



Sustainable Development Mountain Tourism in Iran

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ABSTRACT

Purpose: Tourism is significant among countries and all over the world considered mountain tourism because of its advantages. Despite its rare nature and unique mountainous attractions, Iran has not been able to gain its share of this industry. This study aimed to explain the sustainable mountain tourism development model in Iran.

Methodology: This is an applicable and descriptive-analytical study. It used semi-organized interviews with 22 mountain tourism experts, and the study of library documents collected preliminary data. Then, a researcher-made questionnaire was designed and validated using experts' opinions, consultation with advisors, and the views of eight experts. The reliability of this questionnaire, which had 123 items, was confirmed by Cronbach's alpha ($\alpha=0.973$) and distributed among the samples, including 576 mountain tourists, guides and experts of mountain tourism, and village council officials of mountainous areas by simple random sampling. Various tests, such as King and Horrocks thematic analysis, Kolmogorov-Smirnov, and exploratory and confirmatory factor analysis used to analyze the data.

Findings: The findings of the qualitative section include 100 descriptive codes, 29 interpretive codes, and three broad themes. The results of the quantitative team showed that the factors of sustainable development of mountain tourism are infrastructure in four sub-sectors, attractiveness in two sub-sectors including natural and artificial attractions, and sustainability factor in six sub-sectors. The Standardized Root Mean Square Residual and the Normed Fit Index showed that the research model has a desirable and acceptable fit.

Originality: This article has determined the primary and practical factors, the relationship between these factors, and the explanation of the sustainable development model of mountain tourism in Iran. The purpose of doing it is to expand the existing knowledge for the usage of the stakeholders in mountain tourism.

Keywords

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1. Introduction

In many cases, the desire for travel and migration for early humans has led to access to more water and food resources, choosing better areas to live, more knowledge of nature, and finally, a change in his attitude and view of the world and life. Over the centuries, the exploration of tourism and travel has deepened and become more enjoyable as the planning, and use of past experiences accompanies this exploration. The positive and beneficial effects that travel and tourism have had on people's lives over time have led countries to attract more people to their tourism areas and destinations to benefit their citizens from its rich advantages. These efforts ranked the tourism industry third in the international export classification, after fuel and chemicals, and above the automobile and food industries. In many developing countries, however, the tourism industry ranks first in the export sector (UNWTO, 2020).¹

Sports tourism, one of the most popular industries, has also benefited from this significant growth. Sports tourism has been a new form of tourism in the last decade, as tourism and sports have become interdependent and complementary (Meşter et al., 2008). The interaction of sports tourism and economic development has been a topic of interest in many countries, and numerous studies have confirmed their close relationship (Lin & Lu, 2016). One of the most attractive destinations for most tourists is the mountains and related activities. Mountains are a natural and valuable wealth that the tourism industry often uses extensively (Paunović & Jovanović, 2017; Wearing & Neil, 2009). Mountains cover about 24% of the world's land surface, ranging over every continent, in 139 countries and all major types of ecosystems, from deserts and tropical forests to polar icecaps (Charters & Saxon, 2007; Denniston, 1995; Keller, 2014). Mountains are among the most important natural tourist attractions of contemporary tourism due to the characteristics of geographical space, climate diversity, and various landforms (Drumm & Moore, 2005; Vanhove, 2010). Ten percent of tourist destinations worldwide are developing their mountain tourist attractions, and there are more than 50 medium or large sites for mountain tourism in the Alps alone (Page & Ateljevic, 2009). Nazari (2021) argued that increasing the share of sport tourism in the leisure time of the people according to their interest in sport tourism is very important (Nazari, 2021). Development without considering the concept of "sustainability" cannot achieve the desired goals of countries in the long term and, perhaps in the medium term, will have adverse effects. Dastgerdi et al. (2022) argued that the development of sports tourism in section tourist welcoming is related to the development of the entire tourism industry and requires investment, planning, and organization. Marketing, providing necessary services, and creating distinct and exciting experiences for tourists and satisfying them are the key variables to success in the development of the industry. All these works require the cooperation and coordination of people and organizations in the sovereign, government, public and private sectors (Dastgerdi et al., 2022). Sustainability has become a significant issue in the future of tourism planning and development (Byrd, 2007; Paunović & Jovanović, 2017; Prideaux, 2009) and originated from the basic concepts of the three lines (economy,

¹ United Nation World Tourism Organization

society, and environment) that were influential on sustainable tourism in the 1980s (Aall, 2014; Krippendorf, 1988). Due to their importance in the global water cycle, mountains play a vital role in comprehensive and extensive stability (Prideaux, 2009). Regardless of geographical dimension, stability in mountainous areas is often associated with strong political dimensions, meaning strict political boundaries often ignore geographical, cultural, and biological boundaries (Godde et al., 2000). Also, because the primary resources in which the mountain tourism industry develops are state-owned and managed (Veal, 2002), achieving sustainable development requires a complex process to define the tasks and roles of each factor. With various related activities, mountain tourism has a particular position among sports tourists. Activities such as hillside climbing, hiking, mountaineering, rock climbing, big-wall climbing, canyoning, caving, Alpine or touring skiing, cycling, motorcycling and horse riding in the mountains, sport climbing, ice climbing, sky running competitions, and other sports that are done in this natural and enjoyable environment, is popular with tourists.

Mountainous areas are recognized as the second most popular tourist destination after beaches and islands, including 15 to 20% of annual international tourism. The development of mountain tourism is unique on a global scale and in time and space. For many areas, the development process is characterized by a period of identification or discovery, followed by the development of the target community/region, which ultimately leads to the creation of travel and tourism destinations (Richins et al., 2016). The World Economic Forum report 2019 shows that Iran is in the eighty-ninth place in attracting foreign tourists among the 140 countries surveyed, with an index score of 3.5 and four higher than in 2017, while Spain, France, and Germany are ranked first to third, respectively. For the fifth year in a row, this report declared Iran the best tourist destination in terms of travel expenses and considered it the cheapest (Calderwood & Soshkin, 2019).

Due to its climatic diversity, Iran allows tourists to enjoy its rare nature in peaks higher than 4000 meters from sea level, entire valleys, and hiking and biking trails on mountain slopes in all seasons. Utilization of these natural resources, which is abundantly seen in Iran, requires proper planning and action to achieve sustainable quantitative and qualitative development. We will soon face the uncontrolled growth of tourism if we ignore the pillars of sustainable development, even with the prerequisites for development, such as the appropriate political, legal, security, and economic conditions. After a while, we will not only face a decrease in several tourism, but we will also cause irreparable damage to our valuable natural and national resources due to non-compliance with the principles of sustainable development. Despite the abundant natural and mountainous resources in Iran, it seems that the managers of the relevant organizations have not been able to achieve an excellent position for tourism in Iran, among other countries, with plans leading to sustainable development. Therefore, the current research aims to explain the model of sustainable development of mountain tourism in Iran.

2. Theoretical background

In reviewing the background of research, Colabi (2022) considers the categories of human capital education, culture, personal characteristics, networking and markets, investment

and financing, legislation and policies, and infrastructure are the most critical sustainable tourism ecosystem factors, respectively (Colabi, 2022). Mobasheri et al. (2022) introduced the most critical ecotourism development dimensions: management, infrastructure development, marketing and training, and human resource development and conducting marketing activities to increase market share (market penetration). Furthermore, they are diversification of the ecotourism product (diversification heterogeneous), improving the condition of access roads to tourism target villages, and increasing the resilience of destinations in the face of natural disasters are considered the essential strategies for the development of Iran's ecotourism (Mobasheri et al., 2022). Haghgi and Heidarzade (2021) evaluated the factors of achieving sustainable tourism in the cities of mountainous regions as the priority of urban services, basic needs, recreational attractions, the host community's culture, economy, natural ecosystem, cultural attractions, and sustainability (Haghgi & Heidarzade, 2021). Ghorbani et al. (2020) identified the obstacles and strategies of sustainable development through sports as weaknesses in the educational system, weakness in specialization, economic problems, low cohesion of organizations, governmentality, excessive involvement of politicians, and financial and moral corruption as obstacles and strengthening sports diplomacy. , the development of sports media, improvement of infrastructure, hosting of sports events, and sports development were listed as effective and critical strategies (Ghorbani et al., 2020).

Karimi et al. (2020) showed that adventure sports tourism has necessities and challenges, including socio-cultural, entrepreneurship-based employment, emotion management, communication management, and infrastructure as causal conditions factors. Barriers include administrative-managerial, facilities and equipment, personal, financial, and economic security, superstructures, and information as interveners factors. Platforms have rules and regulations, cultural and communication, academic research, and specialized human resources as background conditions. Strategies include risk management, education and culture building, place and event management, and quality and innovation management. In addition, the results considered effects including economic, social, and cultural (Karimi et al., 2020). Asadi et al. (2020) compared the tourism development model of Iran with Turkey and Malaysia. They concluded that the most effective and impressive factors of the total system are the compilation of the document on the national tourism development of Iran. Also, increasing capital security and investment in tourism, improving international relations, reviving, and promoting tourism infrastructure, domestic tourism development, restructuring the tourism organization, and turning it into a ministry (Asadi et al., 2020).

Incoming tourism development strategies also include: identifying the target market of international tourism; developing marketing and advertising programs in target countries; Increasing linkage with regional and international organizations; Facilitate the issuance of visas and residence permits to target countries; Providing banking services and currency exchange and issuing international bank cards; Investing in the field of international leisure tourism. Scott (2021) also believes that climate change is a significant challenge that increasingly affects investment, planning, operations, and tourism demand. His research findings show that the preservation and development of tourism depend on economic prosperity and socio-political stability. Predictably, climate change will reduce

future economic growth and political instability in many countries. The continuation of this delay will jeopardize the tourism destinations and livelihoods of millions of people dependent on tourism, as well as their cooperation with the Sustainable Development Goals (SDGs) and the ambitions of international development after 2030. He believes that in a sustainable tourism community, we should be aware that if climate change fails, there will be no sustainable tourism (Scott, 2021). Natural factors and characteristics of the destination, planning, and formulation of strategy, infrastructural factors, advertising and information, welfare services, marketing, transportation, the level of people's participation, technology and advanced knowledge, security and trust, international relations, budget, factors Social, economic factors, local issues (Haghighat et al., 2022).

Chakraborty (2020) believes that the Kamikochi Valley is one of Japan's essential mountainous regions and is under intense pressure from visitors from spring to autumn. The intensity of the visit leads to direct pressure on the landscape and wildlife, as well as indirect pressure on the continuous growth of the infrastructure and changes in the configuration of the earth's surface. He concludes that because mountain landscapes are highly dynamic and their characteristics of gradual evolution and flexibility are highly dependent on location, it remains a fundamental challenge to manage sustainable tourism with active understanding, attention, appreciation, and protection of biophysical mechanisms (Chakraborty, 2020). Latip et al. (2020) studied the effects of tourism activities on the environment of Mount Kinabalu. They identified noise and air pollution, tree damage, soil erosion, and waste accumulation as the most important factors of "environmental effects (Latip et al., 2020)."

Researchers have suggested that effective preventive measures should be taken, given that mountain, tourism is one of the tourist attractions and contributes to the region's economy. For this reason, planning, implementing, and strengthening new policies and regulations for tourism activities regarding this site's maintenance and protection will help minimize tourism's effects. Kuščer (2012) presented the model of mountain tourism development, technological conditions, socio-cultural conditions, natural conditions, and political and legal conditions as the main components of the destination conditions. The innovation factor in mountain tourism destinations also includes the components of stakeholder participation and socio-cultural sustainability, environmental sustainability (natural environment), and activity and dynamism. He also mentioned the development factor of mountain tourism destinations with the components of natural environment protection, tourist travel and expenses, visitor satisfaction, and socio-economic well-being (Kuščer, 2012).

In most cases, the statistical samples of the investigated researchers are students and faculty members of the universities and the researchers that have benefited from the opinions of the beneficiaries of mountain tourism, as samples were less observed. Available research in the field of sports tourism and mountain tourism has addressed various issues such as the mutual effects of innovation, environment, and development, the impact of climate change and mass tourism on mountain tourism, the importance of mountain areas in sustainable development, and other issues in this field. The search for researchers to find studies on the model of sustainable development of mountain tourism in Iran was not successful. Therefore, the current research aims to explain the model of

sustainable development of mountain tourism in Iran. The necessity of conducting this research is to provide the necessary information and knowledge to create favorable conditions and prepare software and hardware facilities for utilizing maximum and sustainable benefits from economic, cultural, social, and political advantages due to the presence of domestic and foreign tourists in the mountainous regions of Iran. The results of this study are expected to help remove the existing barriers to the presence of domestic and foreign tourists interested in mountain sports to achieve positive consequences for the target areas continuously and sustainably by hosting an intelligent presence of tourists.

3. Methodology

This is applied research in terms of purpose and nature. The survey research method is content analysis and descriptive-analytical. Collecting primary data in the field and using a semi-structured interview and library study was done, and then questionnaire distribution was used to collect data. The research method is mixed (qualitative and quantitative). The statistical population of this study was connoisseurs, managers, mountain guides, and experts in related organizations, including the Ministry of Cultural Heritage, Handicrafts and Tourism, Environmental Protection Organization, Mountaineering, and Sport Climbing Federation. Also, tourism experts of private organizations and companies serving mountain tourists and local officials such as village councils and governors in mountainous areas were considered alongside tourists exploiting Iran's mountainous regions. In the qualitative part of the research, 22 managers, experts, and guides related to mountain tourism participated in the interview through purposeful sampling and the snowball technique.

After the 17th interview, theoretical saturation was done, and subsequent interviews were continued to ensure that no new data was obtained from these interviews. After examining and carefully studying more than 36 documents and library sources and implementing the interviews in written text, their expressions were carefully reviewed. All the concepts that helped the researcher understand the participants' perspectives, experiences, and perceptions, "according to the research title," in the form of tables adjusted. After rechecking, it was given in the form of descriptive codes. Then, by clustering these codes, interpretation codes were obtained, and finally, by clustering interpretation codes, overarching themes or the main components and factors were obtained. Interviews were conducted using open questions that were the result of documentary studies. Materials acquired from library studies and interviews were used to prepare a preliminary questionnaire.

The final questionnaire, which had 123 items on a five-point Likert scale, was approved by eight experts, specialists, and professors of Alborz and Tehran universities regarding content validity. After preliminary distribution among 30 samples, its reliability was tested and confirmed by Cronbach's alpha ($\alpha=0.973$). In the standardization stage of the research tool, distributing the questionnaire by simple random sampling among 203 people from the samples, the necessary data for exploratory factor analysis was collected. After performing the relevant statistical tests, the final questionnaire was prepared for confirmatory factor analysis and the implementation of the final stage of the research. Then, through face-to-

face and virtual methods (federation channels, mountaineering clubs, and tourism institutions in social networks), 576 usable questionnaires were distributed and returned to the researcher. Data analysis in the qualitative part was performed using King and Horrocks's thematic analysis (2010). It includes three stages of descriptive coding, interpretive coding, and integration through overarching themes using Excel software, which was omitted from the report due to preventing the increase in the volume of the article. Quantitative data analysis was also done with the Keizer-Meir-Olkin sampling index, Bartlett's spheroid test, and exploratory factor analysis for infrastructure, attractiveness, and sustainability scales. F. Finally, the conceptual model was obtained by performing confirmatory factor analysis; SPSS and Amos Graphics software was also used.

4. Results

In the qualitative part of this study, 22 interviewees were present, among whom 50% had bachelor's degrees. Also, each Doctoral, Master's, and Diploma degree includes 13.64% and an Associate degree 9.09%. Their field of activity was the director of the organization or institute of mountaineering/mountain tourism with 31.82%, the mountain tourism guide with 59.09%, and the faculty member of the university with 9.09%, respectively.

In the quantitative section, the field of activity, 11.81% of the research samples were managers or experts in sports organizations, 17.88% of them managers or experts in tourism organizations, 28.30% of them athletes (mountaineering and related sports), 14.06% of Eco tourists, 19.27% mountain guides and 8.68% in other fields. The mean age of participants was 42.05 years with a standard deviation of 13.05 years, and their minimum and maximum ages were 18 and 77 years, respectively. The average mountaineering experience of the samples was 19.42 years, with a standard deviation of 12.53 years, a minimum of one, and a maximum of 61 years. About the annual activity rate, 48.61% of the research samples had more than seven mountaineering or ecotourism (more than one day) activities during a year, 18.06% of them 5 to 7 exercises, 22.57% in 2 to 4, and 10.77% Participated in one action during a year.

After carefully reviewing library documents and sources, conducting interviews, and implementing them into written text, its phrases read carefully. Then, all concepts that help the researcher understand the participant's views, experiences, and perceptions "following the research title" are organized in tables and, after review, given in the form of descriptive codes. Then, by clustering these codes, interpretive codes are obtained, and finally, by clustering interpretive codes, comprehensive themes (components and main factors) are received. After detailed studies and re-polling of experts, 100 descriptive codes, 29 interpretive codes, and three complete themes of sustainability, infrastructure and attractiveness were obtained [Table 1](#). These themes and the process of getting them used to prepare the preliminary questionnaire for the quantitative part of the research. Kolmogorov-Smirnov test showed that the significance level of the variables of sustainability, infrastructure, and attractiveness are 0.315, 0.105, and 0.517, respectively. Given that the significance level greater than or equal to 0.05 confirms the assumption of zero and standard, the data distribution was normal.

Table 1. Descriptive codes, Interpretive codes, and Comprehensive themes.

| Descriptive codes | Interpretive codes | Comprehensive themes |
|--|--|----------------------|
| Promote and advancement of small businesses | Reduction and eradicate of poverty | Sustainability |
| Entrepreneurship and empowerment of the local community | | |
| Reduction and ultimately eradicate poverty | Reduction and eradicate of hunger | |
| Selling local products to mountain tourists | | |
| Reduction and eradicate hunger | Ensuring health, wellness, and well-being | |
| Healthcare and reduction of child mortality | | |
| Improving health and reducing infectious and non-communicable diseases | | |
| Helping with health services and improving health, wellness, and well-being | Assurance of inclusive education quality | |
| Technical and vocational training related to tourism | | |
| Improving the quality of education for the local community | Gender equality | |
| Civic participation and leadership in relevant institutions for women and men | | |
| Gender equality between women and men | Safe water and wastewater management | |
| Public access to safe and cheap drinking water | | |
| Proper disposal of sewage in mountainous areas | | |
| Conservation of water-related mountain ecosystems | Access to cheap and sustainable energy | |
| Local community access to cheap and safe energy | | |
| Expand scientific research on clean energy | Proper position and economic growth | |
| Development of technology and infrastructure for new and sustainable energy | | |
| Creating appropriate jobs with a fair salary | Sustainable industrial centers, attention to innovation and creativity | |
| Sustainable economic growth without degrading the mountain environment | | |
| Creating quality processing industries | | |
| Increasing access to information and communication technology | Reducing inequality within and between countries | |
| Modernization of industries and their adaptation to the environment | | |
| Support for research and development, innovation, and creativity | Creating safe, resilient, and sustainable cities and villages | |
| Renovation and development of cities and villages in mountainous areas | | |
| Development of social justice and protection of the vulnerable | Patterns of responsible and sustainable production and consumption | |
| Encourage investors to participate in regional projects | | |
| Preservation and restoration of cultural and natural heritage | Climate change and its effects | |
| Reduction of damages and losses due to natural disasters and crises | | |
| Creating more intelligent and greener settlements | Underwater living creatures | |
| Promote a responsible production pattern in mountainous areas | | |
| Responsible consumption and reduction of food waste | On land habitats | |
| Improving waste recycling methods in mountainous areas | | |
| Waste management and reduction of its release into the air, water, and soil | | |
| Improve transportation and housing to reduce carbon footprint | | |
| Strengthen resilience and improve adaptation to natural disasters | | |
| Reduce pollution of rivers leading to water resources | | |
| Conservation of the mountain as the source of rivers leading to water resources | | |
| Prevention of foothills pollution and protection of marine ecosystems | | |
| Preservation, restoration, and sustainable use of mountains, forests, and arid regions | | |
| Reduce degradation of plant and animal species ecosystems | | |
| Combating the smuggling of protected plant and animal species | | |
| Reducing pollution due to garbage, waste, and human excrement | | |

| Descriptive codes | Interpretive codes | Comprehensive themes |
|---|--|-----------------------------|
| Interaction between cultures and religions in mountainous areas | pacifist society, access to justice, and accountable organizations | |
| Accountability and transparency of mountain-related organizations | | |
| Necessary partnerships to achieve the common goals of sustainable development | Participating in achieving these goals | |
| International supports for national plans to achieve common goals | | |
| Managers' awareness of the critical role of tourism in the economic prosperity | Economic infrastructure | |
| Stability of prices and inflation control | | |
| Public / private investment and support | | |
| Increasing the share of employment of local communities in mountain tourism | | |
| Training and monitoring of interactions between tourists and the local community | Socio-cultural infrastructure | |
| Respect for cultural differences in mountain tourism destinations | | |
| Development of life skills in tourism staff and managers | | |
| Development of communication skills in tourism staff and managers | | |
| Existence of educational and support institutions related to mountain tourism | Management and planning infrastructure | |
| Managers' view of mountain tourism, as a system, with coordinated components | | |
| Planning of managers to play a critical role in tourism in the future of the country | | |
| Science-based perspective and access to relevant knowledge, information, and statistics | | |
| Decision-making with stakeholder participation and attention to related organizations | Appropriate management and regulations infrastructure | Infrastructure |
| Facilitate the rules of tourism ancillary services | | |
| Update tourism investment laws | | |
| Update laws to support the judicial rights of tourists | | |
| Update the rules regarding tourist clothes | Structural and transportation factors infrastructure | |
| Creating and improving accommodation and hospitality infrastructure in the mountains | | |
| Development of safe water, clean energy, garbage, and waste infrastructure | | |
| Creating and improving infrastructures related to communications, relief and rescue, medicine, and technology | | |
| Development of infrastructures related to intercity transportation and relocation to the foothills | Political and security infrastructure | |
| Strengthening appropriate and friendly political relations with other countries | | |
| Rational policy-making on the importance of tourism | | |
| Increase security, stability, and tranquility | | |
| Reducing the number of decision-making and implementation areas in mountain tourism | Organizational coordination | |
| Coordination between organizations related to mountain tourism | | |
| Transparency of the job description of employees and organizations in this field | | |
| Awareness of relevant organizations on the subject of mountain tourism | | |
| Adaptation of relevant organizations to socio-political developments in the world | Marketing and advertising infrastructure | |
| Preparing guidebooks, brochures, websites, media, visual media, etc., for advertising | | |

| Descriptive codes | Interpretive codes | Comprehensive themes |
|--|--|----------------------|
| Modern, targeted, and specialized marketing to attract interested people | | |
| Multilingual information and the use of social networks in advertising | | |
| Research on the characteristics and expectations of tourists and the capacity of the target areas | | |
| Variety, quality, and manner of providing desirable services related to hospitality, accommodation, health | | |
| Variety, quality, and manner of providing desirable services related to transportation | Facilities and services infrastructure | |
| Diversity, quality, and manner of providing services related to medical, banking, security, and visa | | |
| Variety, quality, and manner of providing service in stores and malls | | |
| Training and empowerment of specialized and skilled personnel | | |
| Utilizing a database to provide human resources | | |
| Determining the necessary standards for human resources in different sectors | human resources supply infrastructure | |
| Training and providing skilled human resources for the future tourism market | | |
| Existence of high mountains | | |
| Climate diversity | | |
| Existence of visual attractions | Natural attractions | |
| Existence of diverse and unique flora and fauna in the mountains | | |
| Possibility to do various mountain sports | | |
| Existence of various hiking and hillside climbing tracks | | |
| Existence of various routes for mountaineering, rock climbing, and big wall climbing | | |
| Existence of regional cultural celebrations and occasions | Artificial attractions | |
| Organizing events, competitions, and sports camps | | |
| Identify appropriate mountain tourism areas | | |
| Existence of historical mountain attractions | | |
| Exhibitions, museums, and halls of fame | | |

In the next step, by performing confirmatory factor analysis, it was determined that the sustainability factor has six components: "Reducing poverty and hunger and promoting health", "Development of technical and vocational education, employment of women and management of water and wastewater resources", "Access to clean and cheap energy, economic growth and infrastructure of conversion industries", "Pacifist communities, accountable organizations and participation in achieving the goals of sustainable development", "Development of social justice, improvement of urban and rural texture, promotion of production and consumption patterns", and "Tackling climate change, conserving habitats related to water and land resources". The results showed that the obtained factor loads for the six component items were more outstanding than 0.4 and had sufficient validity to be maintained in the measurement model. In addition, the factor load of all items was significant at a 95% probability level. Infrastructure factor has four components: "Economic and socio-cultural infrastructures", "Management and planning infrastructures, appropriate laws and regulations, policy and security and organizational coordination", "Structural, transportation, marketing, and advertising infrastructures," and "Facilities, services, and human force supply infrastructures". Their items have a factor load more significant than 0.4 and have sufficient validity to be maintained in the model.

The attractiveness factor also has two components, "Natural attractions" and "Man-made attractions". Its items have a suitable factor load to be maintained in the model, and the factor load of all items is significant at a 95% probability level. Evaluation for fitting the sustainable development of the mountain tourism model can be seen after examining the fit indexes described in Table 2.

Table 2. The fit indexes of the sustainable development of the mountain tourism model.

| | Fit indices | Measure | Criterion | Interpretation |
|-------------|-------------|---------|-----------|----------------|
| Absolute | CMIN/DF | 4.055 | <5 | Confirmed |
| | p-value x2 | 0.004 | >0.05 | Unconfirmed |
| | GFI | 0.984 | >0.90 | Confirmed |
| Comparative | TLI | 0.969 | >0.90 | Confirmed |
| | CFI | 0.998 | >0.90 | Confirmed |
| | RMSEA | 0.068 | <0.08 | Confirmed |
| Parsimony | PNFI | 0.686 | >0.5 | Confirmed |
| | PGFI | 0.579 | >0.5 | Confirmed |

The fitting evaluation of the measurement model of sustainable development of mountain tourism showed that all appropriate indices are in the desired range; only the significance level of the Chi-square statistic is 0.004 and less than 0.05, while it should be more than this value. Therefore, this statistic is not acceptable. Since the significance level is sensitive to the number of samples and is almost always significant in large samples, other fit indicators are sufficient for the conclusion. It can be concluded that the proposed structural model has a desirable and acceptable fit. Figure one is considered the final model of the research. In this model, the sub-components of each factor are arranged in order of priority.

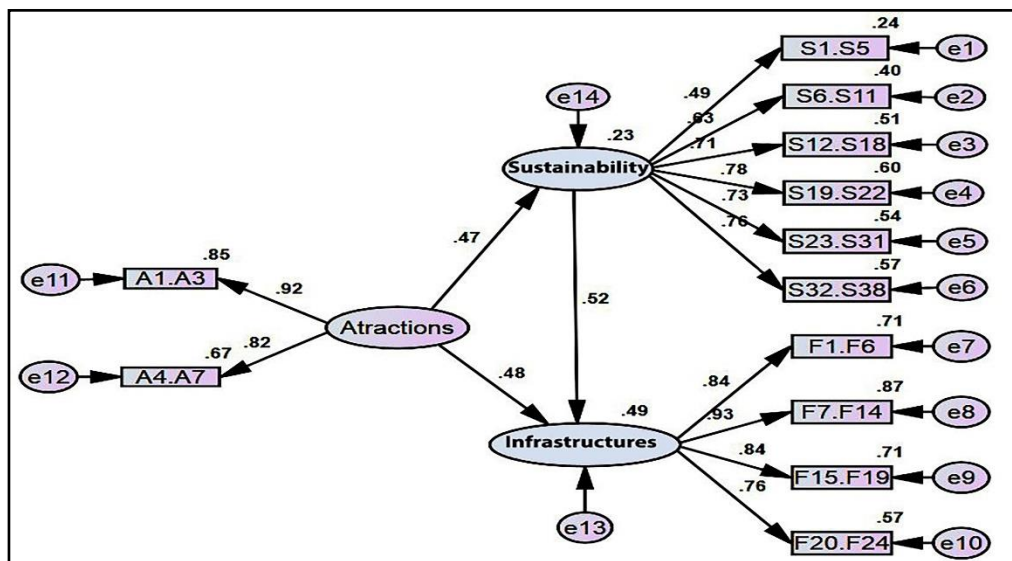


Figure 1. Loading factors of the measurement model of sustainable development of mountain tourism.

Figure 1 shows that the three factors of sustainable development of mountain tourism have been tested in a theoretical model that may be presented as a conceptual research model. Figure 2 is also considered the final research model. In this model, the sub-components of each factor are arranged in order of priority.

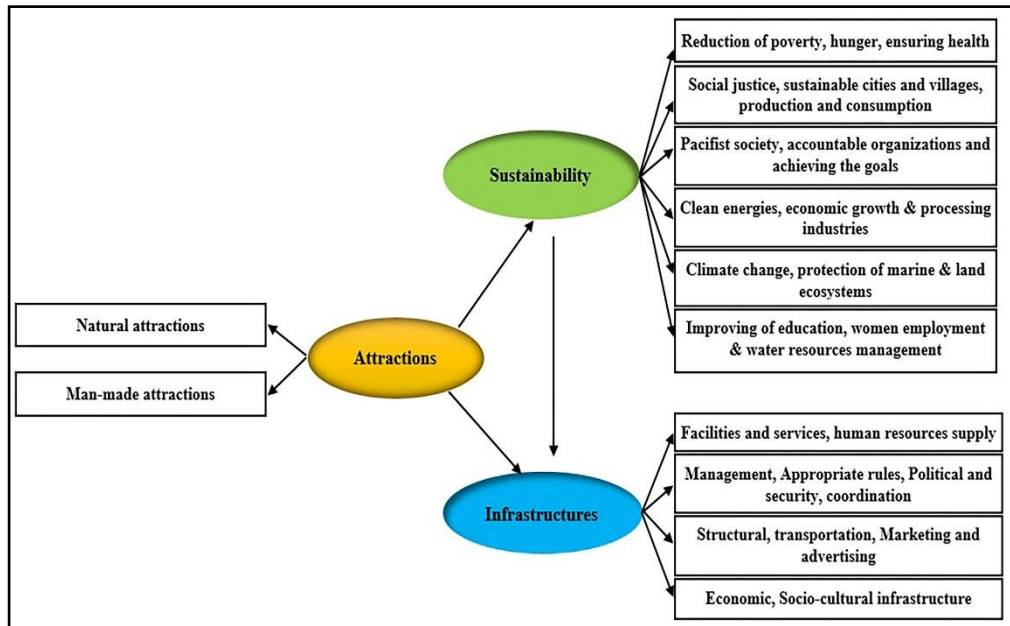


Figure 2. Conceptual model of sustainable development of mountain tourism.

5. Managerial implications

It is expected that the results of this research will be used by the managers and stakeholders of this field and can help reduce the existing barriers to the presence of domestic and incoming tourists interested in mountain sports. They obtained positive economic, cultural, social, and educational results for tourism destinations. The researchers hope that the results of this research will help the officials and managers of sports and tourism in the country and the region, as well as mountain tourism institutions and local communities in mountainous areas, to be more successful in the sustainable development of mountain tourism and to provide services to domestic and incoming tourists.

6. Discussion and conclusion

Travel and tourism are among the most essential and strategic policies for many countries because this industry's turnover and economic benefits have a special place in the classification of exports among countries around the world. One of the most attractive destinations for most tourists is the mountains and related activities. Due to its climatic diversity in all seasons, Iran allows tourists to enjoy the pristine and unique nature in the peaks above 4000 meters from sea level, pristine and water-filled valleys, hiking and

cycling routes in the foothills, and other types of activities. Despite the abundant natural and mountainous resources in Iran, it seems that for various reasons, this country has not been able to achieve its position in international tourism with programs leading to sustainable development. Shortage and sometimes the lack of necessary information in this direction are among the most important reasons for being deprived of this profitable market in the tourism industry. Therefore, this study was conducted to explain the model of sustainable development of mountain tourism in Iran.

The research findings showed that the average age of the interviewees was 49.27 and the respondents to the questionnaire were 42.05 years old. Their age, educational qualifications, and field of activity indicate the use of experienced samples related to the subject for this research. To a large extent, the findings can be considered following the current realities in mountain tourism.

The results of the research identified 100 descriptive codes and 29 interpretive codes and determined three important and influential factors in the sustainable development of mountain tourism: Infrastructure, Attractions, and Sustainability. The components of these three factors include several concepts that include various topics such as economic, social, political, educational, and environmental aspects. The research results of [Colabi \(2022\)](#), [Mobasheri et al. \(2022\)](#), [Haghi and Heidarzade \(2021\)](#), [Ghorbani et al. \(2020\)](#), [Karimi et al. \(2020\)](#), [Asadi et al. \(2020\)](#), [Jaferi et al. \(2019\)](#), [Scott \(2021\)](#), [Chakraborty \(2020\)](#), [Latip et al. \(2020\)](#), [Bracher et al. \(2018\)](#) and [Kuščer \(2012\)](#) are consonant in many aspects with the results of this research. According to UNESCO, the sustainable development goals have an introduction stating that the leaders and people of the world want to end poverty, hunger, violence, corruption, trafficking, etc., by 2030 and move towards human dignity, peace, justice, prosperity, management sustaining natural resources, expanding health, empowering women and girls, supporting vulnerable groups, improving the environment, developing rural areas, respecting cultural diversity, developing general and technical and professional education, job creation and so on.

[Colabi \(2022\)](#) considers infrastructure one of the most important and influential concepts for a sustainable tourism ecosystem ([Colabi, 2022](#)). [Mohammad Nezhad \(2013\)](#) also concluded that the attractions of Mount Damavand include the use of pristine nature, the use of hot mineral waters on the slopes of the peak, seeing wildlife attractions, mountaineering and mythological and epic tourism (such as the story of Arash Kamangir), are the first five priorities of Mount Damavand attractions. The factor of interest by influencing infrastructure and sustainability points out that, for the sustainable development of mountain tourism, attention should be paid to the attractions of these areas, such as diverse weather, high altitude, variety of routes and sports fields that can be implemented in the mountains and providing the base for the creation of the necessary infrastructure, Paying attention to the principles of the concept of sustainability by the public and private sectors facilitates the process of sustainable development. The infrastructure factor can affect sustainability. It will be possible to deal with issues such as environmental aspects, training and empowering the local community, and improving the urban/rural context in the mountainous by creating the necessary infrastructure and paying attention to the headings of the sustainability concept (long-term growth and development with minimal environmental, cultural, social, and economic damage).

The attractiveness factor has two components: natural and artificial attractions, which have a factor load of 0.942 and 0.929, respectively, in the research model. The importance of the presence of high mountains, climate diversity, variety of visual attractions, and unique flora and fauna can remind the effect of the attraction factor in the model of sustainable mountain tourism development. The natural mountain resources in Iran are very diverse due to their location in a wide latitude ranging from 25 degrees and three minutes to 47 degrees and 39 minutes north latitude. This unique and diverse asset can attract many tourists to mountain tourism destinations. The possibility of performing various mountain sports such as rock climbing, big wall climbing, ski mountaineering, flying with a paraglider or wingsuit, hillside climbing, and many other sports applicable in this environment requires the preparation of the initial conditions for the use of mountain sports. These infrastructures can include finding and preparing the access route, drinking water, camp and night shelter location, rescue helicopter landing site, etc., as an artificial attraction. Preparing various routes for mountain climbing, hillside climbing, rock climbing, and big wall climbing is also a manufactured attraction to attract and return tourists in this field.

Regional festivals and cultural events, historical mountain attractions, and museums of mountainous regions can become complementary attractions to make the travel experience more lasting in the minds of mountain tourists. According to (Richins et al., 2016) globally, mountain tourism development is unique in time and place. Mountain areas are second to coasts and islands as popular tourist destinations, generating 15-20% of annual global tourism. The progress and development of mountain tourism on a worldwide scale and in temporal and spatial dimensions are unique. For many regions, the development process has been characterized by a period of exploration or discovery, followed by community/ regional development that creates destinations for travel and tourism (Richins et al., 2016). Related government institutions such as the Ministry of Cultural Heritage, Tourism and Handicrafts (MCTH) and the Environmental Protection and Natural Resources Organization (EPNRO), with the help of non-governmental organizations and local communities, should take the necessary measures to preserve and maintain these resources with appropriate management and planning.

On the other hand, manufactured attractions in mountain tourism, such as maintaining and creating various mountain and rock-climbing routes, hiking and hill climbing routes, organizing events, competitions, sports camps, and the possibility of performing multiple mountain sports, can provide more capacity to attract and satisfy tourists. Artificial attractions can be developed, preserved, and maintained with the management and guidance of governmental and semi-governmental organizations such as the MCTH and the Mountaineering and Sports Climbing Federation of Iran (MSFI) and with the cooperation of mountaineering clubs and non-governmental organizations (NGOs). With the supportive-supervisory role of the government instead of taking over, it can lead to sustainable development.

The components of the infrastructure factor include management and planning infrastructures, applicable laws and regulations, policy, security, and organizational and institutional coordination, with a factor load of 0.930. The infrastructure of structural factors, transportation, marketing, and advertising with a factor load of 0.883; Economic

and cultural-social infrastructures have a factor load of 0.880. And facilities, services, and providing human resources infrastructures have a factor load of 0.811. In terms of research samples, creating the ground and having experienced, trained, efficient, and expert managers with appropriate and specialist planning, proper decision-making, and policy-making that considers the priority of national interests, friendly, deep, and long-term political relations with other countries, creating security and peace for tourists and finally having proper coordination and consensus between organizations and institutions related to mountain tourism has a very high impact on the infrastructures of this area. Creating motivation and cooperation to provide structural infrastructures such as accommodation, shelter, and mountain camps and creating suitable conditions for diverse, safe, fast, and quality transportation along with providing updated infrastructures for advertising and marketing in the field of mountain tourism also is one of the most effective components in the model. Contextualizing the participation of economic activists and investment in this area, along with strengthening and creating cultural and social infrastructures among the beneficiaries, is also very important. The results of the research of (Paunović & Jovanović, 2017),

Colabi (2022), Wang et al. (2019), Rai (2017), Drábová-Degro and Krnáčová (2017) and Kuščer (2012) have been in line with the research results in this field. The existence of trained and qualified human resources, including managers, experts, and operational staff, is one of the main pillars of the success of any organization. The organizations and institutions of the public and private sectors can take advantage of the experiences of famous countries in this field and consider quality and specialized training as the correct way of education instead of passing some course units and awarding a certificate. It will provide the growth and development of mountain tourism, attracting and revisiting these tourist destinations. Uncertainty of the necessary criteria for providing human resources in different parts of mountain tourism services and consolidating proper and friendly political relations with other countries are critical issues in this field. Security, stability, peace, adaptation to the world's political and social developments and friendly relations with other countries will attract tourists and increase their desire for mountain tourism destinations.

The sustainability factor with six components has the largest number of components in the mountain tourism sustainable development model. Peaceful societies, responsive institutions, and participation in achieving sustainable development goals have the highest factor loading of 0.829, among other components. Climate changes and preservation of habitats in water and land with a factor load of 0.780; Clean energy, economic growth, and transformation industries have a factor load of 0.766; Social justice, improvement of urban and rural context, production and consumption pattern with a factor load of 0.751; The education development, women's employment and water resources management with a factor load of 0.717 and poverty and hunger reduction and promoting health with a factor load of 0.713 have the highest and lowest effects on the sustainability factor, respectively. The mutual attention of tourists and the local community to cultural differences and respect for each other's customs and cultural views, having institutions with specific guidelines that are accountable for all their decisions and performance, and the participation of all levels of society, including managers and employees of related organizations, the local community, and tourists to achieve the specified goals of

sustainable development can lead to the achievement of sustainable mountain tourism in the medium and long term.

Another important component is attention to climate change and planning and implementing international guidelines to deal with climate change. Preservation, maintenance, and restoration of plant and animal habitats in water and land directly related to the mountain environment are also among the important items in achieving sustainable development. The government sector supports the local community and investors interested in this field to create and use clean energy such as solar, wind, geothermal, and other environmentally friendly energy. This support can protect the fragile mountain environment against the damage of fossil energy exploitation, reduce the costs imposed on residents and make them healthier, the wider cleanliness of the foothills, and the beauty of the scenery of the tourist destination. The investment and support of the public and private sectors in transformation industries help the local community on the path of wider productivity of its products in the foothills, such as agricultural and animal husbandry products. Suppose we pay deep and continuous attention to the local community's business and create the necessary conditions to create and maintain sustainable employment. In that case, economic growth will occur in the lives of the residents of the mountainous areas. Reducing the gap between the rich and the poor by creating productive and sustainable employment, improving and strengthening the urban and rural context in the geography of the mountain, and introducing and teaching the appropriate patterns of production foothills products and the correct way of consuming resources in this environment is also important and placed in the relevant model. Among the components of the sustainability factor, the lowest impact belongs to reducing poverty, hunger, and promoting health. If the public and private sectors pay attention to the well-being and physical and mental well-being of local communities in the foothills and create the necessary conditions to reduce poverty and hunger, such as entrepreneurship, help, and training to sell local products to tourists, training and promoting small businesses and empowering the local community, can lead to the reduction and eradication of absolute poverty. Standard health care, reducing infectious and non-infectious diseases, and helping improve the health, health services, and well-being of mountainous local communities can be expected for the sustainable development of tourism in the mountains.

Scott (2021), Wang et al. (2019), Rai (2017), Paunović and Jovanović (2017), Drábová-Degro and Krnáčová (2017) also reached similar results in their research. Suppose the managers and officials of public and private organizations and institutions in this field have the necessary training and awareness about the importance of mountains and their fragility in the face of the indiscriminate human invasion of these areas. In that case, they will pay more attention to the sustainability factor in their organization and planning. To preserve, restore and appropriate and sustainable use of mountains, forests, and dry areas such as deserts, adequate and quality education and the necessary incentives in local communities should be seriously considered. Environmentally friendly waste management, expansion, and promotion of technology to produce new and sustainable energy, reduction of pollution caused by human excrements, and improvement of waste recycling methods in mountainous areas with planning, assistance, and supervision of the

public sector and cooperation and implementation by the non-governmental sector can speed up sustainable development of mountain tourism. Development of social justice, modernization, and development of cities and villages in mountainous areas, promotion of responsible production and consumption patterns and reduction of food waste in the foothills, sustainable economic growth, creation of quality transformation industries, and access of the local community to clean and cheap energy are among other components of the sustainability factors, which will provide the possibility of sustainable development of mountain tourism by creating sufficient and effective incentives to attract the private sector and the supervision and support of the government sector.

One of the limitations of the research was not being successful in interviewing and asking for opinions from some government and political officials about tourism and mountains. The lack of similar scientific studies and the difficulty of accessing mountain tourism development strategies and related models in leading countries due to the limited available information on the global Internet network were other limitations of this research.

It is suggested to prepare up-to-date guidelines and criteria in service provision, training, human resources standards, waste management, and human excrements in high altitudes and other cases to take advantage of the experiences of leading countries in mountain tourism. It is also suggested that further research be conducted about comparative study of the process and content training in mountain tourism for managers, experts, mountain guides, and local communities, methods of providing services, along with the mountain environment preservation in Iran and selected countries.

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توسعه پایدار گردشگری کوهستان در ایران

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کلیدواژه

توسعه پایدار
جهانگردی
گردشگری کوهستان
گردشگری ورزشی
مسافرت

نوع مقاله

پژوهشی اصیل

چکیده

هدف: گردشگری از اهمیت بسیار زیادی در میان کشورها برخوردار است و گردشگری کوهستان به واسطه امتیازات آن، در سراسر دنیا مورد توجه قرار دارد. لیکن، کشور ایران با وجود داشتن طبیعت کم‌نظیر و جاذبه‌های کوهستانی خاص نتوانسته سهم خود را از این صنعت کسب نماید. هدف از تحقیق حاضر تبیین مدل توسعه پایدار گردشگری کوهستان در ایران بود.

روش: این تحقیق از نوع کاربردی و از نظر استراتژی اجرا از نوع توصیفی-تحلیلی است. گردآوری داده‌های اولیه با بهره‌گیری از مصاحبه نیمه ساختاریافته با ۲۲ نفر از اساتید و صاحب‌نظران گردشگری کوهستان و همچنین مطالعه مبانی نظری و اسناد کتابخانه‌ای انجام شد. در ادامه پرسش‌نامه محقق‌ساخته طراحی و روائی آن با استفاده از نظرات هشت نفر از متخصصان و خبرگان تأیید شد. پایایی پرسش‌نامه که دارای ۱۲۳ گویه بود تأیید ($\alpha=0/973$) و به روش تصادفی ساده بین ۵۷۶ نفر از گردشگران، مدیران، راهنمایان گردشگری کوهستان، مسئولین شوراها و ده‌باران مناطق کوه‌پایه‌ای توزیع گردید. برای تجزیه و تحلیل داده‌ها از روش تحلیل مضمونی کینگ و هاروکز و آزمون‌های کولموگروف-اسمیرنوف، تحلیل عامل اکتشافی و تأییدی بهره‌گیری شد.

یافته‌ها: یافته‌های بخش کیفی شامل ۱۰۰ کد توصیفی، ۲۹ کد تفسیری و ۳ مضمون فراگیر زیرساخت، جذابیت و پایداری است. یافته‌های بخش کمی نشان‌داد عوامل توسعه پایدار گردشگری کوهستان به ترتیب زیرساخت دارای ۲۴ مؤلفه در ۴ زیرشاخه، جذابیت دارای ۷ مؤلفه در ۲ زیرشاخه جذابیت‌های طبیعی و انسان‌ساخت و عامل پایداری دارای ۳۸ مؤلفه در ۶ زیرشاخه هستند. ارزشیابی نشان‌داد مدل حاصل، از برازش مطلوب و قابل قبول برخوردار است و مؤلفه‌های عوامل سه‌گانه دارای بار عاملی مناسبی هستند و در مدل مفهومی تحقیق قرار می‌گیرند.

اصالت و ابتکار مقاله: این مقاله به تعیین عوامل اصلی و مؤثر، ارتباط این عوامل با یکدیگر و تبیین مدل توسعه پایدار گردشگری کوهستان در ایران پرداخته است. هدف از انجام آن گسترش دانش موجود برای بهره‌مندی ذی‌نفعان حوزه گردشگری کوهستان در مسیر توسعه پایدار می‌باشد.

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