

The Determining of Tourism Climate Calendar of Chosen Geomorphosites in Kermanshah Province by Pereira and TCI index

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Abstract

Geomorphologic landscape is one of the new concept that by emphasizing on determining particular and valuable tourism places have come in to geographical and tourism literature . in recent article by using Pereira method and TCI index filed studies, capacity and determining of tourism climate calendar have been studied Geomorphosites in Kermanshah province. In this survey , by research method from both scientific and supplement scale determined Geomorphologic values of Geomorphosite landscape in tourism view and then its managing value derived from total protection and use scale . from adding of two main scales is derived final score of geomorphosites value .the value of each geomorphosites will be played noticeable role in planning adaptable to potentials region geomorphosites and also civil investing to attract tourist. results show that geomorphologic values of Bisutoon geosite and managing values of Taghbuayan geosite having most potentials and totally Bisutoon mountain geosite having best geosite to attract and tourism planning and developing this industry and finally evolving economics in studied region based on used method. According to results of tourism climate index TCI, in May, June, July, September ,October having ideal condition and high rank that showing best months climatology for presenting tourist.

Key words: Geomorphotourism , Geomorphosites , Pereira, TCI , Kermanshah province.

Introduction

Geosite, geomorphosites are two new concepts in tourism studies that by emphasizing on determining particular and valuable tourism places have come in to geographical and tourism literature(Ielenicz. 2009,7).during last decades have been established various efforts for assessing quality of geomorphologic heritages and tourism geomorphosites capacity in different aspects . (Reynard et al ,2007,148).so, geomorphosites or special geomorphologic places means superficial shapes that for understanding and using tourism having particular values in scientific ,ecological, cultural ,aesthetical and economical scopes . (Pereira et al ,2007,159). In second view of, geomorphosites are defined in cultural landscapes that geomorphosites has been defined besides cultural and educational factors . Panizza (2001) believed that cross point of views are summarized in third view and pointed that ,environment , history ,philosophy and culture should be incorporated in studying and assessing geomorphosites ,by this method protected regions have heritage and historical

value.(comanescu et al ,2011,1161). Also , Rinard et al (2007)considered to presenting a new method in assessing geomorphosites this method considered to assessing geomorphosites (scientific and supplement value) in blenio vally and lucomagno area in Swiss . results shown that Karstic in two areas having high geomorpho tourism value and both areas derived highest scores. Geotourism is generally defined by its sustainable results: conserving natural areas, educating visitors about sustainability, and benefiting local people (Epler, 2002). It is a holistic approach to sustainable tourism that focuses on all definable points that create an authentic travel experience (Stokes et al., 2003). Geotourism can be one of the most powerful tools for protecting the environment. Geotourism (as a „new“ tourism) is an improvement over mass or „old“ tourism that provides better sector linkages, reduces leakage of benefits from a country, creates local employment, and fosters sustainable development (Khan, 1997). It has been popularly promoted as a means of reconciling conservation of geologic and geomorphologic

phenomena with economic development, particularly in developing countries (Campbell, 2002). There is a rich literature devoted to geotourism (generally by geologists and geomorphologists) by which the attractiveness of many geotourism objects are assessed. Many attributes such as type and age of geological formations (including geomorphological factors and nature influenced formations), geographical location, etc are considered in the assessment process as well as transport accessibility, tourism infrastructures, economic and many other factors (Bruschi and Cendrero, 2005; Bruschi et al., 2011). The related literature allows studying the attractiveness of geosites on the base of "Tourism Supply" and not "Tourism Demand". Due to the lack of enough literature on the base of tourism demand, this research is supposed to be one of the first studies which investigates an adequate modeling tool to establish appropriate priorities on the base of tourism demand. Since prioritization and adequate resource allocation play vital roles in planning, the success of any geotourism project depends to some extent on the success of adequate prioritization and modeling. The prioritization problem can be modeled on the basis of tourism supply and demand issues.

Methodology

After studying and determining geomorphologic characteristics ,geomorphosites by library studies and field studies in studied area and Pereira method , we try to making value of geomorphotourism scales in Kermanshah province . so evaluating capacity of studied geomorphosites conducted by field assessing in several times by authors .in this method , geomorphologic value of geomorphosites derived from adding two scientific and supplement scales and managing value derived from adding protection and use scale. from adding of two main scales is derived final score of geomorphosites value. So, to assess environmental and tourism capacity of studied region ,dividing of studied geomorphosites is conducted .in the following structure of studied method has been studied .

A – determining the scientific value

In Geomorphosites discussion ,we use assessing quality process for determining real value of value and protection need. In field of determining scientific value of geomorphosites used several indexes . in fact , scientific scale of

geomorphosites derived from adding all of the sub indexes in Pereira method .of course, scientific scale of geomorphosites , some indexes having high score than other and depended on factor importance is conducted ranking from 0 to 1 and in some due to low importance from 0 to 0.5.in this scale , it is considered to some scientific studies in studied region , studied phenomenon at national level ,its scarcity in studied region . virginity of geomorphosites ,number of attractive geomorphologic shapes other geological shapes and its value in geomorphology training . (table 1)

Table 1

b- value and supplement scale

in this section is established assessing supplement .that is in geomorphotourism discussion only attraction isn't enough .and in fact ,it should be other attractions besides it that cause to it developing . on the other hand , when tourist spend time in geomorphosites , he / she is interested that visit simultaneously other cultural , historical , and ecological attractions so, attractions are as a free marketer for studied site. in this section ,it is considered to cultural scale , aesthetical and ecological value as a supplement (table 2).

Table 2

c- protection scale

in tourism discussions ,sustainability is one of the important and radical concepts . in fact , mass tourism phenomenon having negative impacts on coasts of tourism country like Spain after 80 decades led to tourism experts has studied sustainability issue . this trait emphasized on that natural sources that is in our control by nature ,it should be stayed for next generation without any damages . (table 3).

Table 3

d- using scale

in using scale ,it is largely focused on accessibility capacity ,visual capacity ,recent and common using of geomorphosites and supporting services . if studied geomorphosite have more supporting services and better services and more accessibility ways , it will have more investing value . (table 4).

Table 4

To study tourism comfort climate index TCI in Kermanshah province by GIS , at first monthly statistics 7 required climatic parameters is derived in synoptic and climatology stations in and out of Kermanshah province and necessary exchanges imposed based on TCI model in data. Then ,distribution map of each parameter for 12 months provided in 2012 .next , by mixing maps in GIS environment based on relation 1,provided distribution map of TCI index for each month in Kermanshah .

$TCI=2[(4*CID)+CIA+(2*P)+(2*S)+W]$
relation 1

Monthly data of climatic elements for 20 year period from 1990 to 2011 associated with meteorological synoptic stations derived in Kermanshah by meteorology organization site .in rare cases that is informational deficiency for a or several climatic element can be revised by averaging method . required elements in tourism climate index selected among all elements and conducted necessary quantitative studies for them . finally , 7 climatic variants called daily average temperature of month ,maximum daily temperature of month ,average and minimum of daily relative humidity of month , number of daily sunny hours, monthly average fall rain , average of speed wind used for measuring minor and major indexes of TCI .

3- introducing of studied region

Kermanshah is located in the west of country and allocated to itself about 4.5 percent of all area in country . this province is located between 33° and 42´ to 35° and 17´ northern altitude and 45° and 24´ to 48° and 6´ eastern longitude of Greenwich .kermanshah from north is in neighbor hood Kurdistan , from south Lorestan , Ilam, from the east Hamedan ,and from the west with Iraq country and has 330k common border with Iraq country . this province has 14 towns ,29 regions ,85 villages. Kermanshah has mountainous moderate climate . and historical and visiting places that included several natural and historical attractions . this province has springs ,mirages and caves like hot water spring , bathroom Tung, Abdi , Hendi abad and seifur ,Niloufar, Yavari ,

Tagh bustan ,khefer ,Noji varan ,ghanbar mirages and shahrbanoo, Asal, mard zan ,Anar caves in Bisutoon heights , Ghori cave in Uramanat jungles, Kavati , Parva ,Asnegran , taileh,roteil ,kelisa ,miravi ,norouzkhani , jojo ,haji, aveh za , kabutar ,seid shahab cavesthat each of them have own special attractions .

4- findings

Assessing Pereira method in capacity and tourism climate of chosen geomorphosites in Kermanshah province . Result of field studies and assessing studied method in Kermanshah shown : According to table (5) ,3 chosen geomorphosites that having numerically differenced with other geomorphosites and as a result derived high score are : Bisutoon geomorphosites with score (15.35)that is considered highest score in all of the sites that derived maximum score of geomorphosites tourism capacities in this method (20 score).in fact , this landscape in all of scales derived highest score among other geomorphosites. So that ,scientific and educational scale 4.67,supplement scale 3.75, use scale 4.93 and protection scale 2(with first score) and in future , possibility planning and tourism developing can be conducted by following issues that mostly are emphasized on sustainability .Taghbustan is at second grade .that derived 13.69 score by site . and like as other case but a little rate undergone changes as a result of tourism developing . two sites having same scores in studied region , are Goor dakhme dukan and Anobaie caves . generally principal of tourism developing and using tourism attractions and virgin natural attractions are typically based on fact that planners provide rather services and tools for using of natural sources .but it is considered long term planning and with empty sustainability in planning of some country. In tourism view , if site has unique characteristics , it will be threatened in case of unsuitable distribution in investing and tourism attraction scopes .tourism flourishing in each geographical place besides negative and positive economical and social consequences having environmental impacts that in case of continuous ,cause to irremediable damages(Azmi et al ,2011:15).therefore , planning for sustainable developing of tourism by controlling and accurate managing of

tourism source is necessary. Primary discussion in recent article is the assessing geomorphosites for its flourishing in tourism developing but generally, in tourism studies, tourism developing, should be formed central part of studies that isn't increased future problems in environmental planning by inaccurate using.

Table 5

Assessing TCI method

After 7 monthly climatic parameters has been assessed in synoptic stations in kermanshah province, necessary changes established based on TCI method and distribution map of parameter data provided for 23 months in province. tourism comfort climatic index in province in January and December is unsuitable. in March and February isn't suitable and in April by starting spring season, high temperature, reducing rain fall and good weather is better condition rather than other months and condition for coming tourist is good in province. in November, climatic condition by starting cold weather is good. in May, June, July, September, October, is ideal condition and high rank and these months are the best time for coming tourist. in August, tourism comfort climate index is the best and very desirable condition.

5- Conclusion

Geotourism or tourism geology is new strategy for explaining geology science and understanding natural sources in each region. that in addition to educational role led to tourism developing and geotourism researchers and interested people attracted by geology attractions and in addition to making economic geological sources cause motivation in other researchers for visiting regions that by compounding geological studies and other practical studies, in addition to advertising tourism and its developing, it is determined economical scientific areas of region. and finally, condition for social developing is suitable. in recent years, regions like Kermanshah due to high tourism scales is as a best place for tourism and attracted a lots of tourists and most visiting happened from tourism attractions due to superficial beauty, historical – cultural value and for spending free time. And is less geotourism attention to region. in studied area, noticeable geomorphosites in tourism view are as following: Taghbustan,

Bisutoon mountain, Ghouri Ghale cave, Gour dakhme and Anoubani nei. It is obvious in assessing that region geomorphosites values due to high scientific scale and educational aspects. in fact, this value affected other parameters. derived low scales resulting from various reasons that it can be generally attributed to lack of recreational facilities and equipments, lack of special organization associated with organizing tourism activities, lack of suitable advertising, difficulty in accessibility to site, ... But tourism planning is changing threats in to opportunities. Kermanshah having various capacities in tourism attraction. so, assessing capacity of tourism sites should be identified based on its goal. Recent study by presenting new method in assessing geomorphotourism capacities in Kermanshah, try to joining tourism and optimum uses and finally sustainable planning. it is hoped that future researches and its researchers pay attention to this fact that assessing isn't end point and sustainability of tourism, is most important issue and concerns of experts. according to results index, Kermanshah during cold months (January, February, March, December) due to falling rain, and also low temperature hasn't suitable condition for tourism. in January, has the worst condition and quality of climatic condition for tourism isn't desirable. also, spring and autumn months (April, May, September, October) are the best condition for tourism and spending free time. In this province, there is negative relation between falling rain, relative humidity and numbers of tourists and visitors, that is by increasing fall rain and humidity is reduced number of visitors. also, between temperature average, number sunny hours and wind and number of tourists is positive relation. in fact, by increasing temperature and sunny hours is increased number of tourists in kermanshah province. so, according to fact that vacation can be important influence on travels and recreation and pleasure time, climatic condition of region is a important factor in choosing destination by tourists. generally, climatic condition, like temperature, falling rain wind, sunny hours and humidity having important impact on yearly tourism in different regions.

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Table 1 : Table of scientific value of tourism landforms (most score 5.5) . Source :Pereira et al (2007).

Scarcity to region	Ra	Virginity of phenomenon	in
1-No phenomenon among first five case	0	1-high damages by human activities	0
2- No phenomenon among first three case	25/.	2-damaging of main shapes by natural factors	0.25
3-as a case three phenomenon	0.50	3-damadad in case of main shapes	0.50
4-as a very important phenomenon	0.75	4-a little damage in case of staying main shapes	0.75
5-phenomeno providing exceptional happening	1	5-no seeing damage in shapes	1
Educational capacity of geomorphologic processes	Re	Number of attractive geomorphologic shapes	Dv
1-limited Visual value and without educational attractions	0	1	0
2- limited Visual value and with limited attractions	0.38	2	0.33
3-suitable case of process and problem for non expert explaining	0.67	3	0.67
4- suitable case of process and a suitable educational source	1	More than 3	1
Other geological shapes with heritage value	Ge	Scarcity of views at national level	Rn
1-no other geology shapes	0	1-more than 5 cases at national level	0
2- other geology shapes without associated with geomorphology	0.17	2- distance between 3 to 5 cases at national level	0.17

3- other geology shapes associated with geomorphology	0.33	3- 3cases at national level	0.33
4-other geomorphosite with heritage value	0.50	4-scariety and unique at national level	0.50
Scientific study in geomorphology magazine	kn	2-medium:seminars and scientific articles	0.25
1-there aren't	0	3-high:international articles and thesis	0.50

Table 2: assessing value and supplement scale (most score 4.5). source :Pereira et al (2007)

Cultural scale	cult	Ecological scale	Eco
1-no cultural shapes or damaged	0	1-without concerning to biologic shapes	0
2-cultural shapes without associated with land forms	0.25	2-plant and animal attractions	0.38
3—suitable cultural shapes without associated with land forms	0.50	3-best places in visiting plant and animal attractions	0.75
4- non material cultural shapes associated with land forms	0.75	4-very important of geomorphologic for ecosystem	1.50
5- material cultural shapes associated with land forms	1		
6- suitable cultural shapes associated with land forms	1.25		
7-primitive human land forms with high cultural contact	1.5		

Table 3 : assessing protection value (most score 3). Source: Pereira et al(2007)

Virginty	In	Vulnerability in case of using site	vu
1-high damages as a result of human activities	.	1-high Vulnerability by possibility national wasting and destroying	.
2-damages as a result of natural activities	0.25	2-in case of using , possibility damages to geomorphologic shapes	0.50
3-gamaged by keeping geomorphologic main shapes	0.50	3- in case of using , possibility damages to non geomorphologic shapes	1
4-less damages by keeping geomorphologic main shapes	0.75	4- only damage in accessibility networks(transportation)	1.50
5- without damage and keeping geomorphologic main shapes	1	5-in case of using no possibility in Vulnerability	2

Table 4:assessing using scale (most score 7) Source :Pereira et al (2007)

Accessibility rate	Ac	Visible	vi
1-having difficult accessibility and its accessibility by special tools	0	1-difficult visibility or non visibility in all of region	0
2-only by truck and 500m by foot	0.21	2-visibility by special tools(artificial light , rope)	0.30
3-by truck and more than 500m by foot	0.43	3- limitation in seeing by trees and short and small plants	0.60

4- by truck and less than 500m by foot	0.64	4- suitable visibility for more seeing but little need for movement	0.90
5- by truck and less than 500m by foot	0.86	5-it is suitable for all of shapes associated with geomorphologic	1.20
6-- by truck and less than 100m by foot	1.07	6- it is best for all of shapes associated with geomorphologic	1.50
7-by bus in minor roads and less than 50 by feet	1.29	Equipments and supporting services	Eq
8- by bus in major roads and less than 50 by feet	1.50	1-24 hour supporting services and distance more than 5k with attraction	.
Recent using of geomorphologic attractions	Gu	2-24 hour supporting services and distance between 5 to 10k with attraction	0.50
1-without developing and also it isn't used	0.33	3-24 hour supporting services and distance less than 5k with attraction	0.75
2- without developing but it is used	0.33	4-24 hour supporting services and distance less than 5k with attraction.	1
3-developed and used as a landscape site	0.67	Protection rules and using limitations	Lp
4-developed and used as a geomorphsites or geosite	1	1-by complete protection and using source	.
Recent using from cultural natural attractions	Ou	2-by protection and limited using	0.33
1-Without other attractions , without developed use	.	3- without protection and without limited using	0.67
2- with other attractions but without developing and using	0.33	4- with protection and without limited using with very little limitation in using	1
3- with other attractions , and developing and using	0.67		
4- with other attractions and developing and using	1		

Table 5 :final assessing of geomorphosites by Pereira method in Kermanshah province

total	Managing values		Geomorphologic value		Studied geomorphosites in Kermanshah province	
	Protection scale highest score 3	Use scale highest score 7	supplement scale highest score 7	Scientific scale highest score 7		
13.69	1.50	5.57	2.62	4	Taghbusta	1
15.35	2	4.93	3.75	4.67	Bissutoon	2
	2	2.85	3.12	3.58	Ghori cave	3
9.19	3	2.64	2	1.55	Goor dahkme	4
9.49	3	2.94	2	1.55	Anubani nei	5