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POTENTIAL ASSESSMENT OF HERIS TOURISM ATTRACTIONS WITH THE EMPHASIS ON NEW MARKETS INTRODUCTION USING TOPSIS MODEL

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ABSTRACT

Tourism industry counts as the most peaceful human movement directly influencing knowledge, culture and economy development. The current study aimed to assess the potential of Heris tourist attractions with the emphasis on new markets introduction. The city of interest benefits from environmentally various capabilities and resources including mountains, rich pastures, plant diversification, extended arable lands and plains, agricultural and livestock products, fertile soil and suitable climate as well as well-known handicrafts. This study aimed to recognize Heris tourist attractions and capacities as well as to present a planning model that fits the conditions and region of interest. A descriptive-analytical methodology was taken to carry out this research. Data was gathered via library research and a field study; afterward, the best tourism criterion was identified using TOPSIS model. According to the results, rural tourism scored 0.709131 out of 1 rated as the first tourism priority of the city followed by hiking, ecotourism, stargazing, mountaineering and skiing scored 0.464912, 0.404674, 0.322793, 0.314667 and 0.19088, respectively.

Keywords: Potential Assessment, Tourist Attractions, TOPSIS Model, Heris County, Rural Tourism

INTRODUCTION

Being considered as one of the phenomena occurred in the current century, tourism ranks the third important industry, after oil and car manufacturing, in the world. It has led to poverty alleviation, justice enhancement, and job creation as well as high revenue; as such it was introduced as a basic need of the third millennium by the World Tourism Organization Manila Declaration. Moreover, the number of tourists is predicted to reach 1.5 million in 2020 (Taghizadeh *et al.*, 2012). Tourism, as a newly established industry, has significantly affected the economic, social and cultural situations of the world in recent years.

The contributions it has made are as following: job creation, the regional balance, global peace improvement, investment increase in cultural heritage, environmental rehabilitation, and wild life centers rehabilitation, development of rural areas holding tourist attractions, immigration prevention amongst others (Sadr-e Musavi and Dakhili-e Kahnmauei, 2004). Tourism seems to be an approach to national economic development due to fulfilling its role as one of the income and job creation resources. Thus, the main reasons to its development include increasing revenue, offering new job opportunities and bringing social changes all of which can raise the hope for poverty alleviation especially in the regions suffering from economic depression (Papoli and Saghaei, 2007). Nowadays, tourism is regarded as one of the greatest industries with high diversity influencing many economic, social, cultural and environmental sectors. In many countries, it is considered one of the main resources of income and employment as well as both private sector and infrastructures development. That is why tourism has been paid much attention throughout the world especially in the countries where other economic activities such as manufacturing or extraction either are not economical or carry no significant commercial role (Bakhtiari and Yazdani, 2010). Iran which counts as the first 10 countries regarding tourist attractions and first 5 countries regarding tourism diversity needs to mobilize its capabilities to develop this industry (Amin and Nazari, 2009).

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Regarding the tourist attractions, Iran enjoys various climates, spaces and seasons. Furthermore, the antiquities, FECs (family entertainment centers) and natural beauties of Iran are comparable to those countries with a highly developed tourism industry. Because of Iran's high capacity to attract international tourists as well as direct and indirect effects of this industry on different economic sectors, growth and development, tourism can put an end to the single-product economy and result in a sustainable development and growth.

The advent of economic crises, unemployment and low revenue advantages in some areas have led to an increase in attention to tourism as a solution for international development. Heris, located in Eastern Azerbaijan, is one of those areas facing with unemployment and low revenue. This city which is one of the oldest regions of Eastern Azerbaijan hosts numerous tourists due to its desirable climate and vegetation especially in hot seasons. Rich pastures, vegetation diversification especially medicinal herbs, extended arable lands, agricultural and livestock products, well-known souvenirs and handicrafts (carpet) can be considered as eye-catching features of this area by tourists. Considering these potentials, relevant organizations and investors can make contributions to the development of this city by investing in the tourist attractions of the area. This descriptive-analytical study aimed to identify potentials and capacities of Heris tourist attractions in order to introduce it as a new tourism market using TOPSIS model.

Purpose of the Study

The main purpose of carrying out such research is to assess the potentials of Heris tourist attractions with the emphasis on new markets introduction using descriptive-analytical studies and management models. Some subsidiary goals of the current study are as following:

- Identification of tourist attraction and capacities of this industry in Heris
- Offering a planning model fitting the conditions and area of interest

Literature Review

In his dissertation titled Transmittance Study of Fars Natural Attractions to Create New Tourism Markets Using GIS, Vahidi (2013) classified Bavanat tourist attractions and prepared the tourist map of this city accordingly. The results in TOPSIS model showed the rating of ecotourism activities as following: rural tourism, nomads, ecotourism, star observation, and caving, wild life, hiking and mountaineering. In other words, higher priorities have more shares in marketing activities.

Ghiasi (2013) in his Study of Binaloud Environmental Capacities Regarding Ecotourism and Geotourism prepared slope, direction, height, vegetation, climate and geomorphologic maps. Then, natural and tourism criteria were scored using AHP model. Based on the results, climate, scored 29 percent, was recognized as the first priority regarding natural criteria while hiking with 37 percent ranked the first priority regarding tourism criteria. Taghizadeh (2012) prioritized tourist hubs in Kermanshah Province based on the potential of typical tourism regions using TOPSIS multiple criteria decision-making model. The results suggested that typical tourism regions managed by Kermanshah tourist hub was rated very good- 0.9448-, typical regions of Oramanat hub ranked fair with the score of 0.42981 followed by the other regions. The results of the study- Hamedan Tourist Attractions and Factors and Their Role on the Changes of This City to Identify and Investigate Hamedan Attractions- carried out by Abdolmaleki (1999) indicated that tourism did not affect Hamedan considerably due to some reasons including lack of tourist attractions identification and introduction as well as tourism recession.

Theoretical Foundations and Concepts

Tourism: The first notes about tourism in the encyclopedia of tourism and travel have focused on the historical aspect of this phenomenon. Tourism is defined as optionally spending a part of one's own leisure time taking the pleasure of excursion to a place rather than one's residential area (Baher, 1998).

According to the definition provided by World Tourism Organization, tourism contains of activities a person takes on trips and in places which are not their typical environment. The aims of such a trip which does not last more than a year are pleasure, business or other activities (Ranjbarian and Zahedi, 2009).

Tourist: A tourist is a person who takes a trip for business or pleasure to a place which is not their residential areas while financially supported by the income earned in their residential areas (Musaei, 2011).

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Khanomrood and Barugh) and Khajeh (including the rural districts of Mavaze Khan-e Sharghi and western Bedovestan), 5 municipalities called Heris, Zarnagh, Bakhshayesh, Kalvanegh and Khajeh and 104 Villages. Based on 2011 population and housing census, Heris was populated approximately with as many as 67820 people (1.8% of the total population of the province) while the population of the center of this county was 9823. Its urban and rural residents as well as housing units are 32227, 35359 and 18353, respectively. The neighboring cities are Sarab and Meshkin Shahr, Ahar and Varzghan, Tabriz and Bostan Abad in the east, north, west and south, respectively. Its capital, Heris, is 65 kms far from Tabriz.

Table 1: Heris tourist attractions

Saplagh Tourist Area	Located 3 kms far from Heris, covered with lovely and wild flowering shrubs owning a breathtaking waterfall
Tourist route of Heris-Meshkin Shahr	A unique landscape due to being surrounded by Arasbaran and Meshkin Shahr Jungles
Darband Harzeh Varz Tourist Area	A mountainous area with a river, meadow, spring and waterfall as well as medicinal herbs
Shirlan Area	Located 16 kms far from the capital, having an abundance of beautiful vegetation and edible mushrooms as well as a magnificent waterfall
Darband Guravan waterfall okuz Daghi and Su-galkhan Springs	Located in Guravan Village 5 kms off Heris Having refreshing and light water desirable for kidney patients
Hovzli Castle	Located in Esmaeil Kandi Village, dates back to the 6 th or 7 th century and registered amongst the national works of Iran in 1385
Ay Gala- see	Located 1 kms off the south east of Shirlan Village, registered amongst the national works of Iran in 2006
Dozdeh Baghir Zarnagh Hill	Dates back to the Bronze Age at the first millennium B.C. and registered amongst the national works of Iran in 2006
Damirchi Hill Sheikh Eshagh Tomb	Dates back to the Iron Age to Achaemenid Era Located in Khanqah Village whose architecture dates back to Safavid Era and registered amongst the national works of Iran in 2008
Souvenir (Fatir)	An important factor along with the others to attracting tourists
Handicraft (Haris carpet)	Of high quality and globally recognized, and registered amongst the national works of Iran

MATERIALS AND METHODS

Methodology

It is a descriptive-analytical research with an applied aim. Data gathering was carried out through library centers and field observations followed by the best tourism criterion identification using TOPSIS model. TOPSIS model: This method was first proposed by Hwang and Yoon to choose among multiple alternatives in multi criteria decision makings. During this model, m alternatives are evaluated by n indices. According to this model, the chosen alternative has to be the closest to the positive ideal solution (the best possible state, A*) and the farthest from the negative ideal solution (the worst possible state, A⁻). It is presumed that the desirability of each index is constantly rising or falling in the way that the best

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value of each index indicates positive ideal while the negative ideal is identified by the worst value. Moreover, the indexes are independent from each other (Vali, 2006).

RESULTS AND DISCUSSION

Results

Land shape and height are highly effective in the kinds of ecotourism activity (landscape, accessibility etc.). Based on the indexes defined in the table, the maps of the areas suitable for mountaineering, hiking, winter sports and ecotourism were prepared.

Table 2: The indexes used to combine the information layers in each tourism activity

Activity	Index
Mountaineering	slope over 20%- height more than 1800 meters
Hiking	Slope between 20% and 70%- height between 1800 ms and 2500 ms- all land uses excluding cliffs
Winter sports	Slope between 20% and 70%- height more than 2300 ms- direction from 180 to 360 degrees
Ecotourism	Temperature higher than 0 degrees- slope between 2% and 50%- height between 1200 ms and 2100 ms- all land uses excluding civil and industrial- in all climates
Star observation	Height less than 2100 ms- 6 kms far from cities- humidity lower than 38%- dust less than 40%

Mountaineering

Land slope is considered one of the factors influencing mountaineering activities of ecotourism. Low slope prevents hillsides from being washed and makes them more resistible against erosion which, in turn, leads to a suitable deep soil and, as a result, picturesque landscapes with desirable vegetation. On the other hand, low slope leaves negative effects on some ecotourism activities such as mountaineering and winter sports. Due to the fact that Heris is located in a mountainous area with numerous summits, mountaineering is highly popular in this region. Mountaineering is known as sport tourism taken by tourists to get exercise and hold competitions.

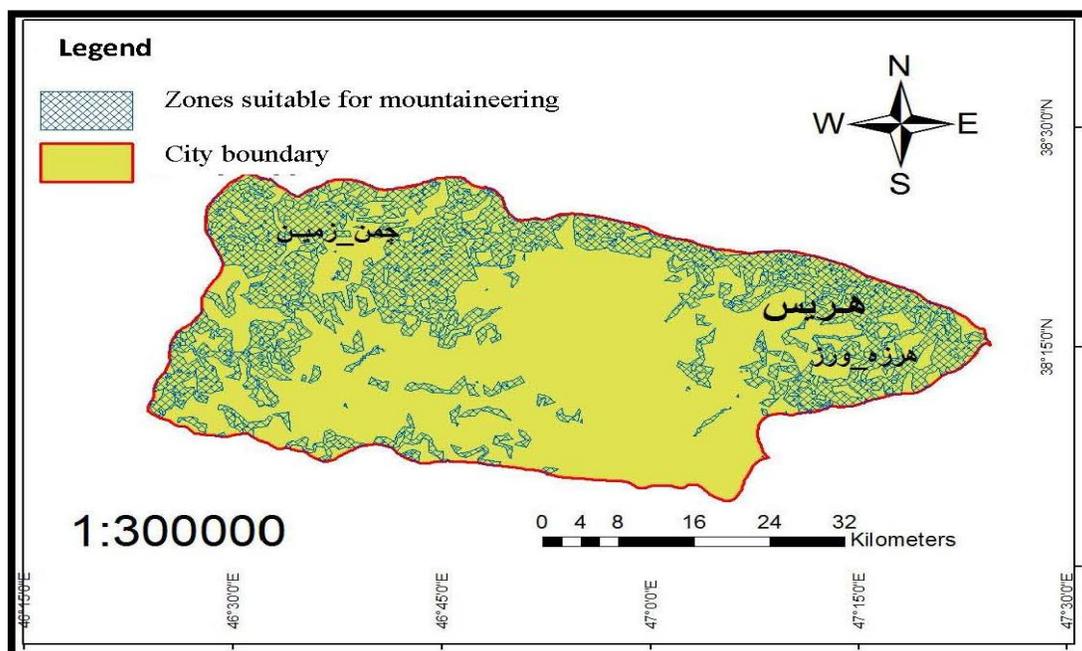


Figure 2: The map of the zones suitable for mountaineering in Heris

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Suitable Zones for Hiking

Hiking needs to be taken at heights within reach of all who desire to go sightseeing or walking in such places. Based on the factors in Table 2, the areas suitable for hiking are zoned. The areas suitable for hiking and enjoying natural landscapes are shown in Figure 3.

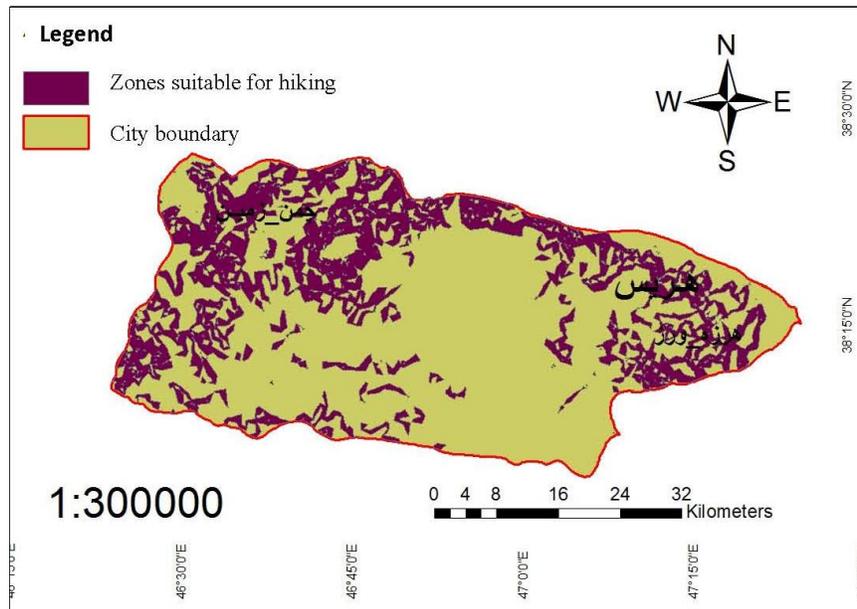


Figure 3: The map of the zones suitable for hiking in Heris

Suitable Zones for Winter Sports (Skiing and Snow Climbing)

Based on the indexes shown in Table 2, the zones located in both northwestern and eastern parts of Heris are suitable for winter sports due to having high snow falls and desirable slope.

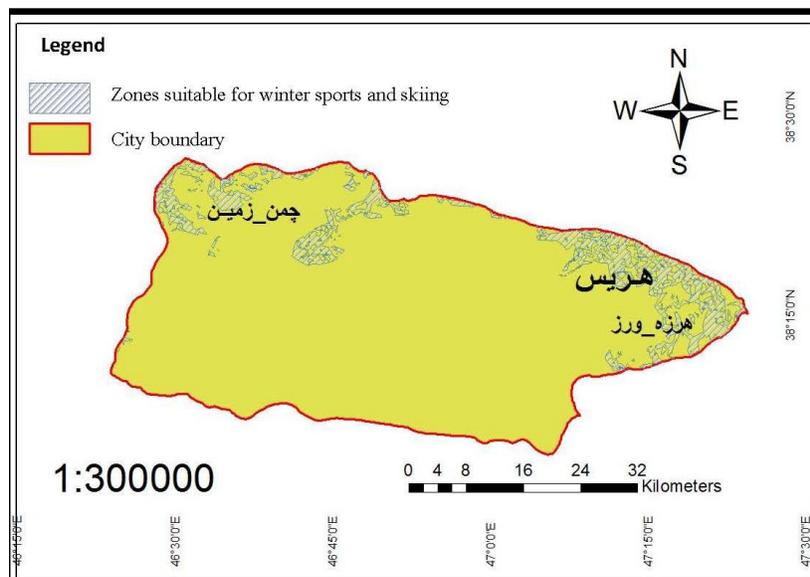


Figure 4: The map of the zones suitable for winter sports (skiing and snow climbing) in Heris
[PERSIAN WORDS USED...REPLACE THEM WITH ENGLISH WORDS]

Identification of the Zones Suitable for Ecotourism

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As the indexes included in Table 2 indicate, the zones having fine vegetation, brilliant landscapes and river are considered suitable for ecotourism.

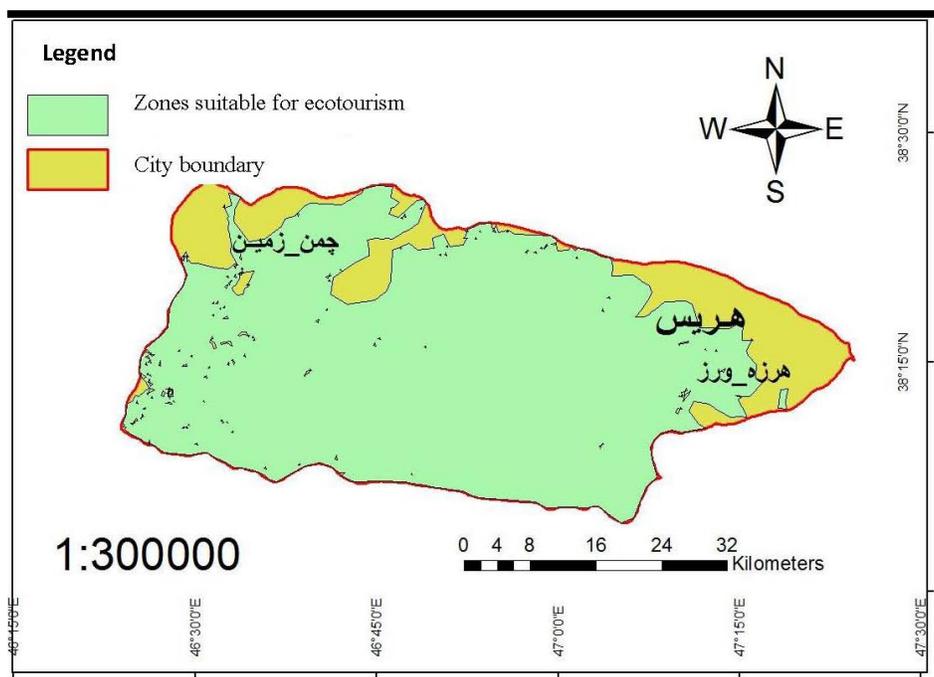


Figure 5: The map of the zones suitable for ecotourism in Heris
[PERSIAN WORDS USED...REPLACE THEM WITH ENGLISH WORDS]

Rural Tourism

Criteria a village must meet in order to be chosen as a tourist destination include utilities such as water, power, telephone lines and gas; housing units more than 50; accessibility network quality; having historical and cultural attractions; local authorities readiness level to host tourists; cooperatives; capacity to cater to tourists for more than 6 months a year; communication ways; health; people’s positive attitude amongst others.

Heris tourism-target villages holding natural, historical and religious attractions symbolize local traditions and customs.

As it can be noticed from the maps shown, Harzeh Varz and Chaman Zamin taking advantage of spectacular nature along with the rich history and culture are the villages that offer numerous potentials to tourists.

Tourism Activities Rating

TOPSIS model was taken to rate tourism activities based on marketing and environmental indexes.

Table 3: Decision making matrix

Index	Amenities Quality	Investment Attraction Capacity	Accessibility	General View	Professional Tour Guide	Security
<i>Ecotourism</i>	5	5	6	6	4	6
<i>Skiing</i>	7	7	7	5	4	6
<i>Hiking</i>	4	3	5	3	4	6
<i>Mountaineering</i>	3	2	4	3	3	5
<i>Star observation</i>	4	5	4	5	3	5
<i>Rural tourism</i>	6	7	6	7	5	6
	151	161	178	153	91	194

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Rating based on marketing indexes

Initial matrix formation

The initial matrix was evaluated based on the assessed criteria and experts' views

Decision-making matrix normalization

The following equation was used to normalize the decision. Thus, Table 4 is formed.

$$n_{ij} = \frac{a_{ij}}{\sqrt{\sum_{i=1}^n a_{ij}^2}}$$

Table 4: Index-scoring matrix

Index	Amenities Quality	Investment Attraction Capacity	Accessibility	General View	Professional Tour Guide	Security
<i>Ecotourism</i>	0.407	0.394	0.450	0.485	0.419	0.431
<i>Skiing</i>	0.570	0.552	0.525	0.404	0.419	0.431
<i>Hiking</i>	0.326	0.236	0.375	0.243	0.419	0.431
<i>Mountaineering</i>	0.244	0.158	0.300	0.243	0.314	0.359
<i>Star observation</i>	0.326	0.394	0.300	0.404	0.314	0.359
<i>Rural tourism</i>	0.488	0.552	0.450	0.566	0.524	0.431

Weight determination of the normalized matrix using the Shannon entropy method

The weights of each index can be determined by applying entropy method based on dispersion of indexes values. Entropy method can be employed for weights determination provided that the data of a decision-making matrix is clearly identified. The higher the dispersion of an index, the higher importance it assumes.

Once the decision-making matrix is quantified, it will be normalized as following:

$$P_{ij} = \frac{r_v}{\sum_{i=1}^m r_v}$$

The number of the activities of interest was as many as 6; thus, k value will be determined using the following equation:

$$k = \frac{1}{\ln(m)}$$

Table 5: Weighted normalized matrix

Index	Amenities Quality	Investment Attraction Capacity	Accessibility	General View	Professional Tour Guide	Security
<i>Ecotourism</i>	0.1114	0.2254	0.06935	0.26965	0.10071	0.07786
<i>Skiing</i>	0.1560	0.3155	0.08091	0.22471	0.10071	0.07786
<i>Hiking</i>	0.0891	0.1352	0.05779	0.13482	0.10071	0.07786
<i>Mountaineering</i>	0.0668	0.0902	0.04623	0.13482	0.07553	0.06488
<i>Star observation</i>	0.0891	0.2254	0.04623	0.22471	0.07553	0.06488
<i>Rural tourism</i>	0.1337	0.3155	0.06935	0.31459	0.12588	0.07786

Deviation degree of the information related to each index was obtained from its entropy value determined by the following equation followed by weight determination of each index:

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$$E_j = -k \sum_{i=1}^m [P_{ij} * \ln P_{ij}]$$

Weighted normalized matrix computation

To compute the weighted normalized matrix, it needs to be multiplied by $w_n * n$ matrix whose elements of the main diagonal are the weights of the criteria and the other elements equal zero.

Determination of positive and negative ideal solutions for each criterion

using the two following equations, 2 virtual alternatives as the best and worst solutions are determined.

Positive and negative ideal points are shown in the table:

Positive ideal alternative

$$d_i^+ = \sqrt{\sum_{j=1}^n (v_{ij} - v_{j \max})^2}$$

Negative ideal alternative

$$d_i^- = \sqrt{\sum_{j=1}^n (v_{ij} - v_{j \min})^2}$$

Table 6: Determination of positive and negative ideal solutions

max	0.1560	0.3155	0.08091	0.31459	0.12588	0.07786
min	0.0668	0.0902	0.04623	0.13482	0.07553	0.06488

Table 7: The distance from positive and negative ideal solutions

d Value	d +	d-
Tourism Activities		
<i>Ecotourism</i>	0.1136	0.1995
<i>Skiing</i>	0.0933	0.2624
<i>Hiking</i>	0.2655	0.0589
<i>Mountaineering</i>	0.3082	0.0000
<i>Star observation</i>	0.1568	0.1639
<i>Rural tourism</i>	0.0251	0.3014

Determination of the relative closeness to the alternatives and alternatives rating

Here, each alternative’s relative closeness to the ideal solution is determined and shown in the table.

$$CL_i = \frac{d_i^-}{d_i^- + d_i^+}$$

Table 8: Tourism activities rating based on the marketing indexes

CLi values	Tourism Activities
0.637174	Ecotourism
0.737579	Skiing
0.18149	Hiking
0	Mountaineering
0.511095	Star observation
0.923112	Rural tourism

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Scoring and Rating based on Environmental Indexes

The indexes of interest in this model were chosen regarding some environmental indexes.

Table 9: Decision-making matrix of the environmental indexes

Index	Slope	Direction	Height	Vegetation	Climate	Temperature
Ecotourism	6	4	6	9	9	7
Skiing	6	9	9	4	8	9
Hiking	5	4	5	7	8	7
Mountaineering	6	4	9	5	7	9
Star observation	5	2	2	4	8	7
Rural tourism	4	5	5	9	8	7

Table 10: Tourism activities rating regarding environmental indexes

CLi values	Tourism Activities
0.404674	Ecotourism
0.29088	Skiing
0.464912	Hiking
0.314667	Mountaineering
0.322793	Star observation
0.709131	Rural tourism

Conclusion

Each study serves to knowledge improvement or decision making. This study aimed to assess the potential of Heris tourist attractions with the emphasis on new markets introduction using TOPSIS model. The area of interest holds natural capacities and resources including abundant water, fertile soil, climate conditions suitable for tourism and vegetation as well as natural and human-made tourist attractions. It also takes advantage of relatively rich pastures, plant diversification such as medicinal herbs and agricultural and livestock products along with well-known souvenirs and handicrafts all of which can improve economic condition of the region and lead to sustainable development through proper marketing provided that appropriate planning and marketing are deployed in order to take full advantage of these resources. In this study, 6 tourism activities including ecotourism, skiing, hiking, mountaineering, star observation and rural tourism were rated based on 6 indexes consisting of slope, direction, height, vegetation, climate and temperature. According to the results, rural tourism scored 0.709131 out of 1 ranked as the first tourism priority of the city followed by hiking, ecotourism, star observation, mountaineering and skiing scored 0.464912, 0.404674, 0.322793, 0.314667 and 0.19088, respectively. The results also indicated that regarding the marketing indexes including security, professional tour guide, general view, accessibility, investment attraction capacity and amenities quality, rural tourism scored 0.923112 is rated the first priority.

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