

Evaluate the Role Retail Climate in Tourism Planning (Case study: Ghoochan and Gonabad)

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ABSTRACT

Among the factors that influence human life whether in the past and today due to technological advancements plays climate conditions an important role. Tourism forms a part of human life needs and has made remarkable progress in the world today. Therefore knowledge about potential environmental and atmospheric conditions in different geographical areas of country plays an important role any planning. This study has tried by Using Indexes of Terjung climate and Ology climate chart, Indexes of effective temperature, Index of Equivalent temperature and wind cooling indicator, Comfort and lack of comfort of different two sub-climates (Ghoochan & Gonabad) assess during years based on monthly data from synoptic stations Ghoochan & Gonabad in a period of 20 years. Research method is descriptive - analytical based on field and a library method. The final results of this study indicate that Eco conditions is changing in Ghoochan from Adverse conditions very cool to warm conditions in different seasons of year. However, the months of May, June and September the best months in terms of desirability for the exploitation of eco-tourism during day is in the area. An Eco condition is changing in Gonabad from Adverse conditions very cool to hot conditions in different seasons of year. However, the months of June, July, August and September the best months in terms of desirability for the exploitation of eco-tourism is during day in the area. in terms of separation night and day terms of climatic comfort to be said that Everyday circumstances, in the months of May and October have favorable conditions of Ghoochan. Months June, July, August, September and some are considered desirable months and Climatic conditions at night Ghoochan, All months have very cool and cold conditions and There is no pleasant month. While daily conditions of Gonabad Months of April and October have favorable conditions and months of May and September are considered relatively pleasant. Climatic biological conditions in night Gonabad, July and August have the relative comfort conditions for tourists' functions.

KEY WORDS: Comfort Climate, Tourism, Climatic Indicators, Ghoochan, Gonabad.

INTRODUCTION

Expansion operating range and expansion scope of human thinking has been causes that human behavior and natural discovered relationships in the form of large number and variety of science and each in its particular framework are examined and analyzed. There is small number of human activities that simultaneously and in terms of academic attention economists, geographers, environmental scientists, psychologists and also scientists have been attracted to the management and political science (Saghae, 2011, p12).

Tourism with climate as one of the most important parameters of natural environment is over of all related and dependent. The phenomenon of tourism and tourist destinations is due to seasonal climatic variation (Scott and other, 2007, 898). One of the important conditions for relaxation and comfort is pleasant climate (Tacken, 1989, 321). Thus, understanding the local climate in the study of tourism prospects is increasingly important (Martin, 2005, 574). Many of tourism activities depend on weather conditions and natural resources and most tourists are set a high flexibility for your holiday destination, It is important for the tourism sector particularly that also effects of climate change determine in two different locations i.e. places of origin and of destination (Martin and Soria, 2009, 170). Purpose of comfort conditions, conditions collection is that in terms of temperature at least for 80 percent of the people be appropriate, or in other words human in that situation does not feel cold and not feeling the heat. Some researchers believe more accurate interpretation in terms of thermal neutrality. Because human does not feel heat and cold and topical discomfort associated with climate issues (Mohammadi, 2007, p119).

Human climatic environment comfort is dependent on thermal balance of their body with surrounding environment. This balance is dependent on combination of factors such as: characteristics of surrounding air, the person's physical activity, temperature, relative humidity, sunshine and wind. Equilibrium state of climatic

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environment comfort occur when create temperature equilibrium between absorbed and excreted by the skin and the environment and cause remaining balance of body internal temperature in 37 degrees centigrade (Kasmae, 1989, p26). General climate of can be as a local index for region's attractiveness and also is affecting on the period's activities, structure and function and comfort of the tourists therefore tourism and leisure time will be affected significantly from the climatic conditions in different regions (Ranjbar, 1999, p146).

Among tourism and effective factors in enjoyment of environmental comfort include topography, geographical. Therefore, according to that understanding of this human reaction against different climatic conditions and climatic factors is essential location, culture, environmental powers, climate such as them. Climate conditions play an important role. Therefore, according to that understanding human reaction against climatic different conditions and climatic factors is essential. in the present study has tried by using environmental indicators related to human climatology in relation with tourism have been studied two different sub-climates Ghoochan and Gonabad city, effectiveness and interactions consequences of climate and tourism and thermal comfort of above areas study and analyze in different months of year based on the typology of tourism. This provides Suitable conditions for recognition of tourist season. it help us in recognizing of tourism patterns and accept tourism based on sub climate.

LITERATURE REVIEW

Climatic division i.e. separation and grouping areas with similar climatic characteristics have long been noted Human. In about 500 BC Greek Paramenides ,the first division of the world's climate as classification of solar climate and in about 140 BC Hipparchus provide named climata climatic zones based on desire to solar radiation (Jafarpour, 1992, 260). History of environmental effects on human functions returns to very long past, so that many scientists in the past, due to weather certain had an emphasis on human activities that are including Aristotle, Huntington, Montesquieu of mid-nineteenth century were presented several methods of climatic classification which is usually based on some main factors temperature and rainfall or combination of both and was approved with instances of vegetation cover but the necessity of applying climatic criteria for suitable space designed for human and necessity minimizing energy consumption for heating and cooling especially from the mid-twentieth century lead to devised methods to study of human climate that can achieve through them to a kind of grouped of environmental Climate. Most of these methods pointed to Terjung (1966) and Ology (1973) Brazol (1954) Mahoney (1973) G. A. Atkinson (1953) Givoni (1969) (Terjung 1966, Ology 1973, Mahoney 1973, razjoian 1986 kaviani & Givoni 1997).

For measuring conditions comfort and convenience human, many researchers have investigated and several models such as Ology (1973), Givoni (1997), Mahoney, Terjung, etc have used in this field. In recent years in this relationship, Terjung (1996) Consider climatic division of America and Jahanbakhsh (1998) about Environmental climate of Tabriz, kaviani (1993) about provide maps of summer and winter Bioclimatic, razjoian (1988) for Anzali bazrpash & et al (1999) In a paper discussed to evaluate the thermal comfort in free environment for ecotourism in the city Babolsar by using index of biological climatic Terjung, Mahoney and Baker and concluded that the city Babolsar from May to late October have Optimal conditions for tourism in nature and free environment terms of thermal comfort .However, in two months, July and August due to increasing relative temperature and high humidity is governed humid condition in this city, but with this wind direction were tolerable conditions ,becomes to optimum conditions. Rasti (1994) in him thesis discussed climate of Chaharmahal Bakhtiari province in order to develop tourism by using two different methods Terjung and effective temperature and concludes that Chaharmahal Bakhtiari province with the features of its place - location, natural - ecological and climatic offers appropriate structure for achieving active and sustainable tourism in any season in the form of short-term and medium term and in this aspect have a good position . This capability is especially significant in ecotourism. Hen & others (2008) by using Terjung index were investigated Climatic conditions for Chongqing tourism .Results showed that the distribution of climate and comfort for tourism in Chongqing is basically consistent with actual conditions.

Studied area

Studied area is Two Ghoochan and Gonabad city from Khorasan province. Ghoochan is one of the highest cities in the northeastern Khorasan, its east length is 58 degree and 30 minutes , its north width is 37 degrees 7 minutes. Gonabad city with an area of about 10,287 square kilometers Terms of position in longitude 58 degrees 41 minutes And is located in latitude 34 degrees 21 minutes and its neighboring city is in north Kashmar & Torbatheidarieh, west Ferdos, East Khaf , South Ghaen.

The annual average temperature is 12 / 8 ° C in Ghoochan. Studied mean monthly temperature in the city Ghoochan indicate that January generally is the coldest and July is warmest months of the year respectively and in most months of the year is provided temperature suitable conditions for visiting the cities and tourist hub of the

province. The annual average temperature is 16/8 ° C in Gonabad. The study of average monthly temperature in city Gonabad indicate that January generally is the coldest and July is warmest months of the year respectively and in most months of the year is provided temperature suitable conditions for visiting the cities and tourist hub of the province. Figure 1 and Figure 2 shows the monthly temperature changes in this city.

Figure 1. Monthly temperature changes Ghoochan city (Period 1989-2010)

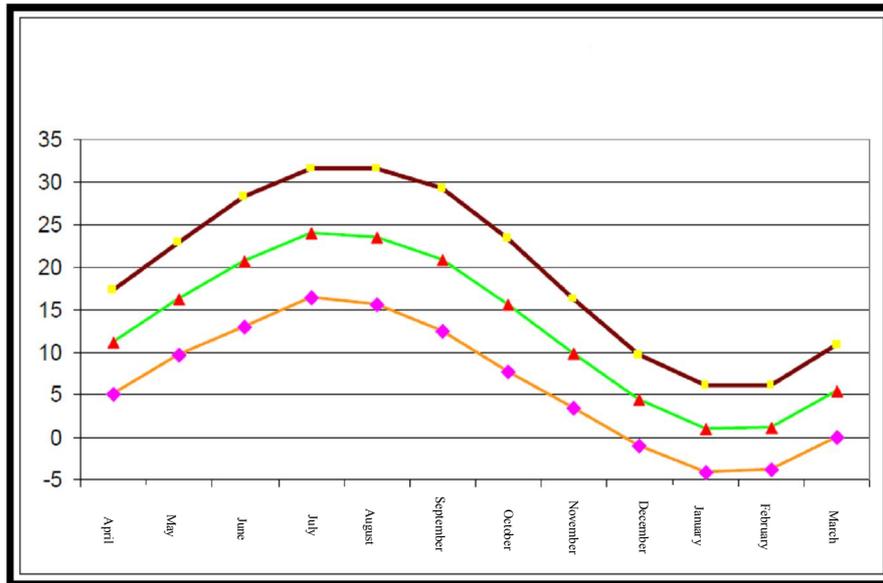
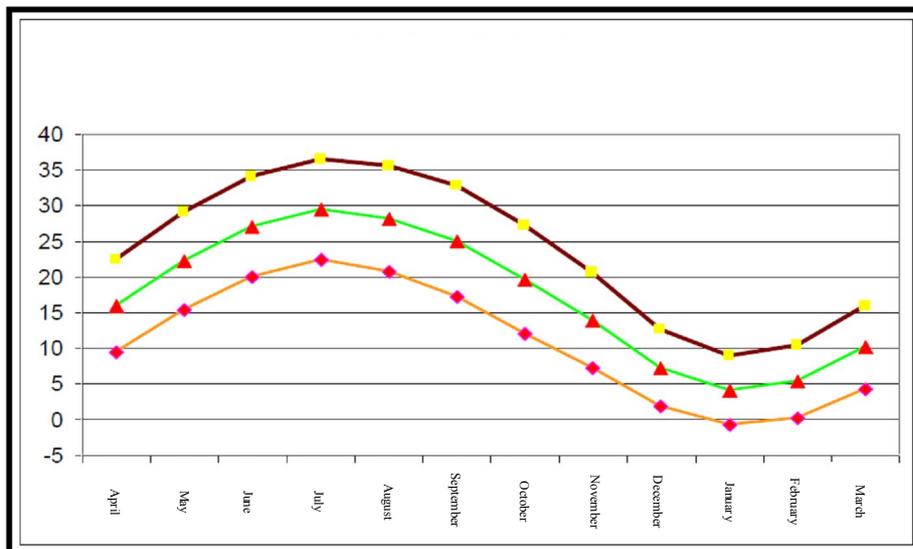


Figure 2. Monthly temperature changes Gonabad city (Period 1989-2010)



Average annual rainfall In Ghoochan is 292/1 mm , Average seasonal rainfall in the spring in the city Ghoochan is 35/4 ,In the summer2/5, In fall 21/4, and in winter is 43/3 mm. Average monthly rainfall during the winter months In December Ghoochan 28/5, February 44/7, And In March 56/7 mm meters that in beginning of spring gradually reduced rainfalls it and its value reduced in April to 49/8, in May 40/7 and June 15/8 mm. Average annual rainfall In Gonabad is 157/3 mm. Average seasonal rainfall in the spring in the city Gonabad is 12/2 ,In the summer0/03, In fall 7/8, And in winter is 25/1 mm. Average monthly rainfall during the winter months In December Gonabad 21/2, February 25/7, And In March 28/4 mm meters that in beginning of spring gradually

reduced rainfalls it and its value reduced in April to 21/5, in May 14/6 and June 0/7 mm. Chart 3 and Chart 4 show Monthly average rainfall in the city of Gonabad and Ghoochan.

Figure 3. Average monthly rainfall in the city Ghoochan (Period 1989-2010)

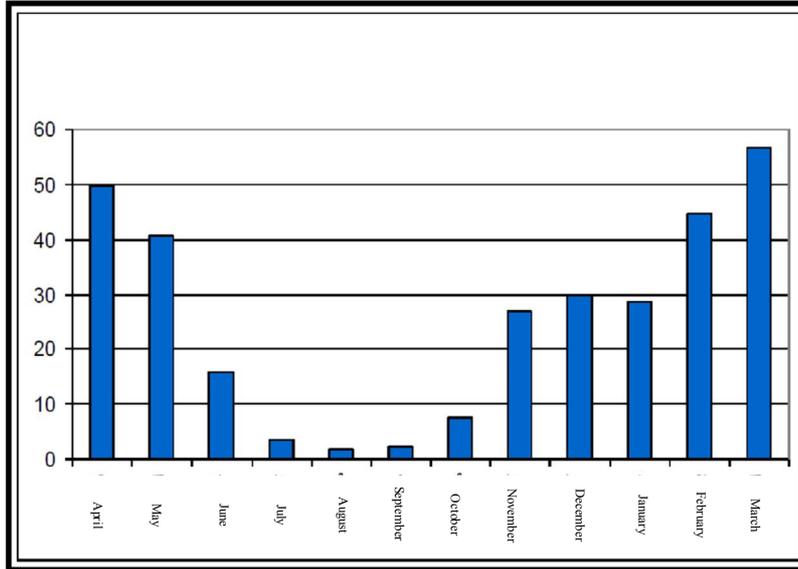
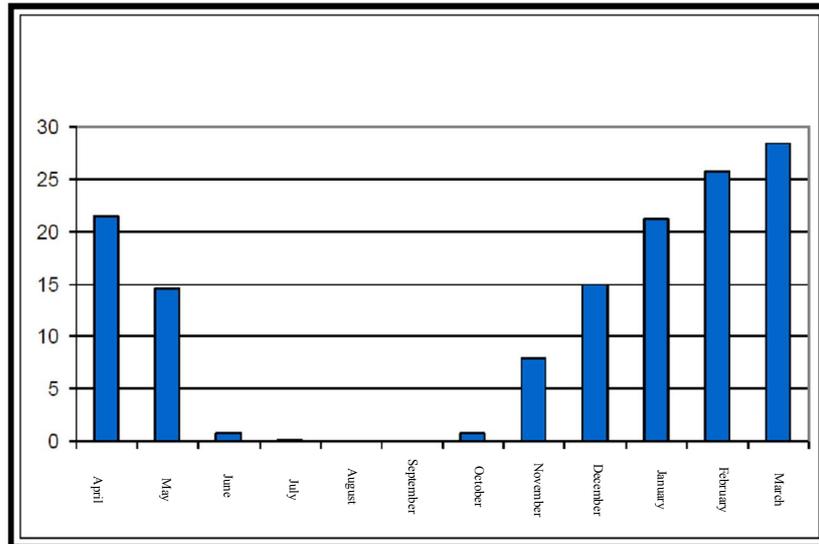


Figure 4. Average monthly rainfall in the city Gonabad (Period 1989-2010)



RESEARCH METHOD

In this study to investigate comfort conditions and lack of comfort in Gonabad and Ghoochan components relative humidity, mean maximum temperature, mean minimum temperature, mean maximum relative humidity, mean minimum relative humidity, average temperature, average rainfall, sunshine hours, wind, water vapor pressure from synoptic stations Gonabad city in a period from 20 years were obtained from meteorological organization site and were analyzed. Continued method Terjung, comfort coefficient and the cooling power of wind, the equivalent temperature index, effective temperature indicators and Ology climate chart and using Excel software and bioclimata and comfort conditions and lack of comfort in different months during the study period (1389-1368), were determined and calculated.

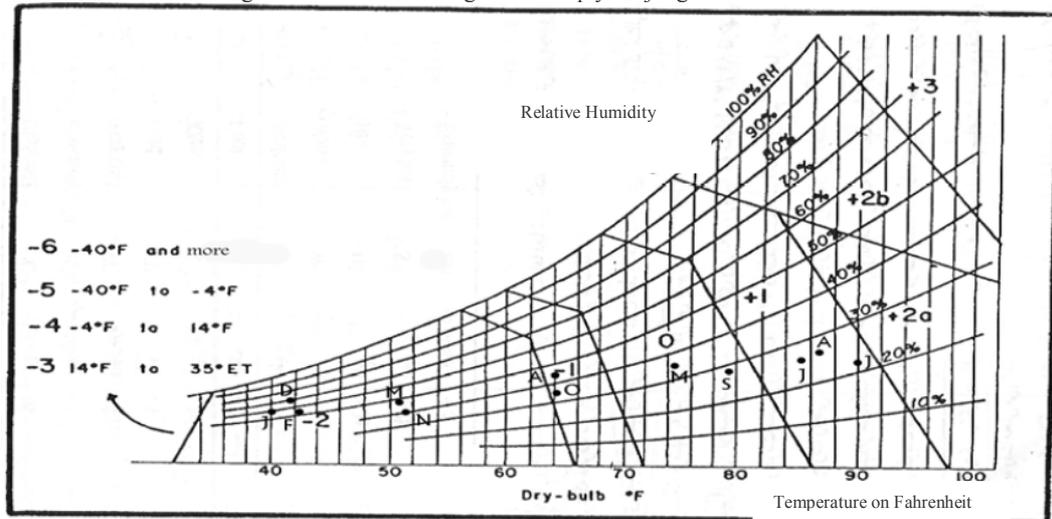
Analysis of Results

According to the data and comparative study of two sub-climates in relation to tourism in provincial-scale, each of the indexes separately was measured in studied range of city Gonabad and Ghoochan.

Terjung -climate Index model

Terjung index is based on the comfort coefficient and impact factor cooling wind. For determining comfort coefficients has been used comfort coefficients range model, in terms of Terjung in Figure 5. This chart in the fact shows the level of comfort achieved that human in conditions different combinations of temperature and normal humidity and conditions, Means average coverage and lack of physical activity (Terjung, 1968:119-123,141). In this graph curved lines represents the relative humidity and horizontal curve represents the temperature is based on Fahrenheit and exposure temperature and humidity conditions in each location reflects its climate months.

Figure 5. Coefficients range from simply Terjung



According to application of Terjung index and this index were calculated according to meteorological data two study areas that the results are given in Table 1. The results indicate that in the region Ghoochan is located eight months of the year, Namely months October, November, December, January, February, March, April and May in the range -2 which represents the situation is very cool. However, the months of June, July, August and September is in the range of 0 that is representing desired physiological and from suitable climatic conditions for exploitation of tourism with suitable conditions human comfort in terms of Terjung index.

Table 1. Evaluation of human comfort station comfort Ghoochan & gonabad coefficient Terjung

Month	January	February	March	April	may	June	July	August	September	October	November	December
Ghoochan Comfort coefficient	-2	-2	-2	-2	0	0	0	0	-2	-2	-2	-2
	very cool	very cool	very cool	very cool	pleasant	pleasant	pleasant	pleasant	very cool	very cool	very cool	very cool
Gonabad Comfort coefficient	-2	-2	-2	0	0	+1	+1	0	-1	-2	-2	-2
	very cool	very cool	very cool	pleasant	pleasant	hot	hot	pleasant	cool	very cool	very cool	very cool

Source: authors calculations, 2011.

In the region Gonabad 6 months of year, Means months of November, December, January, February, March and April were in the range (-2) That show very cool. In July and August are located in the range (+1) have hot conditions. In October, That is in range (-1) indicates to cool conditions. Months May, June and September are in the range (0) that has pleasant condition.

Ology-Climate Index Model

This index was introduced in the sixty decade by Ology that in it was determined comfort area Specifications. Later he completed its chart and showed that comfort area can expanded by using from cooling Properties effects of wind and sun heat property (Razjoian, 1988, 37). From this index for determining comfort area from average maximum temperature daily and minimum relative humidity and from average minimum temperature is used for the night and the mean maximum relative humidity that temperature is in the vertical axis and on the horizontal axis is relative humidity and the intersection this two axes are the comfort area. This index physical comfort conditions specified in relation to surrounding climatic conditions ;also is determines the type of climate in different regions .However, based on culture and region of living area is relative and different.

Investigated of coefficient comfort in Ghoochan stations with Ology method shows that Climatic comfort is low at night of all months and is dominant cold conditions and humid Cold. Ology comfort coefficient for the day at this station indicate that May and October months have climatic comfort and Months June, July, August and September were in above comfort and there is warm and dry conditions and the remaining months of the year were in areas of low Comfort. The results are shown in Table 2.

Table 2. Evaluation of human comfort station comfort factor Ghoochan with Ology

Month	January	February	March	April	May	June	July	August	September	October	November	December
Ology night Comfort coefficient	Low humid Cold	Low humid Cold	Low humid Cold	Low humid Cold	Low humid Cold	Low Cold	Low Cold	Low humid Cold	Low humid Cold	Low humid Cold	Low humid Cold	Low Comfort humid Cold
Ology day Comfort coefficient	Low Comfort humid Cold	Low Comfort Cold	Low Comfort Cold	Comfort	above Comfort Warm dry	Comfort	Low Comfort dry Cold	Low Comfort Cold	Low Comfort humid Cold			

Source: authors calculations, 2011.

Investigated Comfort coefficient of Gonabad region by Ology method shows that Nights years in all months except July, there is low comfort condition , humid Cold or dry cold and July is in comfort border and has climatic Comfort . investigated Comfort coefficient Gonabad region of day with this method shows that Months December, January, February and March are in Low Comfort and the months of May, June, July, August, September and November are in above Comfort and the months of April and October in Comfort region and have good weather. The results are shown in Table 3.

Table 3. Evaluation of human comfort station comfort factor Gonabad with Ology

Month	January	February	March	April	May	June	July	August	September	October	November	December
Ology night Comfort coefficie	Low Comfort humid Cold	Low Comfort humid Cold	Low Comfort humid Cold	Low Comfort Cold	Low Comfort Cold dry	comfort Border	Low Comfort Cold dry	Low Comfort Cold dry	Low Comfort Cold dry	Low Comfort humid Cold	Low Comfort humid Cold	Low Comfort humid Cold
Ology day Comfort coefficient	Low Comfort Cold	Low Comfort Cold dry	Comfort	above Comfort Warm dry	Comfort	above Comfort Warm dry	Low Comfort Cold	Low Comfort Cold				

Source: authors calculations, 2011.

Effective temperature comfort measure Model

Effective temperature includes air temperature slow and saturated that can existence radiation have the same effect that has desired air (Berger, 1989). For determining the effective temperature from desired stations is used Misnard relation according to following formula.

$$ET=T-0.4(T-10) (1-RH/100)$$

That in it ET = effective temperature, T temperature (C) and RH (%) is relative humidity. In above relation T in terms of degrees Celsius and RH is relative humidity in terms of percentage. Based on presented Formulation and existing data from meteorological stations study regions in relation to effect temperature index was studied that results obtained from this calculations shows in Tables 4 and 5 studied city ,separately.

Table 4. Evaluation of human comfort station comfort factor Ghoochan with coefficient Effective

Month	January	February	March	April	May	June	July	August	September	October	November	December
Effective temperature coefficient	2/06	5/99	11/02	15/24	18/4	20/75	20/28	18/28	14/35	9/91	5/09	2/08
Comfort Index	Very cool	Very cool	Very cool	Very cool	Comfort	Comfort	Comfort	Comfort	Very cool	Very cool	Very cool	Very cool

Source: authors calculations, 2011.

Table 5. Evaluation of human comfort station comfort factor Gonabad with coefficient Effective

ماه	January	February	March	April	May	June	July	August	September	October	November	December
Effective temperature coefficient	6/03	10/08	14/6	18/9	21/9	23/4	22/4	20/3	16/9	12/9	7/7	4/9
Comfort Index	Very cool	Very cool	Very cool	Comfort	Comfort	Warm	warm	Comfort	cool	Very cool	Very cool	Very cool

Source: authors calculations, 2011.

Investigated climate data in Ghoochan station with effective temperature index shows that summer seasons and June month has climatic comfort and the remaining months of years have very cool condition. Based on effective temperature index in station Gonabad in months of May and June and September is the climatic Comfort and also October has relatively conditions of favorable and cooling. July and August are Warm and the remaining months of the year is cold.

Wind Chill Index (WCI)

This index does determine the effect of temperatures on humans in winter. These indexes are used in low and very low temperatures and high wind speeds and provides better results. This index is obtained from the following equation.

$$WCI = (10 \text{ SQRT } (v) + 10/45-v) (33-t) 1/163$$

In the meantime Table 6 shows relation thermal sensation index of human body when wearing clothing.

Table 6. Thresholds determined for the cooling of the wind

Extreme heat	Over 2326
Frozen	From 1628/2 to 2326
cold	From 930/4 to 1628/2
cool	From 581/5 to 930/4
Comfort	From 232/6 to 581/5
warm	From 116/3 to 232/6
Hot	From 58/3 to 116/3
Very hot	Lower 58/3

According to coefficients obtained of this index in Ghoochan Months of May, June, July and August are the climatic comfort winter and November is cold And March, April, September and October is cooling. In Gonabad April, May, August and September have climatic Comfort. And months of June and July is warm. November, December and January are cold And February, March and April is cool.

Equivalent Temperature Index

Model of equivalent temperature evaluated temperature Normal effects on living organisms in relation to air temperature and water steam pressure. Tek index is defined as temperature that must have air; According to constant pressure of the air if all its vapor is compressed.

$$Tek=t+1/5e$$

T = temperature

E = water vapor pressure

Investigated human comfort coefficient in these stations by using this model shows that Months of May, June, July, August Ghoochan have climatic comfort and months of April and September is slightly cool. In terms of human comfort seems suitable. Winter months and November have Cold weather and are established disturbing conditions based on above mentioned indicators. Gonabad in the months April, May, July and August have the equilibrium temperature. March, September and October is a little cool. In June the weather is hot and humid and the remaining months of the year is cold.

Conclusions and Suggestions

Tourism is one of the forms of leisure which is a function of two variables, time and place; there is different styles and variety of leisure and tourism according to these two variables. From dimensions of time can be divided to short term, medium term and long term. However in terms of place can be divided to short, medium and far for them that there is a direct relationship between them. From this perspective to activate each of the forms is required planning. The results of this study indicated that for planning and development of tourism, one of very important and affecting variable is Climate and functionality related its tourism activities in different geographical regions. In this project to measure the comfort level of eco for tourism planning have been used from various indicators. Research findings show that analysis obtained from Terjung climate indicator considering the climatic elements, particularly temperature and relative humidity with the conditions of both regions had a higher compliance then respectively, Effective temperature comfort, wind cooling index, equivalent temperature index and finally are Ology index.

Final results of this study indicate that Climatic Biology conditions is changing in the Ghoochan from adverse conditions of very cool, with warm conditions in different seasons .However, the months of June, July, August and September the best seasons in terms of desirability eco conditions for the exploitation of tourism is in the area during the day. A Climatic condition is changing in Gonabad from adverse conditions very cool to hot conditions in different seasons of year. However, the months of June, July, August and September the best months in terms of desirability for the exploitation of eco-tourism is during day in the area. However, the months of June, July, August and September the best months in terms of desirability for the exploitation of eco-tourism is during day in the area. in terms of separation night and day terms of climatic comfort to be said that Everyday circumstances, in the months of May and October have favorable conditions of Ghoochan .Months June, July, August, September and some are considered desirable months and Climatic biological conditions at night Ghoochan ,All months have very cool and cold conditions and There is no pleasant month. While daily conditions of Gonabad Months of April and October have favorable conditions and months of May and September are considered relatively pleasant .Climatic biological conditions in night Gonabad, July and August have the relative comfort conditions for tourists’ functions.

Table 7. Combined indexes results of desirable Physiological comfort in Ghoochan

Equivalent temperature Index	Wind Chill Index	Effective temperature comfort	شاخص اولگی	Terjung Index	Index
comfort	comfort	comfort	comfort	comfort	Year comfort area
June, July, August, September	June, July, August, September	June, July, August, September	May, October	June, July, August, September	

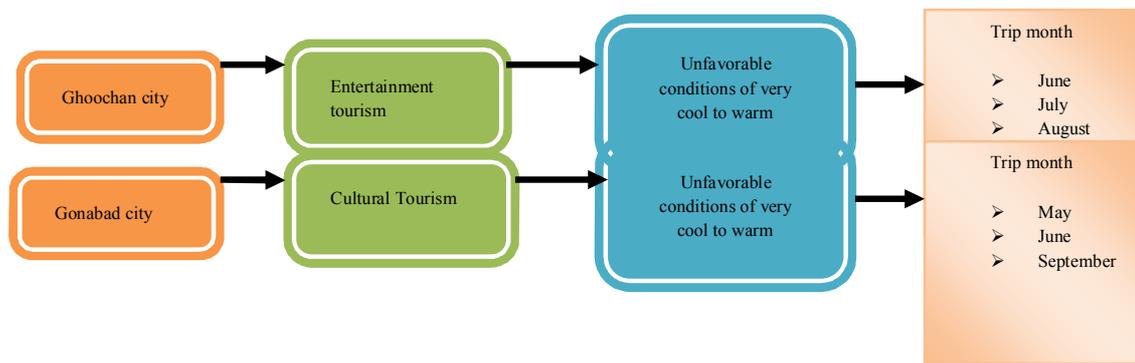
Source: authors calculations, 2011.

Table 8. Combined indexes results of desirable Physiological comfort in Gonabad

Index	Terjung Index	Ology Index	Effective temperature comfort	Wind Chill Index	Equivalent temperature Index
Year comfort area	comfort	Relatively pleasant(warm)	comfort	comfort	comfort
	May, June, September	July and August	April, October	May, June, September	May, June, September and October

Source: authors calculations, 2011.

Due to seasonal tourism and tourist Typology city of Gonabad and Ghoochan which includes historical Tourism product with cultural approach and also natural Tourism with entertainment tourism approach. In relation to city Gonabad, Market demand for tourism in this region be marketing especially in the spring months and also May and June, September and October.



Historical Tours in the two time peaks high potential have in shaping to appropriate tourism experience. In relation to Ghoochan city travel time from late June to early October due to rising air temperatures and summer holidays is the best time to attract tourists from entertainment tourism demand market particularly in regional and national scale. In this area Takes shaped entertainment tourism Tours from Population centers around destination Ghoochan city.

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