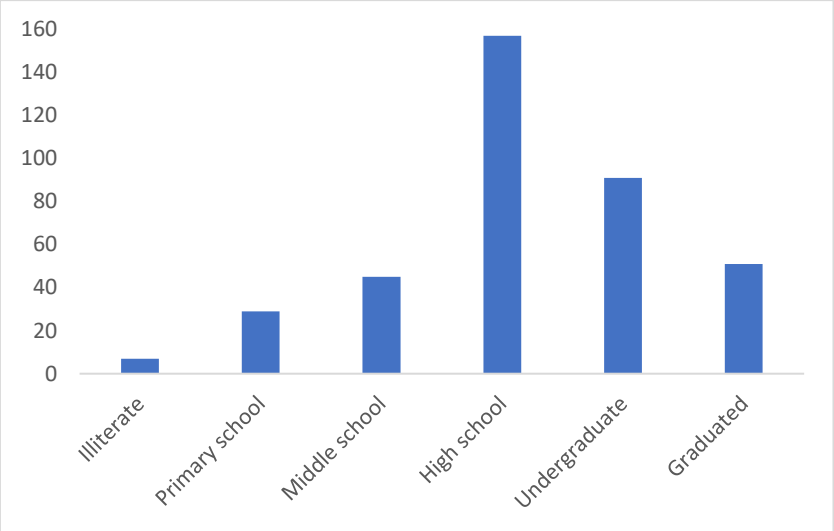


**Figure 8: Bar chart of Education Level, Source**

In Table 6, it can be seen that there is a positive and significant correlation between the education level and the variables. The highest correlation is related to perception and infrastructure with a coefficient of 0.94 followed by cultural with 0.92. It means that, in general, as people's education levels goes up. External interactions and internal reflections shape the tourist's creative experience design. External interactions refer to the tourist's interactions with the environment, people, and product or service or experience, while internal interactions refer to awareness, resources, and creativity, and these dimensions mutually influence the tourist's internal experience as a whole.

**Table 6. Correlation coefficient between research variables**

| Variable | Education Level | Mean | StDev | Median | Spearman Correlation Coefficient | P-value |
|---|---|---|---|---|---|---|
| attitude | Illiterate | 2.40 | 0.00 | 2.40 | 0.78 | 0.00 |
| | Primary school | 3.18 | 0.25 | 3.40 | | |
| | Middle school | 3.40 | 0.00 | 3.40 | | |
| | High school | 4.12 | 0.39 | 4.40 | | |
| | Undergraduate | 4.40 | 0.00 | 4.40 | | |
| | Graduated | 4.40 | 0.00 | 4.40 | | |
| perception | Illiterate | 1.28 | 0.26 | 1.50 | 0.94 | 0.00 |
| | Primary school | 2.47 | 0.54 | 2.75 | | |
| | Middle school | 3.53 | 0.24 | 3.75 | | |
| | High school | 4.14 | 0.16 | 4.25 | | |
| | Undergraduate | 4.88 | 0.14 | 5.00 | | |
| | Graduated | 5.00 | 0.00 | 5.00 | | |
| participation | Illiterate | 2.00 | 0.00 | 2.00 | 0.89 | 0.00 |
| | Primary school | 3.06 | 0.60 | 2.75 | | |
| | Middle school | 3.90 | 0.12 | 4.00 | | |
| | High school | 4.28 | 0.33 | 4.25 | | |
| | Undergraduate | 5.00 | 0.00 | 5.00 | | |
| | Graduated | 5.00 | 0.00 | 5.00 | | |
| cultural | Illiterate | 1.75 | 0.00 | 1.75 | 0.92 | 0.00 |
| | Primary school | 2.89 | 0.44 | 3.25 | | |
| | Middle school | 3.92 | 0.276 | 4.00 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | High school | 4.47 | 0.24 | 4.50 | | |
| | Undergraduate | 5.00 | 0.00 | 5.00 | | |
| | Graduated | 5.00 | 0.00 | 5.00 | | |
| environmental | Illiterate | 3.00 | 0.00 | 3.00 | 0.85 | 0.00 |
| | Primary school | 3.75 | 0.287 | 4.00 | | |
| | Middle school | 4.00 | 0.00 | 4.00 | | |
| | High school | 4.27 | 0.249 | 4.50 | | |
| | Undergraduate | 4.59 | 0.20 | 4.50 | | |
| | Graduated | 5.00 | 0.00 | 5.00 | | |
| Infrastructure | Illiterate | 2.14 | 0.00 | 2.14 | 0.94 | 0.00 |
| | Primary school | 2.67 | 0.22 | 2.71 | | |
| | Middle school | 3.317 | 0.13 | 3.28 | | |
| | High school | 3.90 | 0.29 | 3.71 | | |
| | Undergraduate | 4.50 | 0.07 | 4.57 | | |
| | Graduated | 4.63 | 0.07 | 4.57 | | |

## 4.3. Model results

According to Table 7, the fit of the model was acceptable. Also, the p-value for all paths of the model was less than 0.05 in Table 8. Therefore, all the variables had a positive effect on the dependent variable i.e., hosting tourism, and two questions were confirmed. According to Figure 9, the variables of the behavioral factor had a greater impact than the variables of the environmental factor on hosting tourism, and in total, two factors could explain 79% of the dependent variable.

**Table 7: Summary of model fit**

| CMIN/DF | GFI | RMSEA | Baseline Comparisons | | |
|---|---|---|---|---|---|
| | | | NFI | TLI | CFI |
| 2.888 | 0.971 | 0.041 | 0.931 | 0.915 | 0.923 |

**Table 8: Model results**

| Factor | Question | From ... to | p-value | Estimate | Result |
|---|---|---|---|---|---|
| Behavioral | 1 | Rural Attitude ... Hospitality | 0.01 | 0.86 | Approved |
| | | Rural Participation ... Hospitality | 0.00 | 0.81 | Approved |
| | | Rural perception ... Hospitality | 0.00 | 0.82 | Approved |
| Environmental | 2 | Natural environment ... Hospitality | 0.02 | 0.73 | Approved |
| | | Infrastructural environment ... Hospitality | 0.03 | 0.74 | Approved |
| | | Cultural environment ... Hospitality | 0.01 | 0.77 | Approved |

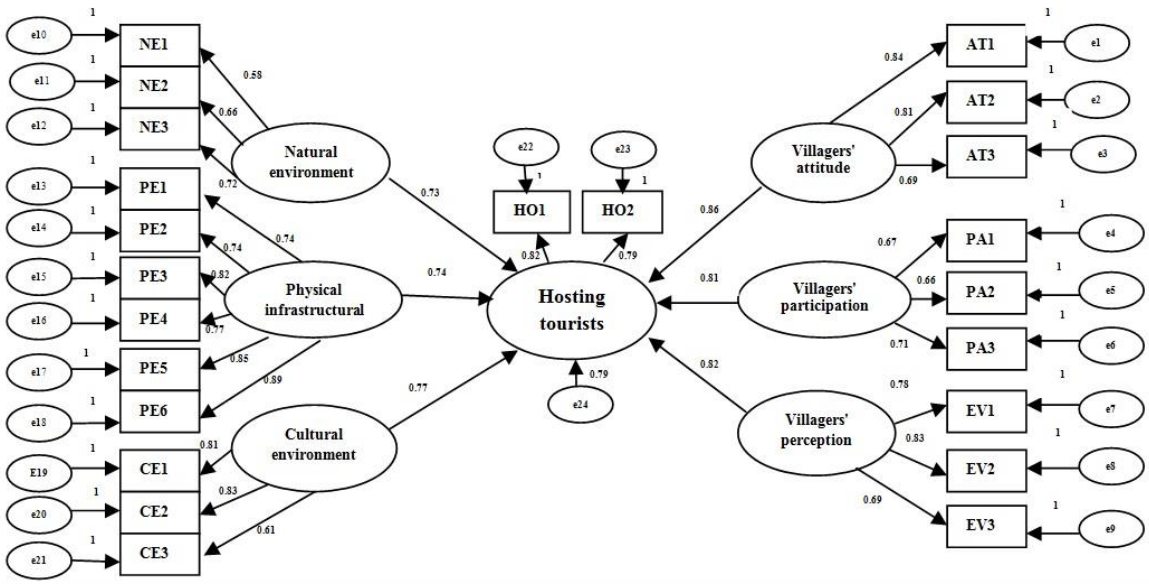


**Figure 9- The results of the environmental behavior model in hosting tourists**

## 5. Discussion and Conclusion

***Question 1) has the behavioral factor had a positive effect on hosting creative tourism?***

By confirming the effect of variables of attitude (β=0.86), participation (β=0.81), and perception (β=0.82) on tourism host

, this question about the effect of behavioral factors on hosting is confirmed. In hosting villagers, the effect of the behavioral factor has been greater than the environmental factor. In the sense that the attitude and evaluation of the residents towards the place of residence and the effects of tourism on their hosting were more effective, while the study conducted in the target villages of Kermanshah province from the point of view of tourists, it was concluded that the environmental factor of the village has Tourists have had a greater impact (Rahimi et al., 2020), which shows the difference in the effectiveness of the two groups of hosts and guests.

The impact of participation on tourism in a study conducted by Rasoolimanesh et al., (2017) in rural areas of Malaysia confirmed this finding. The fact that the villagers understand that their participation in tourism will be effective in the development of the region as mentioned in, or in similar research by Asmelash and Kumar (2019), is the level of participation of the residents of Ethiopia in the decision-making process in the field of tourism. The satisfaction of tourists had resulted. Another thing is that the attitude of the villagers has been positive and the residents, along with a sense of belonging to the local native culture and identity, have hospitality and warmth towards the tourists. Also, a positive feeling of creative tourism with the approach of preserving the environment was observed in them. In other words, they had a conscious approach to the rural natural environment in tourism, which is in line with the results obtained by Erul et al. (2020) in Turkey. Finally, their perception and evaluation of the economic and social effects of tourism were appropriate, which confirms the results obtained by Li et al. (2020) regarding the evaluation of tourism by Chinese villagers.

***Question 2) has the environmental factor had a positive impact on hosting creative tourism?***

By confirming the effect of variables of natural environment (β=0.73), physical environment (β=0.74), and cultural environment (β=0.77) on hosting, this question about the effect of environmental factors on the hosting of villagers is confirmed. The impact of the physical environment and infrastructure on tourism has been proven in various studies. In Taiwan, Chen and Chou (2019) stated that the physical space is the result of the realization of creative tourism. In other words, a physical space with features such as uniqueness, attractiveness, and identity ends in a pleasant perception and causes place attachment.

Furthermore, in another study conducted in Indonesia by Isa et al. (2020), it was found that the infrastructural environment such as accommodation, and transportation will lead to the

tourist's decision to visit that rural area again. About the impact of the cultural environment on hosting, there are also researches consistent with the results of this research, which point out that the tourist space related to food creativity, creative space with handicrafts, local art, and identity authenticity and ceremony, tradition Attractive rituals and rituals that make tourists want to visit and stay. Research by Deng (2010) in East Asia shows that the residents are the heirs and interpreters of the traditional cultural heritage and play an important role in promoting the cultural environment by hosting, spreading creative tourism, and attracting visitors. Finally, Zhang and Xie, (2019) concluded that it is quite clear that the natural environment pristine space, and beautiful landscape have a tremendous impact on the soul and body of every viewer and affect the viewer's sense of inner desirability.

This is contrary to the study of Zhou et al. (2015) conducted in China, where the authors stated that villagers focus on physical authenticity more than identity authenticity and local ethnic tourism has become superficial in China. Also, the appropriate average of villagers' participation in tourist planning can be a guide so that in decisions related to tourism development, comprehensive planning is more considered and not just top-down.

In today's world, where the tourism trend has changed from the mass form to individualistic patterns and tourists give more priority to flexibility and meaningful experiences, creative tourism is a new and interesting aspect in the field of tourism, where more attention is paid to tangible heritage than to tangible heritage. Intangibles are noticed. In this regard, the present research has analyzed the model of creative rural tourism in the target villages of Kermanshah province, and the research model shows that if in the rural area, two behavioral and environmental factors have creative characteristics, they will be effective in hosting the villagers. Also, the effect of the behavioral factor has been reported more. In this sense, the perception, attitude, and participation of the villagers will be good predictors for the realization of hosting. Of course, the role of the environmental factor has also been prominent, the environmental characteristics of the village such as the cultural, physical, and environmental environment have had a serious impact on hosting tourists. Another point that should be mentioned is that according to the clustering analysis, the environmental factor had a good effect on the behavior of the villagers (79%) and with the increase and promotion of the environmental factor, the behavior of the villagers about hospitality also improved. The highest average of creative hosting variables was reported in the villages of Shamshir, Harir, and Hajij, and these villages had the best conditions among the 14 villages. These results can be interesting for behavioral geography researchers. Paying attention to the behavioral factor and rural authenticity will greatly improve the hospitality of the villagers and, as a result, the interaction with the tourist community. The importance of the present research was determined by the fact that in the target villages of Kermanshah province, which are popular with tourists, there was no negative impact on the damage to the originality and rural identity. It is suggested that in future studies, researchers who intend to investigate this issue should consider this point and add a new dimension to the behavioral and environmental dimensions. Also, studying and analyzing villages in different climates of the country seems useful for a group of researchers who are concerned with planning and policymaking.

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**Authors contributions**

The authors equally contributed to the preparation of this article.

**Conflict of interest**

The authors declare no conflict of interest.

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# واکاوی الگوی گردشگری خلاق روستایی در روستاهای هدف گردشگری استان کرمانشاه

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## چکیده مبسوط

### ۱. مقدمه

در ارتباط با گردشگری خلاق از دیدگاه گردشگران، تعریف مشترک به این صورت است که بازدیدکننده در عین‌حال که لحظات خوشایندی از فضای خلاقانه گردشگری تجربه می‌نماید، به این نتیجه برسد که قصد بازدید مجدد از مقصد را داشته باشد. در گردشگری خلاق، حس مطلوبیت ظاهری منجر به حس مطلوبیت باطنی می‌گردد که در اثر ویژگی‌هایی چون منظر و چشم‌انداز، تجربه مشارکت خلاقانه، میراث بومی و کیفیت خدمات‌دهی حاصل می‌شود. درکشور ایران هم، یکی از دغدغه‌های ساکنین در روستاهای هدف گردشگری، حفظ محیط طبیعی محل زندگی‌شان است و تمایل دارند گردشگران، همزمان با گردشگری طبیعت، توجه بیشتری به گردشگری خلاقانه (گردشگری فرهنگی، گردشگری دهکده و ...) داشته باشند تا هم محیط طبیعی تخریب نشود و هم ابعاد دیگری گردشگری مورد توجه قرار گیرد. در روستاهای هدف گردشگری استان کرمانشاه(۱۴روستا) نیز که مورد بازدید گردشگران زیادی می‌باشد، این مساله اهمیت می‌یابد. این که میزبانی به چه صورت است و کدام نواحی پذیرش بهتری دارند. در این راستا تحقیق حاضر به واکاوی اثرگذاری عوامل رفتاری و محیطی بر میزبانی ساکنین روستایی که با رویکرد معادلات ساختاری می باشد.

### ۲. مبانی نظری تحقیق

از آنجا که ایجاد مزیت رقابتی برای کسب و کارها و مقاصد به ویژه در بخش گر.دشگری بسیار مهم است، فرصت های نوآورانه می تواند با توسعه محصولات و خدمات گردشگری، مزیت رقابتی ایجاد کند. بدین ترتیب، رقابت شدید میان شهرها وروستاها به عنوان مقاصد گردشگری، روستاهاوشهرها را ناگزیر به یافتن راهکارهایی برای متمایز شدن از سایر روستا و شهرها و مقاصد گردشگری کرده است که یکی از این راهکارها توجه به گردشگری خلاق است. هدف گردشگری خلاق با کسب تجربیات خاطره انگیز گردشگری محقق می شود. گردشگری خلاق، تاثیر مثبتی بر انسجام جامعه محلی دارد وبر تعامل گردشگر و میزبان موثر است و در نهایت منجر به قصد سفر مجدد گردشگر می گردد. در مورد گردشگری خلاق از دیدگاه روستاییان، تعریف مشترک بدین‌صورت حاصل می‌شود که ساکنین محلی، به فضای خلاقانه روستا متعصب و مفتخر داشته باشد، مشارکت فعالانه در برنامه‌های توسعه گردشگری را بپذیرند و در نهایت میزبانی مناسبی در ارتباط با گردشگری داشته باشد.

### ۳. روش تحقیق

این پژوهش از لحاظ هدف کاربردی و بر اساس ماهیت توصیفی و تحلیلی است و رویکرد حاکم بر آن نیز کمی است که با بهره‌گیری از روش کتابخانه‌ای و پیمایشی با استفاده از پرسشنامه انجام شده است. جامعه آماری پژوهش ۱۴ روستای هدف گردشگری استان کرمانشاه است که بر اساس سرشماری سال ۱۳۹۵ دارای جمعیتی برابر با ۱۰۰۳۹ نفر است و حجم نمونه مورد مطالعه بر اساس فرمول کوکران ۳۸۰ نفر برآورد شد. انتخاب نمونه در روستاهای مورد مطالعه متناسب با جمعیت هر روستا بوده است و شیوه توزیع پرسشنامه نیز تصادفی طبقه‌ای بوده است. برای مدل‌سازی از نرم افزار Amos استفاده و برای تفکیک روستاهای هدف، خوشه‌بندی k-میانگین بکار گرفته شد و داده‌ها در نمودار اسکاتر نمایش داده شد.

### ۴. یافته‌های تحقیق

یافته‌های تحقیق نشان داد متغیرهای مربوط به دو عامل رفتاری و محیطی از میانگین خوبی برخوردار بودند و وزن آیتم‌ها بالاتر از ۰/۵ گزارش گردید. آیتم‌های مرتبط با متغیر "نگرش روستاییان" میانگین بالاتر از متوسط داشتند. در "متغیر مشارکت"، آیتم‌های حفظ محیط‌زیست و تعامل با گردشگران، میانگین خوبی داشتند. در "متغیر ادراک"، تمامی آیتم‌ها میانگین مناسبی کسب نمودند. در متغیر "زیرساختی کالبدی"، وضعیت روستاهای هدف قابل قبول بود. و در نهایت روستاییان، رضایت از میزبانی داشتند. طبق یافته ها متغیرهای

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عامل رفتاری، تاثیر بیشتری از متغیرهای عامل محیطی بر میزبانی گردشگری داشتند و در مجموع دو عامل توانستند ۷۹ درصد، متغیر وابسته را تبیین نمایند.

## ۵. بحث و نتیجه گیری

با تایید تاثیر متغیرهای نگرش ($\beta$=۰/۸۶)، مشارکت ($\beta$=۰/۸۱) و ادراک ($\beta$=۰/۸۲) بر میزبانی گردشگری، این سوال مبنی بر اثرگذاری عامل رفتاری بر میزبانی تایید می‌گردد. در میزبانی روستاییان، تاثیر عامل رفتاری بیشتر از عامل محیطی بوده است. بدین مفهوم که نگرش و ارزیابی ساکنین نسبت به محل سکونت و اثرات گردشگری بر میزبانی‌شان موثرتر بوده، در حالی‌که در مطالعه انجام شده در روستاهای هدف گردشگری استان کرمانشاه از منظر گردشگران این نتیجه بدست آمد که عامل محیطی روستا بر افراد گردشگر تاثیر بیشتری داشته که تفاوت تاثیرپذیری دو گروه میزبان و مهمان را نشان می‌دهد. با تایید تاثیر متغیرهای محیط طبیعی ($\beta$=۰/۷۳)، محیط کالبدی($\beta$=۰/۷۴) و محیط فرهنگی($\beta$=۰/۷۷) بر میزبانی، این سوال مبنی بر اثرگذاری عامل محیطی بر میزبانی روستاییان تایید می‌گردد. این نتایج می‌تواند برای محققان جغرافیای رفتاری جالب توجه باشد. توجه به عامل رفتاری و اصالت روستایی باعث خواهد شد میزبانی روستاییان و در نتیجه تعامل با جامعه گردشگران بسیار بهبود یابد. اهمیت تحقیق حاضر در این نکته مشخص گردید که در روستاهای هدف گردشگری استان کرمانشاه که مورد استقبال انبوه گردشگران هستند، تاثیر منفی بر خدشه وارد شدن به اصالت و هویت روستایی مشاهده نگردید.

**کلید واژه‌ها:** گردشگری خلاق، میزبانی روستاییان، روستای هدف گردشگری، استان کرمانشاه.

**تشکر و قدرانی:**

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

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**Original Article**

# Factors Driving Farmers' Adoption of Wind Energy Development in Rural Areas of Qazvin County

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**Abstract**

**Purpose-** The development of wind energy in rural areas of Iran is a promising solution to achieve the Sustainable Development Goals (SDGs). The purpose of this study is to investigate the factors influencing farmers' willingness and intention to participate in the development and advancement of wind energy. By reviewing the literature and employing an intuitively developed method, the hypothesized influential statements were identified.

**Design/methodology/approach-** The research sample consisted of 189 participants selected through random sampling. The internal validity of questionnaire indicators was assessed by checking Cronbach's alpha coefficient and loading scores through Principal Component Analysis (PCA). The Cronbach's alpha coefficient fell within an acceptable range.

**Finding-** The results of the study revealed that externality directly and significantly affects perceived sensitivity ($\beta$ = 0.40, $p$ = 0.001). In addition, negative externalities have a significant positive effect on perceived severity, with a path coefficient of 0.41 ($\beta$ = 0.41, $p$ = 0.001). The attitude towards the electricity distribution company also has a direct and significant effect on the willingness to participate in the development of wind energy ($\beta$ = 0.35, $p$ < 0.001). The functional rationale (β = 0.17, $p$ < 0.05) and the urgency rationale ($\beta$ = 0.34, $p$ = 0.001) positively and significantly influence the willingness to engage in wind energy development projects. Willingness to participate in development plans has a positive and significant effect on behavioral intention ($\beta$ = 0.66, p = 0.001). The squared multiple correlations for sensitivity, perceived severity, desire to participate in wind energy development projects, and behavioral intention to participate are 0.16, 0.17, 0.33, and 0.22, respectively ($R^2_{Sensit}$ = 0.16, $R^2_{Sever}$ = 0.17, $R^2_{Desire}$ = 0.33, $R^2_{Intent}$ = 0.22). The results of this survey, in general, indicate that it has an impact on farmers' willingness to promote and develop wind energy. Using the transtheoretical model, it was revealed that the majority of farmers are in the stages of "increasing awareness" and "dramatic relief," while experts are in the stages of "self-reevaluation" and "self-liberation."

**Keywords-** Renewable, Energy, development, Acceptance, Wind turbine, Qazvin.

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## 1. Introduction

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Global experience shows that public acceptance of renewable energy technologies, also known as social acceptance, is not favorable. The likelihood that rural people in developing countries adopt such technologies is low (Rezaei and van der Heijden, 2022). The transition to green energies is a gradual, complex, and exhaustive process involving multiple stakeholders and dimensions. The analysis of transitioning to renewable energies (REs) emphasizes the various aspects and characteristics of this intricate process (Omri et al., 2022). Although environmental considerations are less popular, energy dependence on agriculture and the decline of global energy resources are among the important issues in the path of renewed energy development (Sutherland and Holstead, 2014). In connection with the role of REs in the development of rural areas, the synergy between REs and rural development is emphasized, considering them as socio-ecological reforms addressing capitalist crisis tendencies (Clausen and Rudolph, 2020). REs have the potential to thrive in rural areas of Iran due to their environmental, social, and economic advantages. However, they encounter infrastructural, managerial, sociocultural, and economic challenges. The Iranian government has set national goals for the advancement of renewable energy sources in the agricultural sector (Yazdanpanah et al., 2022). The production of renewable energy in the field can lead to increased environmental awareness and sustainable economic and environmental agriculture methods among farmers as well as providing potential economic strengthening to local economies (Sutherland and Holstead, 2014). Based on this, and considering that rural areas in Iran suffer from an unstable energy system, it is necessary to integrate REs into comprehensive development programs, and into rural development programs (Afsharzade et al., 2016).

One of the abundant renewable energies in rural areas and agricultural systems is wind energy. The use of wind energy is still increasing worldwide due to lack of cost in electricity generation (Wall et al., 2021). In deed, attention to the cultural and social dimensions of the ruling in societies is of particular importance in the development of this energy. Evidence suggests that people who wish to adopt renewable energy resources at their place of residence understand a potential market for renewable energy (Sardianou and Genoudi, 2013). On the other hand, there are obstacles to accepting the development of restrictive energy, for example, the perceived personal attitude on the traditional perspective that farmers only need to produce food (Frantál and Prousek, 2016). Farmers primarily produce wind energy to "prove the future" of their farms and increase the long -term economic survival of their farms through trade diversity and investment (Sutherland and Holstead, 2014). Although farmers view the developments of wind turbines at the level of the field as an ideal form of commercial diversity, they consider energy production to be environmentally friendly (Suthherland and Holstead, 2014), in this process, economic issues, including reduced initial investment costs such as value added tax) and energy tax deduction (2023).

In the context of wind energy utilization, emphasis is placed on end-user incentives, as well as infrastructure for information dissemination and technical training (Lew, 2000). Perceptions, beliefs, and acceptance criteria of renewable energy projects vary across different regions (Colmenares-Quintero et al., 2020). Human characteristics, such as intention and willingness to use renewable energy, are crucial for understanding the deployment of renewable energy (Yazdanpanah et al., 2022). The establishment of wind energy projects transforms energy outlooks and daily living environments during the energy transmission process. Regarding the social acceptance of wind energy projects, the role of various aspects of justice like procedural, distributive, and identification) is crucial (Karakislak et al., 2023). Understanding the complex and multidimensional process of energy transfer and social acceptance is a fundamental issue in the expansion and development of renewable energies (Omri et al., 2022). Pro-social orientations were found to be more effective than pro-self-motives in explaining the behavioral intention to use renewable energy technologies among Iranian villagers (Rezaei and van der Heijden, 2022). Achieving sustainable development requires the development of new sources of energy that are clean and inexhaustible (Omri et al., 2022). The insight into the interaction of the determinants for acceptance of the formation of macro and micro policies is of great importance

(Frantál and Prousek, 2016). Due to the production and consumption of REs, no carbon dioxide is released into the atmosphere. This helps reduce healthcare costs, minimize labor loss, decrease dependence on foreign energy sources, and alleviate economic recession (Dinçer et al., 2021). Although technical factors are significant, the economic, institutional, social, and even psychological aspects of transitioning to wind energy should not be overlooked. Although external issues, for example a communication and backup policy related to renewable energy commercialization for farmers, the amount and types of activities related to renewed energy development, geographical and climatic conditions, and the scale of farmlands can facilitate the adoption process of the development of wind energy (Frantál and Prousek, 2016; Moerkerken et al., 2023), it is important to note that people decide to accept or reject the development of wind energy. All these aspects are at the core of environmental economics, institutional economics, and psychosocial approaches (Omri et al., 2022). There is still no research on the extent of the influence of the identified factors on farmers' acceptance of wind energy in Iran. Therefore, the current study, for the first time in the Iranian research system, has investigated the impact of farmers' inclinations and behavioral intentions on the promotion of wind energy in the agricultural sector. There are two approaches to formulate a theoretical basis, one to use the available theories and the second to review the literature, and to spontaneously formulate a theoretical basis, which is called the conceptual framework. The llater has been used in this study. This foundation of the study consisted of variables involving externality, perceived sensitivity, perceived severity, attitude toward participation in wind development projects, attitudes toward the specialists of the regional electricity distribution company, supportive Initiatives, response to urgency, functionalism suitability, development potentiality, and Willingness to participate in the development of wind energy. The study aimed to achieve the following objectives:

(1) Investigating the factors affecting wind energy acceptance by farmers.

(2) Examining the trans-theoretical processes of acceptance in advancing wind energy among farmers, landowners, and experts.

(3) Exploring the difference in variables between rural areas located near wind turbines and those located near fossil fuel electricity plants?

## 2. Research Theoretical Literature

### *2.1. Externality*

An externality, or side effect, occurs when a company or individual engages in an activity that directly impacts others, another company, or an individual, but does not involve payment or receipt of money. This means that the person or company creating the externality does not include the costs or benefits resulting from the respective action in their calculations. When it is said directly, it is meant to exclude any effect that is transmitted by prices. This effect was known as external effects by Wiener. Indeed, assuming rational pricing behavior, the market is precisely the mechanism that produces a Pareto-optimal (socially optimal) outcome. Externalities are divided into two categories: positive and negative. The former occurs when the activity of the company or person producing the externality increases the utility of the unit affected by it. For example, when a person is creative and offers an innovative idea or product that creates a change in society, they may receive a fee for it, but the positive effects far outweigh the cost. A negative side effect occurs when the actions of a company or individual result in a reduction of the utility of the affected unit. For example, a factory that produces steel. The factory emits smoke from its furnaces into the air, which has a detrimental effect on the surrounding environment, impacting agricultural activities and the health of people in the vicinity.

### *2.2. Perceived Sensitivity to Air Pollution Risk Derived from Fossil Power Plants*

Perceived susceptibility reflects an individual's belief regarding the risk of disease (Witte, 1992). It involves the subjective perception of the likelihood of contracting a disease or experiencing harm and potential damage, which influences an individual's susceptibility to risks (Hsu and Ting, 2020). Personal risk and individual sensitivity are the strongest factors influencing people to adopt health behaviors. It seems logical that when people believe they are exposed to a disease, they are more likely to take measures to prevent it, and vice versa. Perceived sensitivity has a strong cognitive component that primarily depends on individuals' knowledge and awareness.

Suldovsky and Frank (2022) examined the predictors of risk perceptions and environmental values influencing individual-level protective behaviors and civic actions related to air pollution in Portland, Oregon. They concluded that risk perceptions significantly predicted protective behavior. Risk perception is a subjective judgment about the characteristics and severity of risks, often used to assess the potential harm posed by natural, environmental, or health disasters (Hsu and Ting, 2020).

### *2.3. Perceived Severity of Air Pollution Risk*

The perceived severity refers to the seriousness of a particular disease or situation that can have significant consequences on health (Witte, 1992). The severity of the perceived risk refers to an individual's subjective belief that they are exposed to a disease, problem, or injury. Perceived severity includes the risk of potential harm (Hsu and Ting, 2020). If there is a perceived threat of a serious illness with real risks, the likelihood of behavior change increases. This perception varies from person to person. Perceived severity also has a strong cognitive component that depends on a person's knowledge and awareness (Rosenstock, 1974). After examining and internalizing information such as the amount of pain caused by the disease, the death rate caused by it, and the social consequences of the disease (impact on work, effect on family life, and social relations), the individual ultimately forms a perception of the severity of the disease for themselves. According to this assessment, the individual understands the severity of the disease, which motivates them to take preventive measures. The results of a study conducted by Yazdanpanah et al. (2020) show that perceived severity has a positive and significant effect on behavioral intention ($\beta = 0.20$, $p < 0.05$) and actual behavior ($\beta = 0.19$, $p < 0.05$).

### *2.4. Development Potentiality*

Understanding attitudes is crucial when designing policy instruments to motivate action. Attitude is partly socially constructed and, therefore, is studied locally rather than extrapolated from other environments (Xu et al., 2017). Each turbine has the potential to generate a significant amount of electricity (Solar Review, 2024). The results of the survey on public attitudes towards the development of onshore wind farms in southwest Scotland indicate that community ownership leads to greater acceptance of these wind farms. The study conducted in the field of the development of renewable energy technologies and the implementation of new development policies for rural areas of Pakistan indicates the relationship between fossil fuel energy, clean energy, and population in rural areas, energy potential, national policies, and regulations (Raza et al., 2020). A survey conducted in Germany, Austria, Italy, and Switzerland revealed that solar farms and electricity-to-gas infrastructure promote the adoption of renewable energy by local communities. In contrast, wind farms have an ambiguous effect, while gas plants and power lines tend to reduce adoption (Azarova et al., 2019).

### *2.5. Functionalism Suitability*

To maintain the share of REs, the wind energy project must integrate technological, environmental, and social aspects (Langer et al., 2018). About the role of wind energy in achieving the Sustainable Development Goals (SDGs), it has been argued that utilizing clean and affordable energy sources, rather than traditional fossil fuel power plants, offers valuable insights into environmental impacts. In this regard, wind energy plays an important role in achieving goals such as SDG8 for decent employment and economic growth, SDG9 for industry growth, innovation, and infrastructure, SDG11 for the development of sustainable cities and communities, and SDG15 for life on earth. These indicators help reduce operating costs, mitigate climate change and environmental damage, enhance employee participation and morale, bridge learning gaps, establish goals and plans, and utilize resources efficiently (Olabi et al., 2023). Further evidence indicates that a strong synergistic effect exists between renewable electricity prices, SDG7 Affordable and Clean Energy, and SDG12 Responsible Production and Consumption, which explains the majority of the future changes in renewable electricity prices (excluding its effect).

### *2.6. Response to Urgency*

Responding to urgency involves developing efficient and effective solutions for a critical and pressing requirement. Given that fossil fuels are extensively utilized and are non-renewable sources of energy, they will eventually be depleted. After the depletion of non-renewable energy sources, the issue of energy supply will become increasingly complex. Therefore, it is crucial to focus on the production and distribution of alternative

renewable energy sources. Since these energy sources are renewable, they are also inexhaustible. More importantly, they cause little to zero damage to the climate or environment. Fossil fuels, such as oil, coal, and natural gas, are only available in limited quantities. Renewable energies do not emit air pollutants or have few pollutants. It is better for our health. The global increase in fossil fuel-based road transport, industrial activities, and electricity generation, along with the burning of waste in many cities, contributes to the rising levels of air pollution. In many developing countries, the use of charcoal and fuelwood for heating and cooking contributes to poor indoor air quality. According to studies by the World Health Organization, the presence of particles and other air pollutants in the urban atmosphere leads to the premature death of millions of people and results in billions of dollars in health and economic costs. Renewable energies do not affect air quality during operation. Replacing the current fossil fuel-based energy system with a renewable energy-based system is the most urgent and efficient way to address air pollution (REN21, 2019).

### *2.7. Willingness to participate in the development of wind energy*

The desire to understand the emotional and psychological dimensions of a person when performing a behavior is implied. This variable is related to the concepts of desire, affection, and motivation to engage in a behavior. The study shows that willingness plays an important role in explaining the intention of protective behavior. For example, the desire to participate in non-governmental organizations contributes to the formation of behavioral intention to engage in these organizations and saving behavior (Abadi et al., 2018; Abadi et al., 2020).

In connection with the desire to promote the development of wind energy among local communities, the compensation mechanism has been discussed. Findings indicate that households prefer government compensation over private compensation. However, households are less willing to accept government compensation compared to private compensation. This finding indicates that the assessment of local resistance to wind development relies on the compensation mechanism (Garcia et al., 2016).

The conceptualization of desire can take various forms and be related to different topics. For example, Everest (2021) studied the willingness of farmers in the northwestern provinces of Turkey to adopt renewable energies such as solar and wind energy, as well as their readiness to establish renewable energy cooperatives. Out of the participating farmers, 65.88% were willing to establish a renewable energy cooperative. According to this study, 91.34% of the participating farmers were concerned about climate change, and 70.84% were willing to receive education on climate change.

### *2.8. Attitude toward participation in wind development programs and projects*

Studies show that issues of distributive and procedural justice are common factors that influence local public acceptance. In fact, local public preferences are related to various forms of financial and procedural participation. The results indicate that wind energy projects are typically well-received by the local community when specific conditions, such as ownership and extensive participation in the decision-making process, are met. Policy recommendations are proposed for implementing wind energy projects to mitigate local opposition. Deepening the understanding of these issues is of practical importance for the future development of wind energy (Lienhoop, 2018). The willingness to participate in the construction of protective biostructures has a positive effect on attitude.

### *2.9. Attitudes toward the specialists of the regional electricity distribution company*

The evaluation of local people and farmers on the performance of management organizations responsible for technologies and development projects plays a crucial role in disseminating and promoting these technologies and projects. If people are satisfied with the performance of organizations, they are more likely to engage in projects related to those organizations and to sustain their participation in those projects. For instance, evidence suggests that insufficient institutional performance in developing countries hinders wastewater treatment. In contrast, in developed countries, institutional and legal frameworks for wastewater treatment serve as catalysts for the robust implementation of wastewater treatment and recycling policies (Sadeghfam and Abadi, 2021).

### *2.10. Supportive Initiatives*

In response to the question of whether the support declared by political opinion leaders at the local, national, and European Union levels increases the adoption of renewable energy systems, Azarova et al. (2019) studied the behavior of citizens in Italy and Switzerland. The researchers concluded that Italian citizens' decisions are influenced by the opinions of the European Union and national government bodies, whereas Swiss citizens' choices are sensitive to the opinions of local politicians. Some sponsorships take the form of subsidy-based initiatives, advocating for the higher price of green energy technology with government subsidies in resource-poor countries (Elahi et al., 2021). The governmental support, through policies, infrastructure development, and financial incentives, fosters the success of disseminating small-scale wind turbines and also provides support (Lew, 2000). Local leaders play a crucial role in the development of renewable energy by sharing profits and taxes from companies with the central government. They also wield significant power over property rights and revenues.

### *2.11. Trans-theoretical model*

The use of process-oriented models, such as the trans-theoretical model, plays an important role in conceptualizing the process of changing farmers' behavior. The trans-theoretical model can accurately describe the stages involved in farmers' decision-making process to adopt and implement environmental behaviors. This model establishes a framework for assessing farmers' readiness to change their behavior, enabling tailored interventions based on their readiness level. This model includes stages of change, decision-making balance, self-efficacy, and change processes. The stages of behavior change structure are central to this model because it is the only structure that incorporates a time dimension. Behavior change consists of five stages of change, which include pre-contemplation, contemplation, preparation, action, and maintenance. The first three stages represent the individual's intention to change, which are formulated in their mind, while the last two stages involve the transformation of behavioral intention into visible actions. At the initial stage, the individual has not yet seriously considered changing their behavior. During the contemplation stage, the individual actively considers changing their behavior. During the preparation stage, the individual is committed to making a change in the near future, typically within the next month. In the action stage, the individual actively changes their behavior, and in the maintenance stage, the newly established behavior continues and becomes ingrained. However, one should be cautious not to regress to previous stages. The stages of behavior change in the trans-theoretical model are: (1) Pre-contemplation, (2) Contemplation, (3) Preparation, (4) Action, and (5) Maintenance. Ten change processes have been identified to enhance decision-making balance, self-efficacy, and motivation. These processes are outlined on www.pmhealthnp.com.

(1) Increasing awareness involves discovering and learning new facts, ideas, and tips that support healthy behavioral changes.

(2) Dramatic Relief: Experiencing negative emotions, such as fear, anxiety, and worry that accompany unhealthy behavioral risks.

(3) Self-reevaluation: Understanding that changing behavior is an important aspect of one's identity as a person.

(4) Environmental reappraisal involves understanding the negative impact of unhealthy behavior or the positive impact of healthy behavior on one's social and physical environment.

(5) Self-liberation: a decisive commitment to change.

(6) Helping Relationships: Seeking and Using Social Support for Healthy Behavior Change

(7) Reciprocal conditioning involves substituting healthier alternative behaviors and cognitions for unhealthy behaviors.

(8) Contingent management involves increasing the reward for positive behavior change and decreasing the reward for unhealthy behavior.

(9) Stimulus control involves removing cues that trigger unhealthy behaviors and adding cues that promote healthy behaviors.

(10) Social Emancipation: Understanding that social norms are evolving to promote healthy behavior change.

## 3. Research Methodology

### *3.1. Wind Energy Site*

The survey was conducted in four townships in the Qazvin province: Qazvin, Takestan, Abyek, and Alborz. The Kahak area is the first place where wind turbine plants were installed. It is situated 8 kilometers from Takstan and 34 kilometers southwest of Qazvin city, the capital of the

province. One of the most significant and largest wind farms in Iran is located in this village. The people in this region engage in agriculture and animal husbandry, producing grapes, corn, alfalfa, and sugar beets as their main products. Additionally, the villagers engage in animal husbandry. Women are engaged in these activities alongside the men of the village and are also involved in the preparation and processing of grape juice and tomato paste.

### *3.2. The sample and the studied population*

The population studied in this research includes all the farmers in townships, including Qazvin, Takestan, Abyek, and Alborz, with suitable potential for investing in and building wind power plants (wind turbines). A sample of 189 farmers was randomly selected and surveyed.

### *3.3. Data Collection*

The data collection tool included a web-based questionnaire and a paper questionnaire. The questionnaire items were developed based on Bandura's cognitive model (Thøgersen and Grønhøj, 2010). In the organizational support section, the organizational support model of Eisenberger et al. (1986) was adapted.

### *3.4. Data Analysis*

Path analysis was conducted using AMOS software (IBM: version 24) to analyze quantitative data.

Table 1 displays the constructs and indicator variables that were included in establishing the causal model.

**Table 1. The constructs and indicator variables that were included in establishing the causal model.**

| Explain | $\bar{x}$ ±SD | Loading Score | Explained Variance (%)[a] | Cronbach's Alpha |
|---|---|---|---|---|
| **Externality** ($\xi 1 \rightarrow \eta 1$) | 3.90±0.71 | | 46.92 | 0.66 |
| Reduction in leaf area, biomass, and nitrogen content | 3.90±1.05 | 0.670 | | |
| A decrease in the yield of agricultural products | 4.15±0.99 | 0.617 | | |
| A decrease in income | 3.94±1.03 | 0.774 | | |
| Adverse effects on vegetation (flora) and wildlife species (fauna) | 3.59±1.10 | 0.669 | | |
| **Perceived Sensitivity** ($\xi 2 \rightarrow \eta 1$)**:** How likely is air pollution from fossil power plant to have negative effects on | 3.57±0.62 | | 34.55 | 0.74 |
| your health? | 3.85±1.17 | 0.854 | | |
| on agricultural crops, such as reducing their yield, leaf area, and biomass? | 3.79±1.25 | 0.735 | | |
| income from agricultural sector? | 3.34±0.98 | 0.791 | | |
| plant and animal populations? | 0.94±3.30 | 0.522 | | |
| **Perceived Severity** ($\xi 3 \rightarrow \eta 1$) The risk of air pollution caused by fossil fuel power plants is: | 3.43±0.69 | | 45.32 | 0.96 |
| a very serious concern for my health. | 3.79±1.23 | 0.724 | | |
| a significant concern for agricultural products. | 3.30±0.90 | 0.745 | | |
| a serious threat to farm income. | 3.23±0.96 | 0.529 | | |
| **Wind Energy Potentiality** ($\xi 4 \rightarrow \eta 1$) | 3.40±0.75 | | 43.43 | 0.92 |
| Wind energy has the potential for further development to generate and supply energy to the power grid. | 2.96±1.10 | 0.505 | | |
| Wind energy has the capacity to further expand and create job opportunities. | 3.31±0.99 | 0.457 | | |
| Wind energy has the potential for further development through investment from the public sector. | 3.57±1.29 | 0.791 | | |
| Wind energy has the potential for further expansion through private sector investments. | 3.79±1.19 | 0.806 | | |
| **Functionalism Suitability** ($\xi 5 \rightarrow \eta 1$) | 3.64±0.93 | | 60.07 | 0.78 |
| The function of wind energy is directly related to ecological factors. | 3.68±1.29 | 0.890 | | |
| The operation of wind energy is proportional to ensuring universal fairness for all consumers. | 3.69±1.20 | 0.799 | | |

| Explain | $\bar{x}$ ±SD | Loading Score | Explained Variance (%)[a] | Cronbach's Alpha |
|---|---|---|---|---|
| The function of wind energy is related to the fair distribution of energy among suppliers. | 3.56±1.13 | 0.609 | | |
| **Response to Urgency ($\xi 6 \rightarrow \eta 1$ )** | 3.62±1.03 | | | |
| The pollution resulting from fossil plants increases the necessity of using wind energy in electricity production. | 3.68±1.38 | 0.753 | 62.36 | 0.89 |
| Climate change, stemming from the rise in fossil fuel consumption, has made it imperative to harness wind energy for electricity generation. | 3.79±1.23 | 0.787 | | |
| The increasing urban population underscores the importance of utilizing wind energy in electricity generation. | 1.41±1.30 | 0.828 | | |
| **Attitudes towards participation in wind turbine development programs and projects ($\xi 7 \rightarrow \eta 1$ )** | 3.17±0.85 | | 47.60 | 0.94 |
| The participation of villagers in the development of wind turbines involves leveraging local expertise and knowledge. | 2.96±1.20 | 0.786 | | |
| The participation of villagers in the development of wind turbines increases their responsibility for renewable energy production. | 3.17±1.31 | 0.662 | | |
| The involvement of villagers in the development of wind turbines increases their responsibility for producing renewable energy. | 3.16±1.24 | 0.772 | | |
| The involvement of villagers in the development of wind turbines enhances the eligibility for government financial assistance for villages. | 3.42±1.21 | 0.503 | | |
| **Attitude toward the electricity distribution company ($\xi 8 \rightarrow \eta 1$ )** | 3.40±0.70 | | 39.46 | 0.70 |
| Officials take into consideration the opinions of the villagers when making decisions about clean electricity production. | 1.20±3.51 | 0.683 | | |
| Officials are working to organize farmers and villagers to revive energy cooperatives and expand the production of clean electricity. | 1.18±2.88 | 0.812 | | |
| Officials perform their duties based on the needs of rural areas. | 1.29±3.52 | 0.699 | | |
| The officials are addressing the air pollution issues in the region by installing wind turbines. | 1.13±3.72 | 0.568 | | |
| **Supportive Initiatives (Organizational Support) ($\xi 9 \rightarrow \eta 1$ )** | 3.39±0.83 | | 41.45 | 0.92 |
| If the managers and officials support wind energy development, the likelihood of my involvement in the wind energy project increases. | 3.50±1.22 | 0.483 | | |
| If my friends and family support wind energy development, the probability of my participation in the wind energy project increases. | 3.40±1.25 | 0.698 | | |
| If neighboring farmers support wind energy development, the likelihood of my involvement in the wind energy project increases. | 3.21±1.36 | 0.723 | | |
| **Willingness to Participate in wind energy programs and projects ($\eta 1 \rightarrow \eta 2$ )** | 3.68±0.94 | | 71.43 | 0.98 |
| I like to participate in consultation meetings with experts from the electricity distribution company. | 3.70±1.16 | 0.856 | | |
| I would like to encourage other villagers to participate in the development of wind turbines. | 3.74±1.08 | 0.799 | | |
| I am eager to contribute to the maintenance and development of wind turbines. | 3.69±1.11 | 0.830 | | |
| I wish to collaborate with local rural organizations for the development of wind turbines. | 3.63±1.11 | 0.893 | | |

| Explain | $\bar{x}$ ±SD | Loading Score | Explained Variance (%)[a] | Cronbach's Alpha |
|---|---|---|---|---|
| **Behavioral Intention (η2)** | 2.99±0.58 | | | |
| My intention is to participate in the development planning of wind turbines in the near future. | 3.53±1.15 | 0.828 | | |
| My intention is to encourage the villagers to participate in setting up a wind energy cooperative or union in the near future. | 2.95±1.06 | 0.717 | | |
| I have planned to participate in the management and protection of the wind turbines once their construction is completed. | 3.81±1.13 | 0.809 | 33.17 | 0.84 |
| I strive to address issues that arise from diverse individuals, both local and non-local, throughout the project implementation. | 2.28±1.27 | 0.684 | | |
| I will provide the trustees with the necessary land for installing wind turbines. | 1.99±1.10 | 0.517 | | |
| I am willing to pay a premium for electricity generated through wind turbines to support this industry. | 2.20±1.18 | 0.699 | | |

**Note:** The dimension reduction method calculates the amount of variance explained in the model through Principal Component Analysis (PCA). Rotation is a crucial step in PCA, where the coordinate system for the principal components is adjusted to improve the interpretation and understanding of these components. Principal components are determined through Principal Component Analysis (PCA) on a dataset, considering the correlation pattern among the main variables.

## 4. Research Findings

### *4.1. Path Analysis*

It is generally assumed that there is no high correlation between predictor variables when implementing the linear regression model. Before conducting the path analysis, it is essential to examine the relationships between predictor variables in the model. The indices used for this purpose are the Variance Inflation Factor (VIF) and the Tolerance Index. The threshold point for the VIF index is less than 10. Moreover, for the tolerance index, the threshold point is greater than 0.20. The results of running the linear regression model showed a variance inflation factor (VIF) index value, as presented in Table 2.

**Table 2. The results of linear regression for assessing variance inflation factor and tolerance index**

| | VIF | Tolerance |
|---|---|---|
| Externality | 1.43 | 0.70 |
| Perceived sensitivity | 1.48 | 0.67 |
| Perceived severity | 1.51 | 0.66 |
| Development Potentiality | 2.40 | 0.41 |
| Functional Suitability | 1.33 | 0.74 |
| Response to Urgency | 1.04 | 0.96 |
| Attitudes towards participation in wind energy development projects | 1.17 | 0.85 |
| Attitude towards the electricity distribution company | 1.15 | 0.86 |
| Willingness to participate in the development of wind energy | 1.03 | 0.96 |

**Note:** Multi-collinearity indicates a high correlation between predictor variables in a linear regression model. To ensure that this phenomenon does not compromise the model analysis, two indices are utilized: The Variance Inflation Factor (VIF) with a cutoff of less than 10 and a tolerance index higher than 0.20 (VIF =1 / Tolerance. Since path analysis involves a set of regression functions, the two indices mentioned above are commonly used to evaluate regression functions by default.

### *4.2. Measurement Model of Path Analysis*

As derived from the initial measurement model, the evaluation of the conceptual model fitting criteria revealed that the model's goodness of fit was unsatisfactory. This indicates that the conceptual model does not align well with the dataset obtained from the survey of the respondents. The results show that the goodness of fit indices of the model is as follows: CMIN = 510.66, df = 63, CMIN/df = 8.10, CFI = 0.13, TLI = 0.14, IFI = 0.32, RFI = 0.13, NFI = 0.29, indicating the inappropriate fit of the studied conceptual model. The root-mean-square error of approximation (RMSEA) is 0.19, indicating that the conceptual model was poorly

fitted. To enhance the measurement model, significant covariance structures between the exogenous variables were established. This adjustment was made to improve the fit indices of the measurement model. The results of examining the criteria for fitting the conceptual model showed that the model's goodness of fit was satisfactory. The conceptual model showed a good fit with the dataset obtained from the survey of the respondents (CMIN = 87.10, df = 42, CMIN/df = 2.07, CFI = 0.93, TLI = 0.87, IFI = 0.93, RFI = 0.77, NFI = 0.88, RMSEA = 0.07). The RMSEA index also indicates that the fitting of the conceptual model has been done properly.

### *4.3. Structural Model of Path Analysis*

As demonstrated in Table 3, externality directly and significantly affects perceived sensitivity ($\beta_{Extern \rightarrow Sensi}$ = 0.40, $p$ = 0.001). In addition, externality has a significant positive effect (with a path coefficient of 0.41) on perceived severity ($\beta_{Extern \rightarrow Severi}$ = 0.41, $p$ = 0.001). The attitude toward the electricity distribution company also has a direct and significant effect on the willingness to participate in the development of wind energy ($\beta_{Atti \rightarrow Willing}$ = 0.35, $p$ < 0.001). The functional reason ($\beta_{Functiona \rightarrow Willing}$ = 0.17, $p$ < 0.05) and the urgency reason ($\beta_{Urgency \rightarrow Willing}$ = 0.34, $p$ = 0.001) positively and significantly influence the willingness to engage in wind energy development projects. Willingness to participate in development projects has a positive and significant effect on behavioral intention ($\beta_{Willing \rightarrow Intent}$ = 0.66, $p$ = 0.001). It is noteworthy that perceived severity has a significant negative effect on behavioral intention ($\beta_{Severi \rightarrow Intent}$ = – 0.44, $p$ = 0.001). This finding indicates that the higher the perceived risk of air pollution resulting from electricity generation by fossil power plants, such as those using diesel fuel in the region, the lower the behavioral intention formed. This issue arises because cognitively and perceptually, the perception of risk severity is appropriately assessed. However, this does not translate into the development of an inquisitive and proactive mindset, such as behavioral intention or actual behavior. This issue highlights a person's indifference towards air pollution. Farmers may believe that this issue is not relevant to them or that they cannot influence the pollution situation. Apathy may occur when the problems of life, family, communities, country, and the surrounding world seem so overwhelming that one feels powerless to address them and make a difference. Indifference is a state in which we do not care or take action on what is happening around us. Indifferent people can be seen as disinterested, unmotivated, and lacking enthusiasm (Buckle, 2024). The prediction rates of the dependent variables (squared multiple correlations) for sensitivity, perceived severity, desire to participate in wind energy development projects, and behavioral intention to participate are 0.16, 0.17, 0.33, and 0.22, respectively ($R^2_{Sensi}$ = 0.16, $R^2_{Severi}$ = 0.17, $R^2_{Willing}$ = 0.33, $R^2_{Intent}$ = 0.22).

**Table 3. Maximum Likelihood Estimates, Standardized Regression Weights, and Critical Ratio**

| | | | Estimate ($\beta s$) | S.E. | C.R | P-value | Confirmed |
|---|---|---|---|---|---|---|---|
| Externality | → | Sensitivity | 0.40 | 0.058 | 6.181 | | Yes |
| Potentiality Reason | → | Willingness | –0.11 | 0.100 | –1.417 | 0.157 | No |
| Functionalism Reason | → | Willingness | 0.17 | 0.084 | 1.996 | 0.046 | Yes |
| Response to Urgency Reason | → | Willingness | 0.34 | 0.079 | 3.896 | 0.001 | Yes |
| Attitude Toward Participation | → | Willingness | 0.10 | 0.065 | 1.744 | 0.081 | No |
| Company Electricity | → | Willingness | 0.35 | 0.082 | 5.601 | 0.001 | Yes |
| Externality | → | Severity | 0.41 | 0.065 | 6.176 | 0.001 | Yes |
| Supportive Initiatives | → | Willingness | –0.02 | 0.065 | –0.355 | 0.723 | No |
| Sensitivity | → | Willingness | 0.004 | 0.233 | 0.026 | 0.979 | No |
| Willingness | → | Intention | 0.66 | 0.050 | 8.306 | 0.001 | Yes |
| Urgency Reason | → | Intention | –0.01 | 0.039 | –0.223 | 0.824 | No |
| Severity | → | Intention | –0.44 | 0.141 | –2.664 | 0.008 | Yes |
| CMIN = 87.10, df = 42, CMIN/df = 2.07, CFI = 0.93, TLI = 0.87, IFI = 0.93, RFI = 0.77, NFI=0.88, RMSEA= 0.07 $R^2_{Sensi}$ = 0.16, $R^2_{Severi}$ = 0.17, $R^2_{Willing}$ = 0.33, $R^2_{Intent}$ = 0.22 | | | | | | | |

**Note:** The unstandardized path coefficients are obtained by dividing the regression weight estimate by the estimate of its standard error. The critical ratio (CR) is then calculated. The resulting value indicates the number of standard error units by which the regression weight estimate is above (+) or below (–) zero. The effect size of the model is measured by a formula Cohen d $= \frac{R^2}{1-R^2}$.

### *4.4. The Perceived Denotation of Wind Turbines*

In connection with the respondents' interpretation of wind turbines, the interpretive method was used to design the desired items. The results of the descriptive statistics analysis showed that the respondents attributed the most significance to wind turbines as an "electricity generating machine" (n=125, 66.1%) (See Figure 1). There is a significant difference in the connotative meanings of intention; therefore, the highest mean score for intention is at the epitome of purity level.

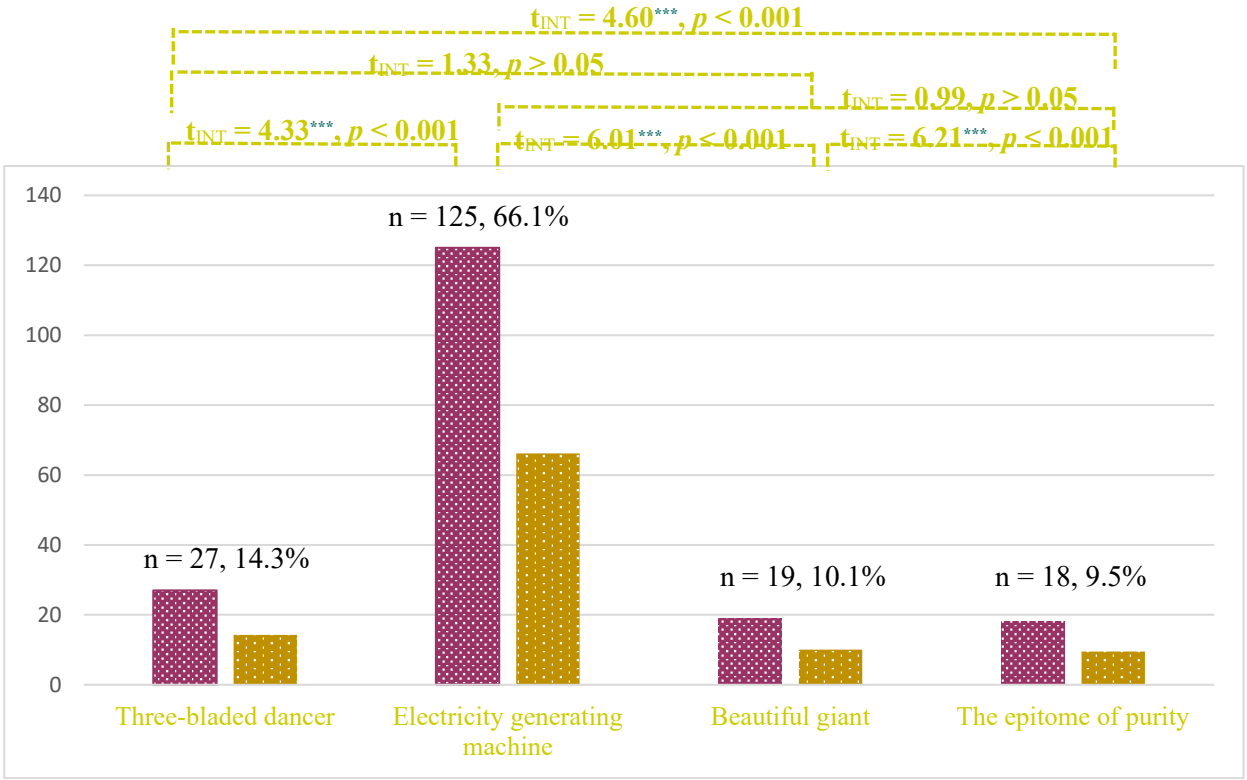


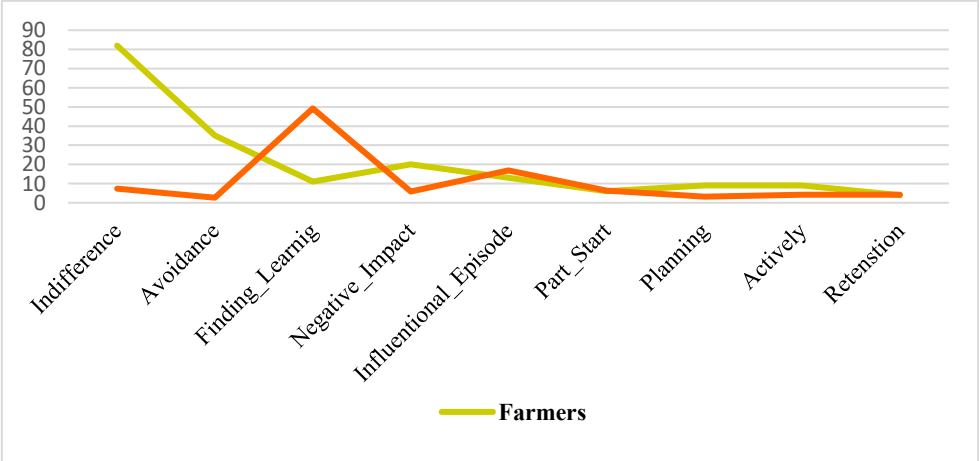

**Fig. 1. Bar chart illustrating viable options for wind turbines.**
Meanings created by farmers around wind turbines. Connotation analysis is typically used to identify the meanings and interpretations constructed by individuals (the function of ontology). Connotation refers to the implied meaning of words, subjects, and phenomena, while denotation pertains to their literal or original meaning.

According to the stages of change model, participants were questioned about their opinions on air pollution in the area resulting from the use of fossil fuels (such as gas, diesel, fuel oil, etc.) by power plants. They were also asked about the importance of focusing on the development of wind energy. Participants were then asked to select the option from the stages of the transtheoretical model that most closely matched their perspective. The most common response to the initial survey (historically, I had been indifferent and uninterested in contributing to the advancement of wind turbine energy) occurred 82 times, accounting for 43.4% of all responses. Following the process, "I mostly prefer to think about participating in the development of wind turbine energy," while avoiding and evading (not thinking about it) because it is nothing but trouble, was the next most common response (n=35, 15.5%) (See Table 4 and Figure 2).

**Table 4. The Processes of Trans-Theoretical Model**

| | Processes | Research Participants [a] | | | |
|---|---|---|---|---|---|
| | | Farmers (n=189) | | Experts (n=131) | |
| 1 | From the past until now, I have felt indifferent and uninterested in participating in the development of wind energy. | 82 | 43.4 | 14 | 7.4 |
| 2 | I tend to avoid considering involvement in wind energy development because it often leads to complications. | 35 | 18.5 | 5 | 2.6 |
| 3 | I am actively seeking and acquiring new facts, ideas, and information to transform my role and passive behavior in the advancement of wind energy. | 11 | 5.8 | 93 | 49.2 |
| 4 | I acknowledge the negative impact of my non-participation and that of the people in the village and city in the development of wind energy. | 20 | 10.6 | 11 | 5.8 |
| 5 | I confirm that the lack of participation in wind energy development projects is a phenomenon that affects the deterioration of the agricultural situation, jeopardizes my livelihood, and increases air pollution. | 13 | 6.9 | 32 | 16.9 |
| 6 | Seriously, I intend to start participating in plans and projects for electricity generation through wind energy. | 6 | 3.2 | 12 | 6.3 |
| 7 | I am currently actively planning to engage in wind energy development activities, such as preparing to participate in a wind energy development project or planning to join a wind energy. | 9 | 4.8 | 6 | 3.2 |
| 8 | I am now actively involved in the wind energy development project. | 9 | 4.8 | 8 | 4.2 |
| 9 | In the future, I am committed to actively engaging in and contributing to wind energy development projects. | 4 | 2.1 | 8 | 4.2 |

**Note:** In the field of behavior patterns related to behavior change, the meta-theoretical pattern comprises nine processes or stages of the Trans-theoretical model. Operationally, various interventions are considered for each unique process. Famous theories in the field of behavior, such as the Theory of Planned Behavior (TPB), Causal Action Theory, and Social Cognitive Theory (SCT), are primarily utilized to predict the variance of behavioral intention and actual behavior.



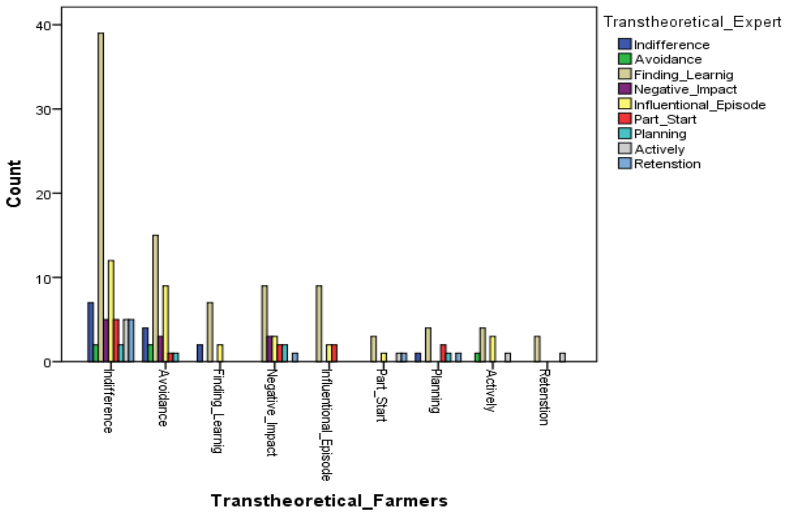



**Fig. 2. The bar chart illustrates the stages and processes of the trans-theoretical model.**

We can understand the mental and practical stages of the farmers. Management obligations can be implemented in alignment with any process. Considering that the highest frequency is related to the first process in the meta-theoretical model, increasing awareness about the causes, consequences, and solutions related to the development of wind energy through media movements, providing feedback for events, and presenting interpretations can be utilized.

Table 5 presents the t-Student test for paired groups with a normal distribution and the Mann-Whitney U test for paired groups with a non-normal distribution to compare independent variables concerning distances of less than 30 km (n1 = 137) and more than 30 km (n2 = 52) from the wind turbine location. Additionally, it includes the Pearson correlation of independent variables with the distance to the fossil fuel electricity plant. Farmers whose farms are located less than 30 km from a wind energy farm have a higher perception of externality (t(187) = 4.03, $p < 0.001$), development potentiality (Mann-Whitney U = 2865, $p < 0.05$), and attitude towards the EDC (Mann-Whitney U = 2841.50, $p < 0.05$).

**Table 5-The results of t-Student test, Mann-Whitney U tests, and Pearson correlation, relationship of independent variables with the distance to area of installed wind turbine and the distance to the fossil fuel electricity plant.**

| | Two-Sample Kolmogorov-Smirnov Z Test | Distance to the location of the installed wind turbines | | t-student test/Mann-Whitney U | Distance to fossil fuel electricity plant |
|---|---|---|---|---|---|
| | | $x_i < 30$ km (n1 = 137) | $x_i > 30$ km (n2 = 52) | | |
| 1. Externality | 1.86** | 4.03 | 3.57 | (t(187)=4.03*** | – 0.41** |
| 2. Perceived Sensitivity | 1.01 | 98.66 | 85.35 | 3060 | – 0.13 |
| 3. Perceived Severity | 0.93 | 98.78 | 85.03 | 3043.50 | – 0.15* |
| 4. Development Potentiality | 1.257 | 100.09 | 81.60 | 2865*(a) | – 0.15* |
| 5. Functional Suitability | 0.80 | 96.69 | 90.55 | 3330.50 | – 0.15* |
| 6. Response to Urgency | 0.82 | 98.68 | 85.32 | 3058.50 | – 0.20** |
| 7. Attitudes towards participation | 0.87 | 97.51 | 88.39 | 3218.50 | – 0.08 |
| 8. Attitude towards the EDC | 1.13 | 100.26 | 81.14 | 2841.50*(a) | – 0.14 |
| 9. Supportive Initiatives | 0.69 | 97.48 | 88.46 | 3222 | 0.13 |
| 10. Willingness to participate in the development of wind energy | 0.86 | 99.05 | 84.34 | 3007.50 | – 0.23** |
| 11. Intention | 3.54*** | 4.05 | 3.44 | (t(187)=7.36***(a) | – 0.50** |

**Note:** The distribution of two variables, externality and intention, was normal. Therefore, we used a t-test to compare the means of the respective variables. The reminders were not normally distributed. Therefore, we utilized the Mann-Whitney U test to compare the mean ranks of two groups of regions based on the distance to the area of installed wind turbines,

specifically those within 30 km and those beyond 30 km. Because it is a ratio scale. EDC stands for Electricity Distribution Company. (a) Results obtained from the Mann-Whitney U test.

## 5. Discussion and Conclusion

The utilization of wind energy in the agricultural sector is a key priority in the policies of the Ministry of Energy and the Ministry of Agricultural Jihad. The present research aims to identify the factors influencing the acceptance of managers and experts in the electricity distribution company regarding the development of wind energy. In this section, the results of quantitative data analysis have been reported first. The results of the correlation analysis between the variables, studied in two parts, focus on the perception of farmers and the perception of authorities and subordinate personnel from the electricity distribution company in the development of wind energy in rural areas.

Externalities directly and significantly affect perceived sensitivity. In addition, side effects have a significant positive effect on the severity perceived by farmers, with a path coefficient of 0.41. The source of side effects in the region is related to the fossil fuel power plant that generates electricity. As mentioned earlier, an externality refers to a phenomenon where, in addition to the two parties directly involved in an economic transaction, there is a third party that is also affected by the transaction. This effect can be positive or negative for the third party. The shape can be either positive or negative. These findings demonstrate the impact of a phenomenon that exists independently of the wind energy production, supply, and demand system. This phenomenon is physically distinct from the reality of wind turbines in the region, despite being separate from the phenomenon of wind turbines. But they are real and are considered a key element in the analysis of the wind energy system. On one hand, there is the reality of consuming fossil fuels, and on the other hand, there is the production of renewable energy sources like wind. In most wind energy research, analysis and interpretation have focused solely on causal factors related to wind energy. However, this study demonstrates that factors external to wind energy production and supply systems also influence acceptance, social responsibility, and the development of wind energy. Therefore, the study suggests that wind energy development should be examined considering the technical, social, and economic characteristics of the field. The phenomenon indirectly related to the development of wind energy is the fossil power plant that generates external effects in the form of air pollution, impacting agricultural products, human health, ecosystem health, and economic justice. Economic justice refers to the mutual benefit between the two parties involved in economic transactions, such as electricity producers and consumers of fossil electricity. However, it often overlooks the externalities on other segments of society and fails to account for external costs.

Air pollution is perceived through sensory signs and imagination, shaped by lived experiences and place identity. The lack of concern about air pollution can largely be explained by the feeling of lack of control and the crowding effect in the competition for attention. This deficiency is primarily influenced by the perceived advantages of residing in major cities, the perceived fairness of the impact on the population, and the perceived delay in health effects from air pollution (Xu et al., 2017). Shahid Rajaei power plant requires 3 billion cubic meters of natural gas annually, but this demand is not fully met, leading to the use of liquid fuel as a substitute. In 2017, the gas company coordinated to receive the largest gas supply quota of the year. A total of 2.7 billion cubic meters of natural gas were delivered and consumed. In the country's power plants, they require 220 to 240 million cubic meters of gas daily, which is highly constrained during winter for large industries. In small power plants ranging from 100 megawatts to large power plants of 2,000 megawatts, like the Shahid Rajaei power plant, alternative liquid fuel must be burned instead of natural gas. This requirement is mandated by the country's authorities to ensure that the supply of gas to household customers remains unaffected. Currently, gas fuel consumption in this power plant has reached zero, and 8,500,000 liters of liquid fuel are consumed daily. Out of this amount, 3 million liters are transported to the power plant by tankers and the rail network (Borna News, 1400). This finding contradicts some evidence. For example, a study of three provinces in Atlantic Canada, including New Brunswick, Nova Scotia, and Prince Edward Island, aimed to determine the

factors affecting the likelihood of paying a non-zero premium for electricity generated using wind technology. Households are willing to pay 14% more monthly on their energy bills for wind power. There is evidence of domain sensitivity (Koto and Yiridoe, 2019).

The attitude towards the electricity distribution company also has a direct and significant effect on the willingness to participate in the development of wind energy. According to this finding, the more positive the attitude, the greater the willingness of farmers to develop wind energy. The excellence in this matter can depend on the extent to which the company's propaganda and information align with the renewable energy development policy. In this case, if the farmers perceive and comprehend that the intellectual and operational policy of the Electricity Distribution Organization focuses on the development and expansion of wind energy, they are likely to desire to contribute to the development of this energy and potentially participate in the projects introduced to their region. Of course, this task of defining projects and contacting farmers will involve assigning responsibility to farmers.

The two variables of functional suitability and response to urgency in wind energy have a positive and significant effect on the willingness to participate in wind energy development projects. The findings show that the perception of the functional nature of wind energy and its other characteristics, such as urgency, will influence farmers' willingness to participate in the development of wind energy. This finding demonstrates that wind energy is compatible with the elements of a sustainable energy production and utilization system.

Participation willingness in development projects has a positive and significant impact on behavioral intention. The philosophical literature highlights additional features that could potentially differentiate between desires and intentions. The first possible criterion is the controllability of the desired behavior. An agent cannot intend to perform a behavior unless that behavior is controllable. However, a distinction must be made between the agent's belief that the behavior is controllable and the actual controllability of that behavior. An agent may decide to start his car, even though he doesn't know that the alternator is not working, making the start uncontrollable. A social perceiver who is aware of the defect attributes the true intention to the agent, even if it is certain that the agent's intention will not be realized. However, if the agent believes that the alternator is malfunctioning and therefore cannot start the car, the perceiver does not assume that the agent intended to start it, but only that he wanted to. Here again, it is not clear exactly how confident the agent must be in the controllability of his behavior before social perception ascribes an intention. However, we can be fairly confident that the perceiver will not attribute intention if the agent is confident that the behavior is uncontrollable (Malle et al., 2001). Intending A requires believing in a will, whereas willing A does not. And the agent can intend to “A” even when he is certain that he will not do A. A certain level of commitment is required before categorizing a mental state as an intention, and the belief that one will not carry out a specific action appears contradictory to committing. It would be confusing for someone to say, "I'm going to go to a party tonight, but I'm sure I won't" because the speaker is clearly showing a lack of commitment. Our measure of commitment indicates that intentional social perceivers do the intention to an agent who simultaneously believes that he will not carry out the intended action. Finally, intending to achieve A requires a plan to perform the behavior of A, or A-ing.

The validity of this claim depends on the details required by such a plan. During the reasoning process, the agent examines the controllability of the action and its compatibility with other demands. The agent initiates the planning process by narrowing down the possible courses of action to a few that are feasible and align with other goals. Reasoning about an intention does not necessarily lead to an action plan. The very act of forming an intention may stimulate the process of developing an action plan (Ibid). Notably, the perceived severity of the negative and significant influence on This finding shows that the greater the perceived risk of air pollution caused by electricity generation from fossil power plants such as diesel in the region, the less behavioral intention will be formed. This issue arises because cognitively and perceptually, the perception of risk severity is appropriately assessed. However, it does not foster the development of an inquisitive and proactive mindset, leading to behavioral intention or actual

behavior. This issue highlights a person's indifference towards air pollution. The person probably thinks that this issue has nothing to do with them, or that they are not in a position to make a change in the pollution situation. Apathy may occur when the problems of life, family, communities, country, and the surrounding world seem so overwhelming that one feels powerless to do anything about them. This means that even when we notice what's going on around us, we may feel like we cannot make a difference. Indifference is a state in which we do not care or take action on what is happening around us. Indifferent people can be seen as cold, aloof, disinterested, unmotivated, and lacking enthusiasm (Buckle, 2024).

## 6. Conclusions and Management Implications

This article examines the influencing factors on the development of wind energy in the agricultural sector. In this chapter, while reviewing the results and findings obtained in this study, management requirements and suggestions for incorporating social responsibility into the production and supply of wind energy to the market have been discussed. Adverse effects directly and impact affect perceived sensitivity. In addition, this variable has a positive and significant effect on the severity perceived by farmers. The source of side effects is related to the power plant that produces electricity by consuming fossil fuels. It is suggested to the policymakers and practitioners of the Ministry of Environment and the Ministry of Health, Treatment, and Medical Education to enact resolutions aimed at preventing air pollution from polluting sources, particularly power plants that rely on fossil fuels like diesel and liquid gas. This issue is not in its normalized form. In this regard, the development of interdepartmental cooperation and collaboration between relevant ministries plays an important role in facilitating the legislative process and implementing the approvals.

The results of this study indicate that the perceived severity of risk, influenced by the externality of fossil power plants, does not impact the behavioral intention or actual behavior of farmers. The main reason for this finding may be that, from the perspective of the respondents, the externalities of the fossil power plant have such a broad scope and magnitude that exceed farmers' abilities to make changes in air pollution. In this regard, it is suggested to promote a culture of responsibility among farmers and rural people by offering orientation classes. In this regard, citizens should be reminded that phenomena such as the air pollution crisis are formed from the integration of components within the physical-social ecosystem. Therefore, fostering commitment and acceptance of social responsibility among citizens will play a crucial role in crisis management. The attitude towards the electricity distribution company also has a direct and significant effect on the willingness to participate in the development of wind energy. According to this finding, the more positive the attitude, the greater the willingness of farmers to develop wind energy. In this regard, it is suggested that educational programs be designed to build culture and promote encouraging community involvement. These programs should explain to farmers how wind energy works and its compatibility with other elements of society and the physical-social ecosystem. It contributes to the theory and practice of sustainable energy development in Iran and other developing countries (Rezaei and van der Heijden, 2022).

In justifying the finding that perceived intensity has a negative and significant effect on behavioral intention, it was argued that this issue reflects the indifference of the public or government institutions toward air pollution. People think that this issue has nothing to do with me or that I am not in a position to make a change in the pollution situation. It is suggested that training classes be broadcasted through television and radio media. The crisis is pervasive and affects the entire societal system and the physical-social ecosystem. A mixed and continuous perspective should be used in justifying and acculturating these issues.

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**Authors contributions**

The authors equally contributed to the preparation of this article.

**Conflict of interest**

The authors declare no conflict of interest.

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**Original Article**

# عوامل مؤثر بر پذیرش توسعه انرژی باد توسط کشاورزان در مناطق روستایی شهرستان قزوین

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## چکیده مبسوط

### ۱. مقدمه

توسعه انرژی باد در مناطق روستایی ایران، یک راه حل امیدوارکننده برای دستیابی به اهداف توسعه پایدار (SDGs) است. هدف مطالعه حاضر، بررسی عوامل مؤثر بر تمایل و قصد کشاورزان برای مشارکت در توسعه انرژی باد در بخش کشاورزی است. تجربه جهانی نشان می‌دهد که پذیرش عمومی یا پذیرش اجتماعی فنآوری‌های انرژی تجدید پذیر، در وضعیت مطلوبی قرار ندارد. به ویژه اینکه احتمال مشارکت مردم روستایی در توسعه این فناوری‌ها، پایین است. در واقع، انتقال به انرژی‌های سبز یک فرآیند تدریجی، پیچیده و کل نگر است که شامل ذینفعان متنوع، ابعاد، جنبه‌ها و ویژگی‌های مختلف است. در ارتباط با نقش این انرژی‌ها در توسعه محیط‌زیستی، اجتماعی و اقتصادی مناطق روستایی، بر بهبود و اصلاحات اجتماعی و محیطی‌زیستی تأکید می‌شود. در این راستا، دولت ایران اهداف ملّی را برای توسعه منابع انرژی‌های تجدید پذیر در بخش کشاورزی تعیین کرده و بر نقش مشوق‌های کاربر نهایی و زیرساخت‌ها برای نشر اطلاعات و آموزش فنّی تأکید نموده است. در این راستا، اگرچه عوامل فنّی بیشتر مورد توجه قرار می‌گیرند، اما جنبه‌های اقتصادی، نهادی، اجتماعی و روانشناختی نیز در گذار به دستیابی به انرژی باد نباید نادیده گرفته شوند. بنابراین، مطالعه حاضر، تأثیر تمایلات کشاورزان و اهداف رفتاری آنها را روی توسعه انرژی باد در بخش کشاورزی بررسی نموده است.

### ۲. مبانی نظری تحقیق

در تحقیق حاضر، متغیرهای عوارض جانبی، حساسیت ادراک‌شده پیرامون خطر آلودگی هوا ناشی از نیروگاه‌های فسیلی، شدت درک شده از خطر آلودگی هوا، پتانسیل توسعه، تناسب عملکردی، پاسخ به فوریت، تمایل به مشارکت در توسعه انرژی باد، نگرش پیرامون مشارکت در برنامه‌ها و پروژه‌های توسعه انرژی باد، نگرش نسبت به متخصصان شرکت توزیع برق منطقه‌ای و اقدامات حمایتی بررسی شدند. در این راستا، ضمن مرور ادبیات تحقیق پیرامون متغیرهای فوق، با استفاده از روش شهود، به تدوین گزاره‌های مفروض پرداخته شد.

### ۳. روش تحقیق

نمونه تحقیق شامل ۱۸۹ کشاورز و افراد روستایی بود که از طریق نمونه‌گیری تصادفی انتخاب شدند. با توجه به نسبت جمعیت کشاورزان به جمعیت کل روستاهای هر دهستان، اندازه نمونه محاسبه شد و به پیمایش پاسخگویان در این روستاها اقدام شد. با توجه به کنار گذاشتن پرسشنامه‌ها با اطلاعات ناقص، داده‌های ۱۸۹ پرسشنامه با اطلاعات کامل تحلیل شد. اعتبار درونی شاخص‌های پرسشنامه نیز با بررسی ضریب آلفای کرونباخ و نمرات بارگذاری از طریق تحلیل مؤلفه‌های اصلی (PCA) ارزیابی شد که در محدوده قابل قبولی قرار داشتند. همچنین، برای تحلیل داده‌ها در نرم‌افزار SPSS24، از الگوی آماری تحلیل مسیر استفاده شد.

### ۴. یافته‌های تحقیق

نتایج مطالعه نشان داد که عوارض جانبی (Externality) به طور مستقیم و قابل توجهی بر حساسیت درک شده تأثیر می‌گذارند. علاوه بر این، متغیر عوارض جانبی با ضریب مسیر ۰/۴۱ تأثیر مثبت و معناداری بر شدت درک شده دارد. نگرش مطلوب پیرامون شرکت توزیع برق نیز تأثیر مستقیم و معناداری بر تمایل به مشارکت در توسعه

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انرژی باد دارد. منطق عملکردی و منطق فوریت به طور مثبت و معناداری بر تمایل به مشارکت در پروژه‌های توسعه انرژی باد تأثیر می‌گذارند. متغیر تمایل به مشارکت در طرح‌های توسعه تأثیر مثبت و معناداری بر قصد رفتاری دارد. مجذور همبستگی چندگانه برای متغیرهای حساسیت، شدت درک شده، تمایل به مشارکت در پروژه‌های توسعه انرژی باد و قصد رفتاری برای مشارکت به ترتیب ۰/۱۶، ۰/۱۷، ۰/۳۳ و ۰/۲۲ گزارش شده است. به طور کلی، نتایج نشان داد که تمایل کشاورزان روی ترویج و توسعه انرژی باد تأثیر می‌گذارد. بعلاوه، با استفاده از مدل فرانظری، مشخص شد که اکثریت کشاورزان در مراحل «افزایش آگاهی» و «تسکین چشمگیر» قرار دارند، در حالیکه کارشناسان در مراحل «خودارزیابی مجدد» و «خودرهایی» هستند.

## ۵- بحث و نتیجه گیری

نتایج نشان داد که عوارض جانبی به طور مستقیم و معناداری بر متغیر حساسیت درک شده تأثیر می‌گذارد. همچنین، این متغیر تأثیر مثبت و معناداری بر شدت درک شده توسط کشاورزان دارد. منبع عوارض جانبی مربوط به نیروگاه با مصرف سوخت‌های فسیلی است. پیشنهاد می‌شود که با همکاری بین سیاستگذاران وزارت انرژی، محیط‌زیست و وزارت بهداشت به تصویب قطعنامه‌هایی با هدف جلوگیری از آلودگی هوا از منابع آلاینده، به ویژه نیروگاه های با سوخت فسیلی اقدام شود. در همین راستا، توسعه همکاری‌های بین بخشی و همکاری بین وزارتخانه‌ها مربوطه نقش کلیدی در تسهیل روند قانونگذاری و اجرای مصوبات دارد. بعلاوه، نتایج این مطالعه نشان داد که شدت درک شده خطر، تحت تأثیر عوارض جانبی نیروگاه های فسیلی، روی قصد رفتاری یا رفتار واقعی کشاورزان تأثیر نمی‌گذارد. دلیل اصلی این یافته این است که از دیدگاه پاسخگویان، دامنه و بزرگی عوارض جانبی نیروگاه‌های فسیلی بقدری است که از توانایی کشاورزان برای ایجاد تغییر در میزان آلودگی هوا بیرون است. در این راستا، باید به شهروندان یادآوری کرد که پدیده هایی مانند بحران آلودگی هوا از ادغام اجزای موجود در اکوسیستم فیزیکی-اجتماعی تشکیل می‌شود. بنابراین، تقویت تعهد و پذیرش مسئولیت اجتماعی در بین شهروندان نقش مهمی در مدیریت بحران خواهد داشت. همچنین، نگرش به شرکت توزیع برق نیز تأثیر مستقیمی و قابل توجهی در تمایل به شرکت در توسعه انرژی باد دارد. با توجه به این یافته، هرچه نگرش مثبت‌تر باشد، تمایل کشاورزان برای توسعه انرژی باد بیشتر می‌شود. در این راستا، پیشنهاد می‌شود که برنامه‌های آموزشی برای ایجاد فرهنگ مشارکت در توسعه انرژی باد طراحی شود.

**کلیدواژه‌ها:** تجدیدپذیر، انرژی، توسعه، پذیرش، توربین باد. قزوین.

## تشکر و قدرانی

این مطالعه به همکاری‌های علمی و پژوهشی بین کشور ایران و کشور ترکیه (فراخوان شمس تبریزی) مربوط می‌شود و از طرف مرکز مطالعات و همکاری‌های بین المللی وزارت علوم، تحقیقات و فناوری مورد حمایت مالی قرار گرفته است. قرارداد پژوهشی مربوطه به شماره ۲۶۱۳ می‌باشد. نویسندگان از ریاست و کارکنان این مرکز، کمال تشکر و سپاسگزاری بعمل می‌آورند.

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# Assessing the Role of Non-Governmental Organizations in Rural Sustainable Development (Case Study: Zehak County)

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**Abstract**

**Purpose**- Non-governmental organizations (NGOs) play a significant role in the process of sustainable development and the social vitality of communities. These organizations focus on strengthening the economic and social capacities of marginalized groups, addressing general public issues, and sometimes tackling the challenges of specific social strata. In the age of globalization, sustainable development of a society depends on resolving its environmental, economic, and social problems.

**Design/methodology/approach-** This study adopts a descriptive-analytical approach and was conducted in the villages and among the households of Zahak County, located in Sistan and Baluchestan Province. Using Cochran's formula and questionnaires, 21 villages were selected as the sample, comprising 358 households. In order to obstacles to the growth and expansion of non-governmental organizations in the rural areas of Zahk county. To further assess the relationship between NGOs and sustainable development, **Analysis of Variance (ANOVA)** was employed. Additionally, the **Fuzzy Analytic Hierarchy Process (FAHP)** was applied to identify the most influential factors contributing to the effectiveness of NGOs. Finally, the **Fuzzy TOPSIS method** was used to prioritize the villages based on the role of NGOs in sustainable development.

**Findings-** The results of the research indicate that the impact of NGOs on rural development dimensions has been generally unfavorable, with only the socio-cultural dimension showing a significant effect (Beta coefficient: 0.311), while other dimensions demonstrated negligible influence.

**Practical Implications**- According to the research findings, investing in and implementing socio-cultural programs can help expand NGOs and improve the current condition of villages in Zahak County towards sustainable development.

**Originality/Value**- Although previous research has been conducted in various regions of Iran, the distinct characteristics of Zahak County -where this study is focused- limit the applicability of earlier findings. Consequently, new research is necessary to address the specific conditions of this area. Zahak County faces unique challenges, particularly due to the cessation of water flow from the Helmand River by the Afghan government. This disruption has significantly impacted local livelihoods and altered environmental conditions, creating circumstances that warrant dedicated investigation.

**Keywords**- Rural areas, Sustainable rural development, Non-governmental organizations (NGOs), Zahak County.

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## 1.Introduction

In the field of rural development and particularly in the planning and management of rural development, numerous executive bodies with overlapping responsibilities are involved (Rezvani, 2002). Among the facilitating institutions in the process of community development in the era of globalization are non-governmental and civil society organizations, hereafter referred to as NGOs (Moradi & Hamidi, 2020). NGOs are considered a modern phenomenon in the social life of communities (Ghaneirad & Hosseini, 2005: 97). These organizations represent a type of institutional structure characterized by legal independence from the government, non-profit status, and voluntary and participatory decision-making structures (Smith, 1989). NGOs are independent, flexible, democratic, and non-profit entities that focus their activities on strengthening the economic and social capacities of marginalized groups, addressing general societal. The general principle of all non-governmental organizations is public participation in achieving issues, and sometimes resolving the challenges of specific social classes (Lester et al., 1996). (balanced and sustainable development, ultimately leading to the creation of an advanced civil society (Barari et al., 2012). Sustainable development has been widely accepted by scientists, governments, international institutions, and private companies as a response to contemporary economic, environmental, and social crises (Soltanipour & Damari, 2016).

In most provinces of Iran, rural NGOs have been established to enable rural empowerment. A fundamental challenge in empowerment is that it is often considered a "hidden phenomenon" and not directly observable (Kazi et al., 2017). In other words, empowerment means the ability to make choices and gain power (Li et al., 2011). In this context, the province of Sistan and Baluchestan is still in its early stages concerning the formation of NGOs. The present study aims to evaluate the role of these organizations in the sustainable development of rural areas in Zahak County through two main stages: recognition and planning. In the first stage, the study seeks to understand the current conditions of the region's villages in relation to NGOs, identifying both the facilitating and inhibiting factors and the extent of NGO influence on local rural development. In the second stage, based on the findings of the first phase, a set of planning recommendations is proposed to empower NGOs in fostering sustainable development in the target area.

Given these objectives, the study attempts to answer the following key questions:

1. What is the most significant factor contributing to the expansion of NGOs in the rural areas of Zahak County?
2. Which dimensions of sustainable development do non-governmental organizations have the greatest impact on?

By answering these questions, the study seeks to analyze the formation process and effectiveness of successful local NGOs and propose them as models for similar initiatives in other rural target areas.

## 2. Research Theoretical Literature

Development can be considered the ultimate goal of every planning system, which has accelerated in all aspects of human life and, in many cases, has even influenced the customs, traditions, and beliefs of societies (Moti'i Langroodi & Hajipour, 2018). Structural groundwork in four general dimensions can lead to the proper functioning of the sustainable development process. These dimensions include environmental-ecological, socio-cultural, economic-political, and physical-spatial (Saeedi, 2013).

NGOs serve as the best representatives of their communities and act as facilitators of meaningful dialogue between society and government, which can ultimately lead to societal resilience (Fitzpatrick et al., 2014). Improving environmental conditions, enhancing the welfare of underprivileged groups, promoting collective initiatives, and fostering a sense of responsibility are among the goals of forming NGOs (Sobhani Moghaddam et al., 2017). One possible reason for the limited presence of these organizations is the insufficient support from other governmental bodies, coupled with their marginalization from key societal affairs in recent years (Peyravisi & Shirkhani, 2020) One key strategy for achieving sustainable community development is the presence of vibrant and capable NGOs that can contribute their capacities to a comprehensive and participatory development process (Balouei Jamkhaneh et al., 2011). NGOs include independent cooperatives, women's groups, and

rural associations (Mohammadi & Navabakhsh, 2014).

### *2.1. Previous Studies on the Role of NGOs in Sustainable Development*

- Naderi Khorshidi (2010), in a study titled *"The Role of NGOs in Social Engineering"* using content analysis and fuzzy logic, emphasizes that systematic interaction among the governmental, private, and public sectors leads to community advancement and development.
- Alal-Hesabi (2011), in a study titled *"The Role of NGOs and Local Leaders in Rural Development"*, investigated the port town of Laft using a qualitative and participatory approach and believes that the high capacity for public participation in Laft had a significant and accelerating effect on the development of the village.
- Javani et al. (2017), in their research titled *"The Status of NGOs in Villages: Formation Processes, Effects, and Consequences – Case Study: Villages of Rashtkhar County"*, found that NGOs enhance villagers' access to training programs, raise awareness, diversify job opportunities, and promote scientific outreach activities necessary for the prosperity of NGOs in various regions.
- Sobhi Moghaddam et al. (2017), in a study titled *"Designing a Model for the Formation of NGOs: Conditions, Interactions, and Consequences (Case Study: Kikha Village, Zabol County)"*, emphasized that local NGOs play a constructive role in improving social and cultural life, increasing income, enhancing health, empowering communities through modern education, protecting the environment, and emphasizing the role of women and other internal and external influencing factors.
- Yazdanpanah & Ghazalsaflou (2019), in a study entitled *"Exploring the Role of Non-Governmental Organizations in Achieving Sustainable Rural Development (Case Study: Golestan Province)"* using a descriptive non-experimental research method, found that non-governmental organizations, particularly in terms of knowledge–communication and economic factors, play the most significant role in achieving sustainable rural development
- Khosravipour & Asadi (2019), in a paper titled *"The Role of NGOs in Sustainable Development"* in a review article based on library resources and internet websites, recognized NGOs as facilitators of development through cooperation among people, government, and the private sector.
- Naderi et al. (2019), in a study titled *"Examining the Relationship Between NGO Functions and Modern Sustainable Development Indicators (Case Study: Kermanshah Province NGOs)"* using a descriptive-survey research method, believe that, concluded that NGOs can significantly contribute to regional empowerment by attracting specialized volunteers and focusing on the interests of specific groups.
- Shafiee Sabet and Mirvahedi (2020), in their research *"Planning Model Based on New Paradigms in Pakdasht and Surrounding Areas"* using a descriptive–analytical method, concluded that, found that villagers have not played a significant role in sustainable development or participatory planning. They emphasize the importance of improving planning methods and adopting new paradigms to better understand rural issues and guide sustainable rural development.
- Peyravisi & Shirkhani (2020), in a study titled *"The Role of Women's Participation in Enhancing NGO Capabilities"*, identified factors highlighting women's role in strengthening NGOs and concluded that financial support plays a critical role in their development.
- Sourshramana (2015) studied *"The Role of NGOs in the Development of Rural Areas in Southern India"*, concluding that NGOs significantly contribute to promoting and implementing development programs in rural areas, positively affecting economic conditions, social status, and personal growth. The study emphasized the importance of government financial and institutional support for NGOs.
- Nyangau et al. (2016), in a study titled *"The Role of NGOs in Social Development in Developing Countries"*, found that in social development challenges, the government and international communities act as a team, with NGOs playing a key role in educating all stakeholders.
- Hartmann et al. (2019), in their research on the role of NGOs in enhancing social capital and innovation in Peru (2003–2018), concluded that NGOs have significantly contributed to rural development across different development stages.

• Goudarzi Firouzi & Kouchaki (2020), in their article *"Structural Equation Modeling of the Factors Affecting the Realization of Rural Knowledge-Based Development (Case Study: Dehkadeh Village, Hamidiyeh County)"*, using a descriptive–analytical and survey method, concluded that reducing government intervention and strengthening and supporting voluntary non-governmental public institutions will lead to knowledge-based development and sustainable rural development.

• Boozarjomehri & Javani (2020), in a study entitled *"The Role of Non-Governmental Organizations in Empowering Rural Women in Rashtkhar County"* using a qualitative research method, showed that NGOs in rural areas with suitable conditions have various economic, social, and environmental effects, and in the environmental dimension, they contribute to the empowerment of rural women

• Keita et al. (2022) argued that despite annual multi-million-dollar investments in irrigation development in coastal African countries, the transition from government-led to NGO-led development has not significantly changed the vulnerability of local populations over the past 60 years.

This comprehensive literature review reveals that both NGOs and government institutions must collaborate to improve service delivery and ensure dynamic and effective NGO operations. NGOs, rooted in humanitarian service, can complement government efforts by empowering individuals, fostering participation in rural development, and addressing deficiencies in governmental organizations. With proper investment and planning, NGOs can help rural communities thrive and create favorable conditions for sustainable development.

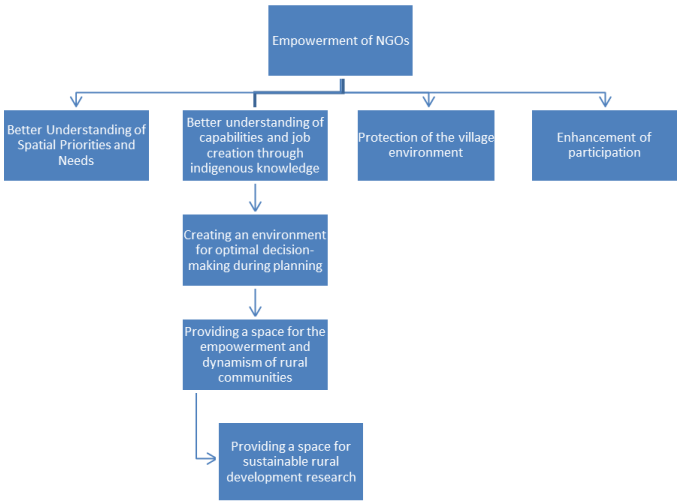


**Figure 1. The Role of NGOs in Sustainable Development of the Villages in Zahak County**

## 3. Research Methodology

### *3.1 Geographical Scope of the Research*

Zahak County is located in the northern part of Sistan and Baluchestan Province, in the eastern section of the Sistan plain. The county spans an area of 950 square kilometers, accounting for approximately 0.5% of the province's total area. The county is located at 30 45 to 30 55 N latitude and 61° 70′ 67 ″to 61° 50′ E longitude. (Heidari et al., 2016: 55). Zahak County, with a population of 74896 and an area of 950 km$^2$, consists of two districts: Central and Jazinak. It includes four rural districts: Zahak, Khwaja Ahmad, Jazinak, and Khamak, and contains 203 villages in total. The distance from the county center to the provincial capital is 213 kilometers, and the distance to Tehran is approximately 1,518 km. The county sits at an elevation of 483 meters above sea level.

According to the 2016 census by the Statistical Center of Iran, Zahak County had about 17,849 households and a total population of 74,896. Among the rural districts, Zahak and Khwaja Ahmad had the highest (30,493) and lowest (9,342) population, respectively. Gender demographics varied, with women outnumbering men in Jazinak and Khamak, and men outnumbering women in Khwaja Ahmad and Zahak (Statistical Center of Iran, 2016).

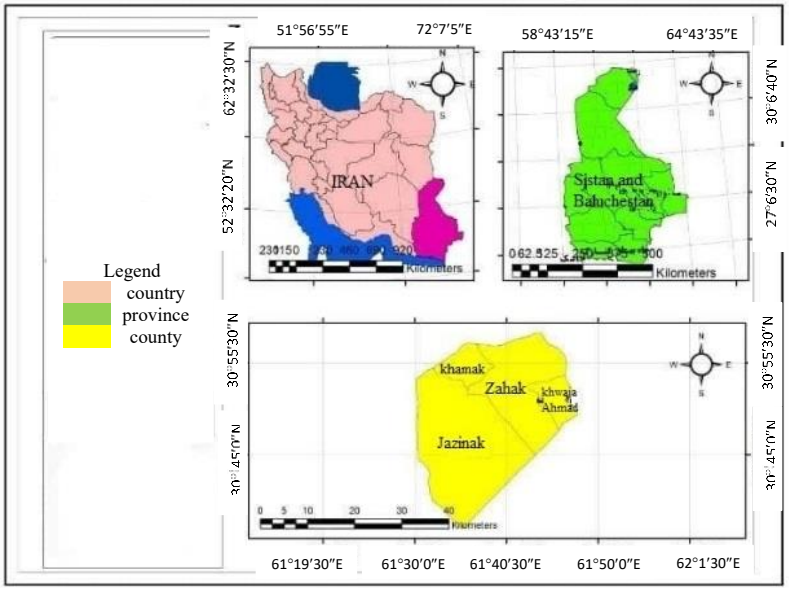


**Figure 2. the study Location**

## 3.2. Methodology

This study is applied in nature and adopts a combined descriptive-analytical and case study approach. The villages of Zahak County served as the study area, with resident villagers constituting the unit of analysis. Data collection employed both documentary (library-based) and field (survey-based) methods.

To determine the sample size, the total number of villages in the study area was first identified. Using Cochran's formula, 21 villages were randomly selected as sample villages through stratified sampling. Then, based on the number of households in each selected village and again using Cochran's formula, a sample size of 358 households was determined. Proportional to the number of households in each village, the number of sampled households was calculated, and questionnaires were completed through random selection and direct interviews with village residents.

The study was conducted in two stages: assessment and planning. In the assessment stage, data were gathered through documentary and field methods, with field data collected using structured questionnaires. To analyze the data, statistical tools such as the **one-sample t-test** were used to evaluate the effects of NGOs on various aspects of sustainable development in the study area.

## 4. Research Findings

The findings are presented in two sections: **Recognition** and **Planning**.

### *4.1. Findings from the Recognition Phase*

To depict the existing spatial context of the villages in the region and to achieve a comprehensive understanding, the data collected during the recognition phase are presented as follows:

**Respondents' Characteristics**

a. **The Impact of NGOs on Dimensions of Rural Sustainable Development:** In this section, a one-sample t-test was applied. The results are summarized in Tables 1 to 4 as follows:

b. **Quality of the Relationship Between NGOs and Rural Sustainable Development:** The outcomes of this analysis are shown in Tables 5 and 6.

### *4.2. Second Section: Planning*

The findings obtained from the recognition phase indicate that the greatest impact of NGOs among

the dimensions of sustainable development is in the socio-cultural dimension. In villages with capable NGOs (as shown in Table 9), positive growth in community participation in rural projects has been observed. In these villages, NGOs have been able, to some extent, to facilitate access to healthcare and other services by identifying local problems and communicating them to authorities. They have also fostered social unity and cohesion among the residents. Another notable socio-cultural effect of these NGOs is encouraging villagers to preserve natural resources and the environment through religious, spiritual, and Quranic teachings.

From these findings, it can be inferred that when planning to empower and revitalize NGOs, system orientations, investments, and program designs should focus on utilizing socio-cultural capacities. Additionally, the results from Tables 2 to 5 indicate that the economic and physical structures in the study area's spatial context are inadequate. These findings suggest that, alongside socio-cultural program development, functional, economic, and physical revitalization of the region must also be addressed to ultimately create a spatial environment conducive to NGO empowerment and dynamism.

According to supplementary questionnaires, 64.5% of respondents were male, and 35.5% were female. The highest relative frequency belonged to the age group 41 to 50 years (29.1%). Regarding education levels, the majority held a diploma (27.4%), while the lowest frequency was among illiterate respondents (7.5%).

**Response Rate to the Evaluation of the Role of NGOs in Rural Sustainable Development Based on Sustainable Development Indicators**- Among 20 social-cultural indicators examined, the means of 12 items were below the desired average, while 8 items exceeded it. The item "Giving importance to the position of local village managers" with a mean of 3.656 had the highest mean score, whereas "Increasing welfare facilities" with a mean of 1.908 had the lowest. Overall, the socio-cultural index, with a mean of 2.809, was below the average level.

**Table 1- Evaluation of the Role of NGOs in Rural Sustainable Development from the Socio-Cultural Indicator Perspective Using One-Sample t-Test (Test Value = 3)**

| Item | Mean | t-Statistic | Significance (p) | Mean Difference | 95% Confidence Interval for Mean Difference |
|---|---|---|---|---|---|
| | | | | | Lower Bound |
| Increasing Public Participation | 3.162 | 3.176 | 0.002 | 0.162 | 0.062 |
| Creating, Expanding, and Strengthening Coordination Between People and Government | 3.120 | 2.137 | 0.033 | 0.120 | 0.010 |
| Increasing Participation in Group Activities (Mutual Aid) | 2.774 | -3.925 | 0.000 | -0.226 | -0.340 |
| Appropriate Access to Medical Services | 3.148 | 2.537 | 0.012 | 0.148 | 0.033 |
| Appropriate Access to Sanitary Water | 2.059 | -13.764 | 0.000 | -0.941 | -1.076 |
| Improving Existing Educational Spaces | 2.444 | -8.886 | 0.000 | -0.556 | -0.679 |
| Assisting in Literacy and Education in the Village | 1.911 | -16.156 | 0.000 | -1.089 | -1.222 |
| Building Trust Among Villagers | 2.064 | -12.595 | 0.000 | -0.936 | -1.819 |
| Increasing Welfare Facilities | 1.908 | -16.772 | 0.000 | -1.092 | -1.220 |
| Creating a Sense of Responsibility | 2.564 | -6.148 | 0.000 | -0.436 | -0.575 |
| Increasing Assistance to Villagers During Natural Disasters | 2.430 | -9.094 | 0.000 | -0.570 | -0.693 |
| Holding Consultative and Synergistic Meetings | 2.637 | -6.931 | 0.000 | -0.363 | -0.466 |
| Attention to Spirituality and Justice Among Villagers | 3.098 | 2.047 | 0.041 | 0.098 | 0.004 |
| Transferring Village Problems to Officials | 3.693 | 13.927 | 0.000 | 0.693 | 0.595 |
| Unity and Solidarity | 3.369 | 9.199 | 0.000 | 0.369 | 0.290 |
| Empowerment of Women and Youth | 3.464 | 10.260 | 0.000 | 0.464 | 0.375 |
| Valuing the Position of Local Village Managers | 3.656 | 15.724 | 0.000 | 0.656 | 0.574 |
| Enhancing the Status of Indigenous Rural Knowledge | 2.841 | -2.708 | 0.007 | -0.159 | -0.274 |
| Continuous Attention to Educational Programs | 2.838 | -2.772 | 0.006 | -0.162 | -0.277 |
| Improving Quality of Life | 2.838 | -2.811 | 0.005 | -0.162 | -0.275 |
| **Overall (Socio-Cultural)** | 2.801 | -6.353 | 0.000 | -0.199 | -0.261 |

The results regarding the economic indicator indicate that, among the 14 examined items, the means of 3 items were below the desired average. Overall, the economic indicator was evaluated as favorable with a mean of 3.229. Additionally, the means of 9 items exceeded the desired average. The item "Support for vulnerable and low-income groups" recorded the highest mean at 4.061, while the item "Income empowerment of rural residents" had the lowest mean at 2.592.

**Table 2. Evaluation of the Role of NGOs in Rural Sustainable Development from the Economic**

| Item | Mean | t-Statistic | Significance (p) | Mean Difference | 95% Confidence Interval for Mean Difference |
|---|---|---|---|---|---|
| | | | | | Lower Bound |
| Creation and Support of Home-Based Workshops | 4.061 | 15.614 | 0 | 1.061 | 0.928 |
| Attention to Cooperatives and Microcredit Funds | 3.656 | 16.165 | 0 | 0.656 | 0.557 |
| Provision of Supportive Employment Packages in Agriculture | 3.455 | 9.174 | 0 | 0.455 | 0.358 |
| Attention to Quality of Indigenous Products and Handicrafts | 3.433 | 8.793 | 0 | 0.433 | 0.336 |
| Existence of Local Funds | 3.369 | 5.964 | 0 | 0.369 | 0.241 |
| Mobilization of Small Public Resources (Resource Gathering) | 3.288 | 5.147 | 0 | 0.288 | 0.178 |
| Identification of Opportunities to Improve Rural Income | 3.204 | 3.444 | 0.001 | 0.204 | 0.087 |
| Interaction with Financial and Credit Institutions | 3.198 | 3.317 | 0.001 | 0.198 | 0.081 |
| Creation of New Jobs | 3.187 | 3.009 | 0.003 | 0.187 | 0.065 |
| Capacity Building and Self-Reliance of Rural Residents | 3.126 | 2.184 | 0.03 | 0.126 | 0.012 |
| Support for Vulnerable and Low-Income Groups | 3.114 | 2.122 | 0.035 | 0.114 | 0.008 |
| Increase in Overall Household Income | 2.83 | -2.773 | 0.006 | -0.17 | -0.291 |
| Facilitation and Increase in Receiving Employment Loans | 2.707 | -4.438 | 0 | -0.293 | -0.423 |
| Income Empowerment of Rural Residents | 2.592 | -6.379 | 0 | -0.408 | -0.534 |
| **Overall (Economic)** | 3.229 | 8.061 | 0 | 0.229 | 0.173 |

**Environmental Indicator Results-** The results related to the environmental indicator show that among the 9 items examined, the mean scores of 6 items fall below the desired benchmark, while 3 items have means above the benchmark. The item "Biodiversity Conservation" received the highest mean score of 4.279, whereas the item "Assistance in Combating Drought and Its Environmental Impacts" had the lowest mean score of 2.274. Overall, the environmental indicator was evaluated as unfavorable with an average score of 2.830.

**Table 3. Evaluation of the Role of NGOs in Rural Sustainable Development Based on the Environmental Indicator Using One-Sample t-Test (Test Value = 3)**

| Item | Mean | t-Statistic | Significance (p) | Mean Difference | 95% Confidence Interval for Mean Difference |
|---|---|---|---|---|---|
| | | | | | Lower Bound |
| Hygienic Waste Collection | 3.765 | 25.158 | 0.000 | 0.765 | 0.705 |
| Reduction of Environmental Pollution | 3.179 | 2.928 | 0.004 | 0.179 | 0.059 |
| Sanitary Condition of Public Spaces | 2.321 | -8.362 | 0.000 | -0.679 | -0.838 |
| Condition of Green Spaces | 2.321 | -8.802 | 0.000 | -0.679 | -0.830 |
| Biodiversity Conservation | 4.279 | 21.369 | 0.000 | 1.279 | 1.162 |
| Assistance in Combating Drought and Its Impacts | 2.274 | -9.386 | 0.000 | -0.726 | -0.878 |
| Reduction of Environmental Pressures | 2.606 | -5.076 | 0.000 | -0.394 | -0.546 |
| Environmental Improvement | 2.427 | -7.107 | 0.000 | -0.573 | -0.731 |
| Vulnerability Reduction | 2.302 | -9.453 | 0.000 | -0.698 | -0.844 |
| **Overall (Environmental)** | 2.830 | -3.828 | 0.000 | -0.169 | -0.256 |

**Physical (Built Environment) Indicator Results-** The results of the physical indicator reveal that all 9 examined items have mean scores below the desired benchmark. Among these, the item "Improvement of Infrastructure Facilities" holds the highest mean score of 2.405, while "Increased Access to Renewable Energy Sources" has the lowest mean of 2.128. Overall, the physical indicator was evaluated as unfavorable with an average score of 2.310.

**Table 4. Evaluation of the Role of NGOs in Rural Sustainable Development Based on the Physical Indicator Using One-Sample t-Test (Test Value = 3)**

| Item | Mean | t-Statistic | Significance (p) | Mean Difference | 95% Confidence Interval for Mean Difference |
|---|---|---|---|---|---|
| | | | | | Lower Bound |
| Access and Communication Routes | 2.307 | -9.267 | 0.000 | -0.693 | -0.840 |
| Increased Access to Renewable Energy Sources | 2.128 | -11.184 | 0.000 | -0.872 | -1.025 |
| Access to Public Transportation | 2.299 | -8.716 | 0.000 | -0.701 | -0.859 |
| Increased Access to Mass Communication Devices | 2.422 | -6.592 | 0.000 | -0.578 | -0.751 |
| Increased Access to Infrastructure (Electricity, Water) | 2.357 | -7.813 | 0.000 | -0.643 | -0.804 |
| Improvement of Infrastructure Equipment | 2.405 | -7.644 | 0.000 | -0.595 | -0.748 |
| Compatibility of Executed Plans with Rural Environment | 2.207 | -10.477 | 0.000 | -0.793 | -0.942 |
| Attention to Establishment of Cultural, Educational, Health Centers, etc. | 2.355 | -7.912 | 0.000 | -0.645 | -0.806 |
| **Overall (Physical)** | 2.310 | -10.201 | 0.000 | -0.690 | -0.823 |

**Multivariate Regression Analysis of the Impact of NGOs on Rural Sustainable Development in Zahak County-** The result showed that the adjusted coefficient of determination ($R^2$) was found to be 0.682, indicating that the independent variable explains 68.2% of the variance in the dependent variable. This demonstrates a highly significant relationship between NGOs and rural sustainable development, with the significance level reported as p = 0.000.

**Table 5. ANOVA Analysis of the Impact of NGOs on Rural Sustainable Development**

| Standard Error | Adjusted $R^2$ | $R^2$ | Multiple Correlation Coefficient (R) |
|---|---|---|---|
| 0.065 | 0.682 | 0.703 | 0.713 |

The regression sum of squares is substantially higher than the residual sum of squares, and given the large F-value which is significant at the 0.01 level, it can be concluded that the model possesses a high explanatory power in explaining the dependent variables.

**Table 6. ANOVA Analysis for the Existence of a Linear Relationship Between the Impact of NGOs on Rural Sustainable Development**

| Component | Sum of Squares | Degrees of Freedom | Mean Square | F Statistic | Significance Level |
|---|---|---|---|---|---|
| Regression Effect | 8.144 | 4 | 6.672 | 66.509 | 0.000 |
| Residual | 2.001 | 377 | 0.001 | | |
| Total | 10.145 | 381 | | | |

The results indicate that NGOs exerted the greatest influence on the socio-cultural dimension with a beta coefficient of 0.311. Additionally, they influenced the economic dimension with a beta of 0.243, the environmental dimension with a beta of

0.189, and the physical (built environment) dimension with a beta of 0.144.

**Table 7. Regression Coefficients of Independent Variables on the Dependent Variable**

| Variables | Standardized Beta (β) | Standard Error | Unstandardized Coefficient (B) | t Statistic | Significance (p) |
|---|---|---|---|---|---|
| Constant | — | 0.056 | 0.455 | 5.113 | 0.069 |
| Economic | 0.243 | 0.017 | 0.197 | 7.445 | 0.000 |
| Environmental | 0.189 | 0.022 | 0.137 | 7.654 | 0.000 |
| Socio-Cultural | 0.311 | 0.010 | 0.262 | 8.887 | 0.000 |
| Physical | 0.144 | 0.033 | 0.098 | 6.222 | 0.000 |
| *Source: Research Findings, 2023* | | | | | |

**Prioritization of Key Factors in the Expansion of NGO Activities in the Villages of Zahak County-** To prioritize the most important factors influencing the expansion of NGO activities in the villages of Zahak County, the Fuzzy Analytic Hierarchy Process (FAHP) model was utilized.

**Table 8. Prioritization of Key Factors in the Expansion of NGO Activities in Zahak County**

| Factors | Economic Needs | Socio-Cultural Needs | Environmental Needs | Physical Needs | Weight | Rank |
|---|---|---|---|---|---|---|
| Economic Needs | 1.1.1 | 0.25 / 0.33 / 5 | 2 / 3 / 4 | 4 / 5 / 6 | 0.227 | 2 |
| Socio-Cultural Needs | 2 / 3 / 4 | 1.1.1 | 4 / 5 / 6 | 6 / 7 / 8 | 0.318 | 1 |
| Environmental Needs | 0.25 / 0.33 / 5 | 0.166 / 0.25 / 2 | 1.1.1 | 2 / 3 / 4 | 0.186 | 3 |
| Physical Needs | 0.166 / 0.25 / 2 | 0.125 / 0.142 / 0.166 | 0.25 / 0.33 / 5 | 1.1.1 | 0.112 | 4 |
| *Source: Research Findings, 2023* | | | | | | |

The results indicate that socio-cultural needs, with a weight of 0.318, were the highest priority; economic needs followed with a weight of 0.227; environmental needs ranked third with a weight of 0.186; and physical needs were last with a weight of 0.112. These represent the most important factors for the expansion of NGO activities in the villages of Zahak County.

**Prioritization of Villages in Zahak County Based on the Role of NGOs in Rural Sustainable Development-**The fuzzy TOPSIS method was employed to prioritize the villages of Zahak County regarding the role of NGOs in rural sustainable development. The results indicate that Qaleh Now village, with a TOPSIS score of 0.909, Guri with 0.832, Deh Safdar Mir Beyg with 0.785, and Khamak with 0.760 ranked first through fourth respectively, reflecting their relatively favorable status compared to other villages in terms of the role of NGOs in sustainable rural development.

**Table 9: Prioritization of Zahak County Villages Based on the Role of NGOs in Rural Sustainable Development Using Fuzzy TOPSIS**

| Village | TOPSIS Weight | Rank |
|---|---|---|
| Hasan Khun | 0.449 | 11 |
| Amir Nezam | 0.373 | 15 |
| Kaftar Gey | 0.443 | 12 |
| Qaleh Kohneh | 0.368 | 18 |
| Hosein Abadi | 0.724 | 6 |
| Asghazi | 0.617 | 7 |
| Deh Ali Akhound | 0.343 | 19 |
| Alari | 0.732 | 5 |
| Qaleh Now | 0.909 | 1 |
| Mola Ghasem | 0.390 | 17 |
| Deh Abdol Aziz | 0.289 | 21 |
| Deh Safdar Mir Beyg | 0.785 | 3 |

| Village | TOPSIS Weight | Rank |
|---|---|---|
| Guri | 0.832 | 2 |
| Khwaja Ahmad | 0.405 | 14 |
| Deh Yadegar | 0.372 | 16 |
| Abbas Rostam | 0.410 | 13 |
| Piri | 0.487 | 9 |
| Khamak | 0.760 | 4 |
| Qaleh Kang | 0.309 | 20 |
| Malek Heidari | 0.536 | 8 |
| Deh Deraz | 0.468 | 10 |

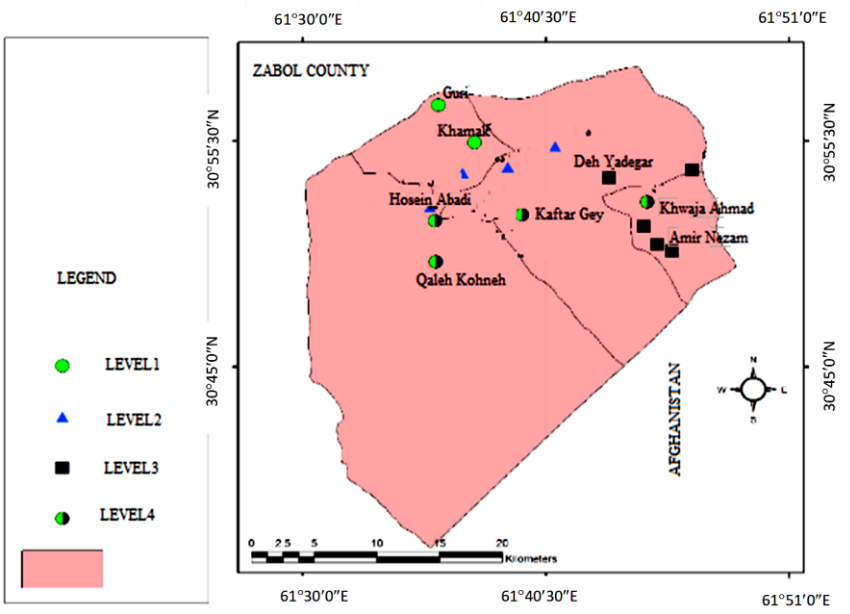


**Figure 3. Priority Map of Villages in Zahak County Based on the Role of Non-Governmental Organizations in Rural Sustainable Development**

## 5. Discussion and Conclusion

Although the villages of Zahak County are recognized as deprived and underdeveloped due to their prevailing geographical conditions, the formation of NGOs (Saman) in these villages has led to positive changes in their socio-cultural, economic, environmental, and physical conditions. Public participation in rural projects, which was minimal or almost non-existent before the formation of these NGOs, has now increased. Although still far from ideal, this progress has created much hope among villagers. The NGOs, by identifying the problems of the people and communicating these issues to authorities, have somewhat facilitated access to healthcare, hygiene, and other services, and fostered unity and solidarity among the villagers.

Given the spiritual values among villagers, NGOs strive to use religious and Quranic teachings and other spiritual education to encourage optimal and non-wasteful use of resources. This not only prevents environmental degradation but also helps other villages benefit from these resources NGOs play an effective role in rural development, consistent with the findings of Khosravipour and Asadi (2019). However, the research showed that NGOs' role in increasing overall household income and income empowerment in rural residents has not been satisfactory, which contrasts with the findings of Naderi et al. (2019).

Based on the research findings, the following recommendations are proposed:

- **Utilizing NGO opinions** to align rural development project proposals with the real

needs and priorities of the villages. This will make project suggestions more realistic and increase the chances of their implementation.

- **Enhancing institutional participation:** NGOs, due to their understanding of poverty areas, priorities, and real village needs, can act as a bridge between people and relevant governmental organizations for rural development and infrastructure.
- **Economic and functional revitalization:** Relevant organizations should use the indigenous knowledge of NGOs when preparing rural development plans, leveraging their awareness of local potentials for sustainable employment suited to the region.
- **Physical revitalization and organization:** NGOs are more aware of the physical shortcomings and problems in their living spaces; thus, their input should be incorporated in rural master plans to ensure these plans address real physical needs.
- **Strengthening socio-cultural dimensions:** NGOs' socio-cultural capabilities can be harnessed to increase participation and conserve natural and environmental resources towards sustainable development.

Some efforts have been made to establish home production workshops, such as carpet weaving, handicrafts, and beekeeping, but these are limited. With support, the capacity to increase such workshops in Zahak villages exists. Considering the villagers' livelihood status and ongoing drought, it is suggested that NGOs identify income improvement opportunities and provide employment support packages to help improve villagers' income and living conditions.

Cultural centers and libraries are very limited or absent in most villages. Actions should be taken to increase villagers' access to these facilities. Although jihadist groups provide training in Quran, Islamic teachings, and personal and public health, lack of dedicated venues and poor dissemination hinder full utilization; thus, proper measures should be undertaken.

Jihadist groups engage in house construction, distribution of stationery, remedial academic and artistic classes, and invite volunteer doctors in Zahak County. However, due to the county's size and the distances between villages and the county center, access is limited. It is recommended these activities be expanded and offered in more parts of the county.

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**Authors contributions**

The authors equally contributed to the preparation of this article.

**Conflict of interest**

The authors declare no conflict of interest.

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**Original Article**

# ارزیابی نقش سازمان های مردم نهاد در توسعه پایدار روستایی (مطالعه موردی:شهرستان زهک)

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## چکیده مبسوط

### ۱. مقدمه

در عرصه توسعه و عمران روستاها و بویژه در زمینه برنامه‌ریزی و مدیریت توسعهٔ روستایی، دستگاه های اجرایی با وظایف موازی و مشابه حضور دارند.از جمله نهادهای تسهیلگر در فرایند توسعه جوامع در عصر جهانی شدن سازمان‌های مردم نهاد و غیر دولتی (NGO)می‌باشند. سمن‌های روستایی در بیشتر استان‌های ایران برای ایجاد توانمندسازی روستایی تشکیل شده است. در این راستا استان سیستان و بلوچستان، به عنوان یکی از استان‌های نوپا در زمینه تشکیل سمن‌ها می‌باشد. پژوهش حاضر سعی دارد در دو مرحله شناخت و برنامه‌ریزی به ارزیابی نقش این سازمان‌ها بر توسعه پایدار روستاهای شهرستان زهک بپردازد. سازمان‌های مردم‌نهاد (NGOs) نقش مهمی در فرآیند توسعه پایدار و پویایی اجتماعی جوامع ایفا می‌کنند. این سازمان‌ها بر تقویت ظرفیت‌های اقتصادی و اجتماعی گروه‌های به‌حاشیه‌رانده‌شده، پرداختن به مسائل عمومی و گاه مواجهه با چالش‌های قشرهای خاص اجتماعی تمرکز دارند.

### ۲. مبانی نظری تحقیق

سمن‌ها از آنجا که بر پایه خدمات رسانی به انسان ها شکل گرفت؛ میتواند در کنار نظام سیاسی، محقق کننده این اهداف باشند. سمن ها به عنوان واسطه ای برای توانمندسازی و برانگیختن ابتکار عمل فردی در روستاییان زمینه ی مشارکت فعالانه و ثمربخشی شان را درعمران,بهسازی و توسعه بخشی کمی و کیفی فضاهای زیستی شان مهیا می سازند. سمن ها , نماد مشارکت اجتماعی هستند که باعث کاهش فقر و بی عدالتی بویژه در مناطق محروم می شوند و بخشی از ناکارآمدی سازمانهای دولتی راجبران می نمایند . توجه , سرمایه گذاری و برنامه ریزی در جهت ,توانمند و پویاسازی سمن ها می توانند ,فضا را برای تواتمندشدن روستاهای فضای مورد مطالعه پژوهش فراهم سازند. همچنین زمینه برای تدوین بهینه طرح‌ها و برنامه‌ها برای نهادها و ارگان‌های مرتبط با توسعه پایدار روستایی فراهم سازد.

### ۳. روش تحقیق

پژوهش حاضر از نظر هدف، کاربردی و از نظر روش بررسی، ترکیبی از روش‌های توصیفی- تحلیلی می‌باشد و از نظر روش مطالعه موردی استفاده شده است. مورد مطالعه روستاهای شهرستان زهک و واحد تجزیه و تحلیل در این پژوهش اهالی ساکن در روستاهای این شهرستان هستند. که با استفاده از شیوه اسنادی (کتابخانه‌ای) و میدانی (پرسشنامه) اجرا شده است وبرای تعیین حجم نمونه، ابتدا تعداد روستاهای محدوده مورد مطالعه مشخص گردید و با توجه به تعداد آن‌ها و استفاده از فرمول کوکران تعداد ۲۱ روستا به عنوان روستاهای نمونه محاسبه گردیده است انتخاب روستاها نیز به روش تصادفی طبقه‌ای صورت گرفته است. سپس با توجه به تعداد خانوارهای ساکن در روستاهای نمونه و استفاده مجدد از فرمول کوکران، تعداد ۳۵۸خانوار به عنوان خانوار نمونه محاسبه شده است. در مرحله بعد به تناسب تعداد خانوارهای ساکن در هر روستا، تعداد خانوارهای نمونه آن روستاها تعیین و به طور انتخابی برای تکمیل پرسشنامه¬ها انتخاب شده ¬اند. جمع آوری اطلاعات به دو صورت انجام گرفته است: الف) روش اسنادی (کتابخانه ¬ای) ب) روش میدانی: در این روش با حضور در روستاها و تکمیل پرسشنامه از طریق مصاحبه مستقیم با اهالی روستا، اطلاعات مورد نیاز گردآوری شده است. پژوهش حاضر در دو مرحله شناخت و برنامه ریزی انجام می گیرد. داده ها و اطلاعات مورد نیاز مرحله شناخت از دو طریق اسنادی و میدانی فراهم گردیده در بخش میدانی از ابزار پرسشنامه استفاده شده است. همچنین جهت تجزیه و تحلیل داده های حاصله

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از آزمون های آماری تی – تک نمونه ای جهت ارزیابی اثرات سمن ها بر ابعاد مختلف توسعه پایدار در منطقه مورد مطالعه استفاده شده است. با توجه به این که از طیف پنج گزینه¬ای لیکرت در پرسشنامه استفاده شده است , براین اساس عدد ۳ به عنوان معیار سنجش یا میانگین مطلوب انتخاب شده و کلیه میانگین¬های به دست آمده با توجه به سطح معناداری کمتر از ۰/۰۵ نسبت به این میانگین مورد ارزیابی قرار گرفته است. همچنین برای شناخت کیفیت ارتباط میان سمن ها و توسعه پایدار از مدل تحلیل واریانس وجهت شناخت عوامل توسعه دهنده اثرات سمن ها از مدل تحلیل سلسله مراتبی فازی (FAHP ) استفاده شده است. در نهایت نیز جهت اولویت بندی روستاهای فضای مورد مطالعه در زمینه پژوهش از روش تاپسیس فازی استفاده شده است. و ابزار های نرم افزاری مانند EXCEL و SPSS به کار گرفته شد.

## ٤. یافته‌های تحقیق

به منظور بررسی تاثیر سمن ها بر توسعه پایدارروستایی در روستاهای شهرستان زهک از آزمون تحلیل رگرسیون چند متغیره و آزمون فیشر استفاده شده است. همان طور که مشاهده می¬شود مقدار ضریب تعیین تصحیح شده برابر است با ۰/۶۸۲ که نشان می¬دهد که متغیر مستقل ۰/۶۸ درصد از متغیر وابسته را تبیین می¬کند که این نشان می¬دهد بین سمن ها و توسعه پایدارروستایی با توجه به سطح معناداری بدست آمده که برابر با ۰/۰۰۰ است، رابطه کاملا معنا داری برقرار است. سمن ها بیش¬ترین تاثیر را با مقدار ضریب بتای ۰/۳۱۱ بر بعد اجتماعی- فرهنگی داشته اند. همچنین بر بعد اقتصادی با ضریب بتای ۰/۲۴۳، بر بعد زیست محیطی با ضریب بتای ۰/۱۸۹ و بر بعد کالبدی با ضریب بتای ۰/۱۴۴ نیز تاثیرگذار بود ه اند. به منظور اولویت بندی روستاهای شهرستان زهک از نظر نقش سمن ها در توسعه پایدار روستایی از مدل تاپسیس فازی استفاده شده است. نتایج نشان می¬دهد که روستای قلعه نو با مقدار تاپسیس ۰/۹۰۹، گوری با مقدار تاپسیس ۰/۸۳۲، ده صفدرمیربیگ با مقدار تاپسیس ۰/۷۸۵ و خمک با مقدار ۰/۷۶۰ به تربیت در رتبه¬های اول تاچهارم قرار دارند که نشان دهنده وضعیت مناسب این روستاها نسبت به سایر روستاها از نظر نقش سازمان های مردم نهاد در توسعه پایدار روستایی است.

## ٥.بحث و نتیجه‌گیری

اگرچه روستاهای شهرستان زهک با توجه به شرایط جغرافیایی حاکم بر آنها به عنوان روستاهای محروم و توسعه نیافته شناخته می شوند، اما شکل گیری سمن ها در این روستاها موجب شده تا وضعیت اجتماعی- فرهنگی، اقتصادی، محیطی و کالبدی روستاها تغییرات مثبتی داشته باشند. افزایش مشارکت مردم در طرح های روستایی که تا قبل از شکل گیری سمنها بسیار ناچیز و شاید وجود نداشت در حال حاضر رشد داشته است اگرچه هنوزهم با شرایط ایده آل بسیار فاصله دارد , ولی موجبات امیدواری بسیاری را در میان روستاییان فراهم کرده است. سمن‌ها در روستاهای مورد مطالعه , با شناسایی مشکلات مردم و انتقال این مشکلات و کاستی¬ها به مسئولین تا اندازه¬ای توانسته‌اند دسترسی مردم را به خدمات درمانی، بهداشتی و خدمات دیگر آسان¬تر نمایند و موجب اتحاد و همبستگی در بین روستاییان شوند. سمن‌ها با توجه به معنویات بین روستاییان سعی دارند تا با تفکرات دینی و قرآنی و همچنین آموزش معنویات دیگر به روستاییان در راستای استفاده بهینه و بدور از اسراف از منابع مختلف، علاوه¬بر این که مانع از تخریب محیط زیست شوند , در برخورداری دیگر روستاها از این منابع کمک نمایند . همچنین سمن ها در توسعه روستاها نقش موثری دارن سمن ها با توجه به شناخت حوزه های فقر, اولویت ها ونیازهای واقعی روستاها, می توانند این موارد را به ارگان ها و سازمان های دولتی مربوطه در زمینه عمران و آبادانی روستاها, انتقال دهند و در واقع به مثابه پلی میان مردم ونهادهای تصمیم گیر واجرایی باشند.

**کلیدواژه‌ها**: مناطق روستایی، توسعه پایدار روستایی، سازمان های مردم نهاد، شهرستان زهک،

## تشکر و قدردانی

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دکتر مهدی حسام (استادیار جغرافیا وبرنامهٔ ریزی روستایی دانشگاه گیلان)

دکتر ساره حسینی (استادیار منابع طبیعی دانشگاه علوم کشاورزی و منابع طبیعی ساری)

دکتر سید امیرمحمد علویزاده (دانشیار جغرافیا و برنامه‌ریزی روستایی دانشگاه پیام نور)

دکتر علی‌اکبر عنابستانی (استاد جغرافیای انسانی و آمایش دانشگاه شهید بهشتی)

دکتر جمشید عینالی (دانشیار جغرافیا وبرنامهٔ ریزی روستایی دانشگاه زنجان)

دکتر علی گلی (دانشیار جغرافیا و برنامه‌ریزی روستایی دانشگاه شیراز)

دکتر سعدی محمدی (دانشیار جغرافیا و برنامه‌ریزی روستایی دانشگاه پیام نور)

دکتر محمودرضا میرلطفی (دانشیار جغرافیا و برنامه‌ریزی روستایی دانشگاه زابل)

دکتر ولی‌الله نظری (استادیار جغرافیا و برنامه‌ریزی روستایی دانشگاه فرهنگیان)

دکتر زهرا یکتامهر (استادیار جغرافیا و برنامه‌ریزی شهری دانشگاه آزاد اسلامی مشهد)

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: ۰۵۱-۳۸۷۹۶۸۴۰ 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.

نمونه فارسی:


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بسم الله الرحمن الرحيم

دانشکده ادبیات و علوم انسانی

# مجلّهٔ پژوهش و برنامه‌ریزی روستایی

**سال چهاردهم، شمارهٔ ۲، بهار ۱۴۰۴، شمارهٔ پیاپی ۴۹**

**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 :** معصومه ایرانپاک

**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 چهاردهم، شماره ۲، بهار ۱۴۰۴، شماره پیاپی ۴۹



شاپا: ۲۷۹۱-۲۷۸۳