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## DETERMINATION OF THERMAL TOURISM POTENTIAL IN KARAHAYIT, DENIZLI: A STUDY ON LOCAL TOURISTS<sup>45</sup>

Cennet ŞANLI<sup>46</sup>

Hasan KARA<sup>47</sup>

### Abstract

Karahayıt is located in Turkey's southwest within the borders of Denizli. It is one of the rapidly growing tourism centers with its proximity to Denizli province and Pamukkale, a world-famous tourism center located in the region, as well as its hot water, thermal springs, healing mud, and "Red Water" which has spread out of the country in recent years. In this study, the thermal tourism potential of Karahayıt (Denizli) and the tourists' views about thermal tourism were evaluated. In the questionnaire, which was outlined according to the screening model, the general screening was carried out in two dimensions. The first one is the documentary screening model on the determination of natural and human elements that constitute the thermal tourism potential of Karahayıt research area. The second dimension, on the other hand, is the questionnaire conducted with 150 samples (voluntarily) participating in the study from the local tourist population visiting Karahayıt. In this scope, the related literature and the questionnaire developed by Çetin (2010) were used as the data collection tools. In addition, field studies, field inspections, and interviews were conducted with the locals to obtain the research data. The data obtained from the related literature, field studies and field inspections were examined using descriptive analysis method, while statistical techniques were used in the analysis of the survey data. As a result of the study, it is seen that Karahayıt thermal field has an important potential in terms of thermal tourism. According to the data obtained from the local tourists, the majority (70%) take into account the characteristics of thermal water and the advice the relatives / friends in choosing the facility; they come to Karahayıt because they believe that thermal is beneficial to health (42%), thinks that they are treated rheumatism (28.7%) and joint disorder (13.3%), they are satisfied with the thermal facility (58%) and advice thermal facility which they stayed (55%). However, more than half of the local tourists (62%) believe that the promotion of the region was not sufficient, the social activities carried out in thermal facilities were limited (58%) and the infrastructure in the thermal facilities was insufficient (54%). In Karahayıt, it is necessary to build high quality thermal facilities and to create new areas and activities for recreation. By this way, the region will become more attractive, the satisfaction level of the visitors will increase and at the same time the people of the region will be able to earn more.

**Keywords:** Thermal Tourism, Karahayıt, Denizli, Local Tourists

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<sup>45</sup>A pilot application was conducted on the validity of the questionnaire used as a data collection tool in this study. The relevant study was presented at the 3rd International Research Congress on Social Sciences (September 5-8, 2018) in Skopje.

<sup>46</sup>**Correspondence to:** Asst. Prof., Pamukkale University, Faculty of Arts and Sciences, Department of Geography, Kınıklı Campus, 20160, Denizli, TURKEY., [csanli@pau.edu.tr](mailto:csanli@pau.edu.tr)

<sup>47</sup>Prof., Pamukkale University, Faculty of Arts and Sciences, Department of Geography, Kınıklı Campus, 20160, Denizli, TURKEY., [hasankara@pau.edu.tr](mailto:hasankara@pau.edu.tr)

## INTRODUCTION

The concept of tourism originates from the French word “tourisme” (Özçağlar, 2000: 162). Tourism refers to travel activities for pleasure (Doğanay and Zaman, 2016: 1). Akat defines tourism as the services consisting of social, cultural and human activities to refresh the physical and mental health and to meet the rehabilitation needs of individuals in the rapidly increasing industrialization and urbanization (Akat, 2000: 3). These services are generally classified in line with the participants' objectives, number, age, socio-economic status, and the locations visited. The tourism types according to the aims of the participants include congress tourism, golf tourism, sports tourism, adventure tourism, cultural tourism, eco-tourism, youth tourism and health tourism (Doğanay and Zaman, 2016: 6).

Thermal tourism is a kind of health tourism which takes place in the climatic conditions of a region where the healing water, mud, and steam, which are released from the surface in a natural way and contain the useful minerals (Öztürk and Yazicioğlu, 2002: 183). This type of tourism has come to the fore as a multifaceted type of tourism that provides the transportation, accommodation and hospitality requirements of tourists for the use of cold and hot mineral waters for drinking and external applications for health purposes (Doğaner, 2001: 74; Bulut and Girgin, 2001: 61). 12-month availability, high occupancy in the facilities during the accommodation and treatment process that leads to high levels of employment, easy integration with other alternative tourism types, human health-improving activities in thermal facilities, as well as fun and recreational opportunities have been instrumental in making thermal tourism a multi-faceted sector (Göçmen, 2008: 1-2).

Information on the use of thermal waters dates back to prehistoric times. In the prehistoric period, thermal spring remains that belonged to the Hittites and Phrygians are evidence that hot water was used for treatment purposes (Unutmaz, 1994). Studies carried out in this field suggest Haymana in Ankara, Aşağı Abbas in Bolu, Karakurt in Kırşehir, Bulamaçlı thermal spring in Çiçekdağı, Sard in Manisa and Pamukkale in Denizli were used during the Hittite period, while Gazlıgöl thermal spring in Afyon and Çardak in Sivrihisar were operational during Phrygian period (Sandıkçı, 2008). It is known that old ruined thermal springs of the Romans and Byzantines were restored during the Turkish Seljuks and later the Ottomans and opened to the public.

Kutahya-Yoncalı, Kırşehir-Karakurt, and Bursa-Çekirge thermal springs and Seljuk and Ottoman baths are examples of these (Doğaner, 2001: 75). Today, the effects of thermal water resources on both patients and healthy individuals are explained scientifically. In this way, thermalism (thermal tourism) has started to gain importance by integrating with other treatment methods in countries such as Germany, Austria, Romania and France. Turkey, on the other hand, is counted amongst the top seven countries in the world in terms of thermal water capacity and ranks first in Europe. (Akdogan and Atyorulmaz, 2018). The fact that Turkey is located on the Alpine Orogenic belt is the main origin of these rich resources. According to the Mineral Research and Exploration Institute (MTA) data and studies conducted by various researchers, there are more than 2.000 healing water resources and 1.300 thermal sources in Turkey (Doğanay and Zaman, 2016: 264).

The geothermal area of Denizli province in the west of Turkey is one of these resources. Geothermal resources in and around Denizli include Pamukkale, Kızıldere, Çardak, Karahayıt, Buldan Efe, Gölemezli, Yenice Çizmeli, Bölmekaya, Tekke baths, Babacık and Demirtaş (Yılmaz-Kolancı, 2017). In this study, Karahayıt was examined as a research area with a geographical perspective.

Tourism, which has become one of the fastest growing sectors in the world economy, is seen as an important tool of economic development especially for developing countries including Turkey. In industrialized countries, people participate in thermal tourism activities in order to protect their health, spend quality time, and perform different activities (Çetin, 2010). For this reason, various studies have been carried out in the literature about Turkey's thermal tourism potential in recent years (Sandal and Karademir, 2015; Boekstein, 2014; Çetin, 2011; Öcal, 2011; Cooper-Erfurt, 2010; Lee, Ou, and Huang, 2009; Lee and King, 2008; Şahin, 2007; Ünlü, 1998). However, a study has not been found in the sample of local tourists in the Karahayıt thermal field. Therefore, the aim of this study is to evaluate the thermal tourism potential of Karahayıt in line with the opinions of the local tourists coming to the region. The findings of the research will contribute to the literature; also it will be an important data source for local governments in terms of investments to be made in the region. In addition, in accordance with the opinions of domestic or foreign tourists on tourism policies in the Karahayıt, it is predicted that this study may be a determinant in the development plans for thermal sites at international level.

## METHOD

The study was carried out via the screening model as it is aimed to evaluate the thermal tourism potential of Karahayit, Denizli according to the views of local tourists coming to the region. The screening model is a suitable model for a study that aims to describe a past or existing situation as it is (Karasar, 2006). Descriptive screening models are divided into two parts as general screening and case study screening. The general screening models are screening methods in a universe of a large number of elements in the whole of the universe or in a series of related case studies in order to reach a general idea about the universe (Karasar, 2006). In this study, general screening was carried out in two dimensions, meaning the documentary screening was used in order to determine the natural and human elements that form the thermal tourism potential of Karahayit research area, while the survey was conducted with a questionnaire consisting of 150 local tourists (voluntarily) visiting Karahayit. In this respect, the related literature and the questionnaire developed by Çetin (2010) were used as data collection tools. Legal permission was obtained from the author regarding the use of the questionnaire. The survey consists of a total of 37 items, but 7 items were excluded from the questionnaire following the preliminary application. In the final survey which consisting of 30 questions, domestic tourists are asked about “demographic characteristics”, “why they came to Karahayit”, “whose advice they came to the region”, “what they think about the promotion of Karahayit thermal”, “which diseases treated in Karahayit thermal”, “what affects them in the selection of thermal facilities in the region” “Which social activities they participated in Karahayit”, “possibility to recommend Karahayit thermal.” The results were expressed as frequency (f) and percentage (%) by using statistical techniques in analyzing the data. In addition, field studies, field observations, and interviews with the locals were also used to obtain the findings of the study.

## FINDINGS

This chapter is reviewed under two headings. "Research Area Findings" covers Karahayit's physical and human potential obtained as a result of the document analysis method and field studies, while "Survey Data Findings" features an analysis of the survey data of 150 local tourists who participated in the study voluntarily.

### RESEARCH AREA FINDINGS

In this study, Karahayit was considered as a research area. It is known that the name Karahayit comes from the chaste tree - hayit in Turkish- (*Vitex Agnus-castus* L.), a species of the deadnettle family (Lamiaceae) (Yılmaz-Kolancı, 2017). In his detailed work on the place names in Denizli, Kurgun states that Karahayit originates from the name of the plant (Kurgun, 2002: 126). Karahayit is located within the borders of the Pamukkale district, 25 km north of Denizli city center and 5 km north of the world-famous Pamukkale Travertines (Figure 1).

The Denizli basin is 7-28 km wide and 62 km long in the NW-SE direction (Koçyiğit, 2005) and is located in an area covered by Pliocene formations and surrounded by Menderes massif metamorphic rocks forming a high topography (Özgüler, Turgay and Şahin, 1982-83). Therefore, the metamorphic rocks of the Menderes Massif and the sedimentary rocks composed of terrestrial sediments catches the eye in Karahayit and the surrounding region (Figure 2). While the metamorphic rocks of the Menderes Massif form the basis of the stratigraphic succession, the young continental sediments of sedimentary rocks serve as the cover rock of the geothermal system.

It can easily be said that Karahayit and its close surroundings at the intersection point of Alaşehir graben and Büyük Menderes Graben in Western Anatolia are located in an area of very high seismic activity. N-S directional expansion in western Anatolia revealed the normal faults in the NW-SE direction and graben systems extending in these directions (Ketin, 1960). The most important faults surrounding the basin are Pamukkale faults in the north of the basin and Babadağ and Denizli faults in the south (Figure 2). In the vicinity of Karahayit hydro-geologically, Paleozoic and Mesozoic aged marble and limestones and Pliocene-period limestones are found in the ground, young travertines and alluviums on the surface, and different terrestrial deposits belonging to the Pliocene period on the hills in the east (Kutlu and Özgür, 2016: 180).

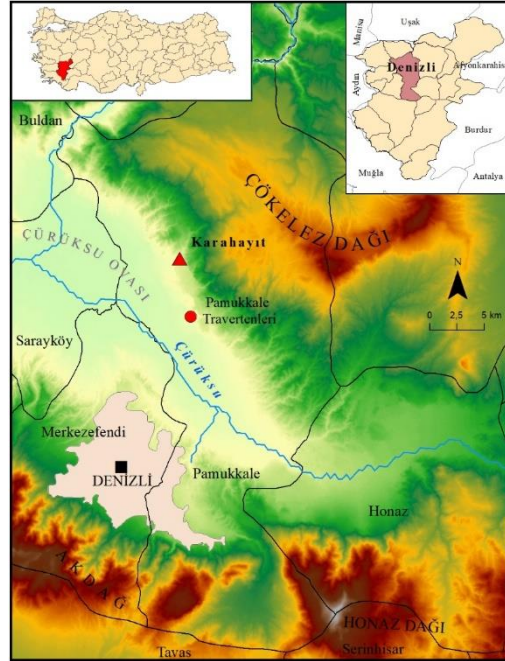


Figure 1: Karahayit's Location Map

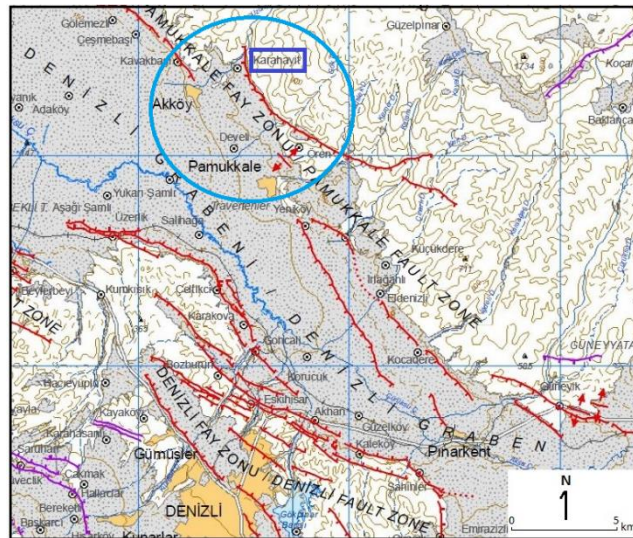


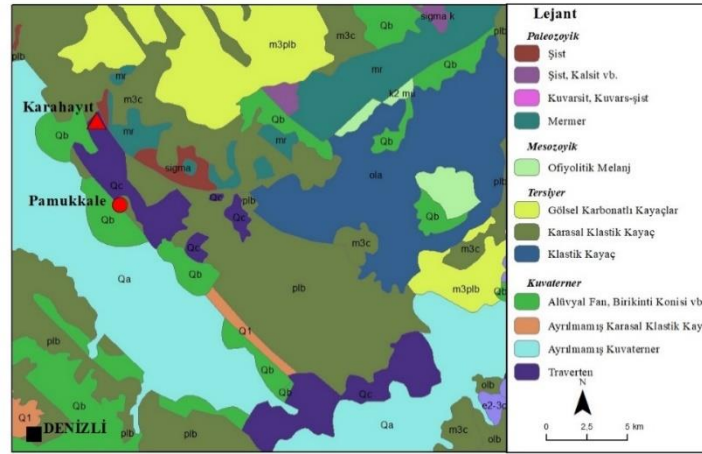
Figure 2: Active Fault Map of Karahayit and its Surroundings

(Taken from MTA General Directorate 1 / 250.000 Scale Turkey Active Fault Map Denizli sheet)

In Karahayit's vicinity, the high relief in the east decreases as moving towards the west, and gradual declines and slopes occur at the places where the step faults are cut. The small streams in the eastern slopes, which have not yet been able to form their beds, disappears by draining the rainwater falling on the slopes and fading on the bottom of the graben. In the east of Karahayit, where valley formation is still in its early stages, small valleys stand out due to slopes. In the middle of the two major fault lines between the graben field in the west and the high hills in the east, the wide plateau surface where Karahayit is located extends.

When the climate characteristics of the research area were evaluated, since there was no meteorological station in Karahayit, the data of the nearest station, Denizli Meteorological Station was used. Due to the fact that Denizli and Karahayit are located

on different sides of the same plain at a distance of 25 km, their climates are very close to each other. Karahayit is located on a south-facing slope at an altitude of 335 meters, 80 meters lower than Denizli.



**Figure 3:** Geological Map of Karahayit and its Surroundings

Monthly average temperatures are at the lowest level with 5.9 °C in January, rising to 27.6°C in July and reaching an average of 16.3°C per year. Temperatures do not fall below 5°C in any month (Table 1), reflecting the characteristics of the Mediterranean climate in terms of warm winters and hot summers.

Months	1	2	3	4	5	6	7	8	9	10	11	12	Yearly
Avg. Temperature (°C)	5.9	7.1	10.2	14.7	19.8	24.7	27.6	27.0	22.5	16.8	11.4	7.6	16.3
Precipitation Rainfall (mm)	91.6	72.3	63.6	53.5	43.0	25.0	13.0	8.3	14.3	35.1	55.6	88.4	563.7

Source: <https://mgm.gov.tr/veridegerlendirme/il-ve-ilceler-istatistik.aspx?k=A&m=DENIZLI>

The lowest precipitation is observed as 8.3 mm in August, while the highest precipitation is recorded as 91.6 mm in January. In the hot months of July, August and September, the summer period is dry with very low rainfall. From October onwards, precipitation increases and reaches its maximum level in winter months such as December, January and February. The typical Mediterranean climate is experienced as the winter is quite rainy (45% of the total annual rainfall) and the summers are dry.

Rich in vegetation, Karahayit is dominated by red pines on the eastern slopes. Chaste tree (hayıt in Turkish), which lends its name to the research area, various types of maize and grass communities are common in the valleys and river beds.

When Karahayit is evaluated in terms of population (Table 2), it is observed that the population is not developed much. Until the 1970s, the population remained very low due to the lack of agricultural land, especially in the other remote villages of Denizli (Belge, 2018). The fact that Pamukkale, which is located about 5 km to the southeast, has a world-famous tourist attraction area has also affected Karahayit. With the hot springs gradually recognized, the village houses in the region began to turn into hostels one by one. Especially with the acceleration of tourism in the summer months, people who came to sell the products they raised from the nearby villages started to pay one-day visits to Karahayit.

At the end of the 1980s, the decision to cancel the highway passing through the center of the Pamukkale travertines and to demolish the hotels that occupied the travertines, some of these hotels started to be built in the Karahayit area. In the 1990-2000 period, there was an increase in the population with Karahayit's municipal organization just like the other 36 administrations in Denizli (Kodal, 2009: 361). However, due to its close proximity to Denizli and the development of its transportation system, operators and employees made day trips and therefore Karahayit could not show the population growth that it deserved.

Karahayit, which had a population of less than 500 until the 1980s, increased to 2,110 people in 1990 and 2,810 in 2000. While the population declined to 2,433 in 2007, the decrease of the population had accelerated since this date, decreasing to 1,010 people in 2015 and increasing once again to 1.266 residents. With the law no. 6360 on November 12, 2012, with Denizli becoming and metropolitan municipality and Pamukkale becoming a district, the municipality status of Karahayit was

abolished. The region was later registered as a settlement connected to Denizli's Pamukkale district. This situation led to a loss of population in Karahayit (Table 2). Another factor in the reduction of the population was the fact that it was close to Denizli, that the owners of the workplace made daily trips and that the new housing areas were limited.

**Table 2: The Change of the Population by Years in Karahayit 1965-2018)**

Year	Male	Female	Total
1965	196	171	340
1970	199	135	334
1975	237	217	454
1980	251	235	486
1985	261	303	564
1990	955	1156	2111
2000	1298	1512	2810
2007	980	1453	2433
2010	476	546	1022
2018	581	685	1266

Source: <https://biruni.tuik.gov.tr/medas/?kn=95&locale=tr>

Karahayit thermal waters, which have high radioactivity, emerge from three main sources. Red, brown, greenish, blue and various colored travertines caused by the mineral oxides in the 40-60 thermal water of the thermal spring, whose flow rate changes from 1 to 75 lt/sec (Table 3), is a natural wonder. The thermal spring is also called "red water" due to its predominant colors of red and brown (<http://www.pamukkale.gov.tr>) (Photo 1 a, b). Ca and Mg as cation, HCO as anion, and a small amount of SO are observed in these waters. It is understood that these waters interact with carbonaceous rocks based on the substances and colors found in them (Dilsiz, 1998).



**Photo 1 (a, b).** Red Water Resources in Karahayit

**Table 3: Chemical Properties of Karahayit Thermal Water**

Spring	Flow	Temperature (°C)	PH	Conductivity	TDS (ppm)
Karahayit Mosque Spring (1971)	-	42	6,26	2730	3019,61
Karahayit Kızıleğen (1940)	1	40	6,02	2720	3155,43
Karahayit Kirmizisu (1980)	2,5	51	-	-	3046
Karahayit Uyuz Spring (1980)	4	61,6	6,2	-	3997,95
Karahayit Spring (1990)	-	53	6,3	4420	-
Karahayit İteroni (2005)	75	50	-	-	-
Richmond Hotel Drilling (2002)	-	46,8	6,19	3000	3079,32
Colossea Hotel Drilling (1999)	-	34	-	-	3098

Source: Taken from Barut et al., 2013 p. 8-10 and rearranged

Nowadays, Karahayit thermal water is used for bathing, drinking water, and mud bath purposes. It has been found that the healing waters of Karahayit, mostly visited by local tourists have positive effects on the liver, biliary tract, kidney, and urinary tract. Karahayit offers different facilities such as apart hotels, motels, and hotels for domestic and foreign tourists. The locals converted their homes into apart hotels and hostels with the opening of spring waters to tourism (Photo 2 a, b, c, d). In the form of home add-ons, they have established a shared pool in the middle or accommodation areas with pools.



Photo 2 (a, b, c, d): Apart Hotels and Hostels in Karahayit Thermal Field

In recent years, with Pamukkale becoming a center of attraction in tourism, eight Tourism Operation certified thermal facilities with 3308-bed capacity have been built in Karahayit, which is located in the immediate vicinity (Table 4), (Photo 3 a, b, c, d).



Photo 3 (a, b, c, d): Hotels in Karahayit Thermal Field

<b>Table 4: Hotels with Tourism Operation Certificate in Karahayit</b>			
Hotels	Stars	Number of Rooms	Number of Beds

1	Colossae Thermal Hotel	5	310	626
2	Polat Thermal Hotel	5	252	504
3	Pam Thermal Hotel	5	236	472
4	Lycus River Thermal Hotel	5	272	544
5	Richmond Pamukkale Hotel	4	315	632
6	Karahayit Doğa Thermal Hotel	5	120	230
7	Herakles Hotel	3	132	264
8	Pamukkale Ece Hotel	3	18	36
<b>Total</b>			<b>1.655</b>	<b>3.308</b>

Source: <http://www.pamukkale.gov.tr/tr/Konaklama-Yeme-Icme/Karahayit-Ksb-Turim-Isletme-Belgeli-Oteller>

In addition, a total of five tourism facilities, including two Cure Centers without tourism certificate, one Physical Therapy and Rehabilitation Center and two thermal hotels, are still under construction. In addition to 8 facilities with Tourism Operation Certificate; 11 facilities with Municipal Certificate and 2267-bed capacity continue to provide services (Table 5).

w	Hotels	Number of Rooms	Number of Beds
1	Ege Apart Hotel	40	100
2	Elit Hotel	26	100
3	Grand Marden Hotel	330	1.077
4	Halıcı Hotel	175	380
5	Kurtur Hotel	30	60
6	Oskar Hotel	45	90
7	Reis Apart Hotel	62	125
8	Termoses Hotel	33	65
9	Topaloğlu Hotel	37	70
10	Şamdan Hotel	34	80
11	Villa Lycus Hotel	60	120
<b>Total</b>		<b>872</b>	<b>2.267</b>

Source: <http://www.pamukkale.gov.tr/tr/Konaklama-Yeme-Icme/-Karahayit-Ksb-Bld-Belgeli-Oteller>

Although there are changes in number in short periods, 106 hostels with 4316 bed capacity in the form of small and large-sized houses and family businesses (Table 6) still operate in Karahayit.

Hostel		Number of Rooms	Number of Beds	Hostel		Number of Rooms	Number of BEds
1	Aca Hostel	12	24	54	Komfort Hostel	35	70
2	Acar 1 Hostel	29	58	55	Kor Hostel	18	50
3	Acar 2 Hostel	12	24	56	Korkmaz Hostel	12	24
4	Akkaya Hostel	20	40	57	Kurhaus Hostel	6	12
5	Albay Hostel	30	60	58	Mert Hostel	16	32
6	Albay Çınar Hostel	45	105	59	Mutlu Hostel	17	34
7	Alis Hostel	12	24	60	Oğuz 1 Hostel	22	44
8	Anıl Hostel	18	36	61	Oğuz 2 Hostel	10	20
9	Asil Hostel	33	66	62	Oğuz 3 Hostel	20	40
10	Azım Hostel	16	32	63	Osman Durmuş 1	8	16
11	Batu Hostel	15	30	64	Osman Durmuş 2	6	12
12	Beyaz Güvercin	4	8	65	Osmanlı Hostel	50	100
13	Bilgiç Hostel	10	20	66	Özdemir Hostel	32	64
14	Çamlık Hostel	15	30	67	Önder Hostel	20	40
15	Çavdar Hostel	20	40	68	Özkan Hostel	29	58
16	Çavuşoğlu Hostel	10	20	69	Özmevlana Hostel	16	32
17	Çıbıkoğlu Hostel	20	44	70	Özyavuz Hostel	10	20
18	Çiçek Hostel	50	130	71	Paşa Hostel	23	46
19	Demir Hostel	24	48	72	Sağiroğlu Hostel	7	14
20	Dilek Hostel	13	26	73	Sağlık Hostel	12	24
21	Durak Hostel	17	34	74	Sapmaz Hostel	18	36
22	Durmuş Hostel	14	28	75	Saray Hostel	12	24
23	Doğa Hostel	14	28	76	Selçuklu Hostel	40	80
24	Ece Hostel	4	8	77	Sinan Hostel	15	30
25	Efe 1 Hostel	14	40	78	Sultan Hostel	35	70
26	Efe 2 Hostel	6	18	79	Şahinler 1 Hostel	16	32
27	Elite Hostel	21	65	80	Şahinler 2 Hostel	16	32
28	Emin Hostel	7	14	81	Şen Hostel	16	32
29	Erdal Hostel	7	14	82	Şifa Hostel	19	38
30	Furkan Hostel	12	24	83	Termotes Hostel	33	66



31	Gözbeyoğlu Hostel	21	63	84	Tikveş Hostel	19	38
32	Gurbet Hostel	20	40	85	Topaloğlu Hostel	29	58
33	Gül Hostel	12	24	86	Turan 1 Hostel	40	80
34	Güneş Hostel	25	50	87	Turan 2 Hostel	15	30
35	Güney Hostel	30	60	88	Uğur Hostel	9	18
36	Hacely Hostel	30	60	89	Ulugut Hostel	30	60
37	Hatipoğlu Hostel	50	100	90	Uzunoğlu Hostel	22	44
38	Haydarkurt Hostel	20	40	91	Ümit 1 Hostel	21	42
39	Hocaoğlu Hostel	14	28	92	Ümit 2 Hostel	10	30
40	Horata 1 Hostel	6	12	93	Villa Yavaş Hostel	13	39
41	Horata 2 Hostel	12	24	94	Vural Hostel	68	136
42	Huzur Hostel	18	36	95	Yağcıoğlu Hostel	12	24
43	İpek Hostel	14	28	96	Yavuz Hostel	10	20
44	İsmail Hostel	9	18	97	Yeşildere Hostel	16	32
45	Kaan Hostel	36	72	98	Yetimoğlu 1 Hostel	10	20
46	Kale Hostel	18	36	99	Yetimoğlu 2 Hostel	17	34
47	Kaltur Hostel	7	14	100	Yetiş 1 Hostel	15	30
48	Karahallı Hostel	33	66	101	Yetiş 2 Hostel	30	60
49	Kardelen Hostel	10	20	102	Yıldırım Hostel	30	80
50	Kardeşler Hostel	12	24	103	Yıldız Hostel	15	30
51	Kaya Hostel	54	128	104	Zafer 1 Hostel	13	26
52	Kiraz 1 Hostel	10	20	105	Zafer 2 Hostel	12	24
53	Kiraz 2 Hostel	11	22	106	Zeybek Hostel	23	46
				<b>Total</b>			
						<b>2.064</b>	<b>4.316</b>

Source: <http://www.pamukkale.gov.tr/tr/Konaklama-Yeme-Icme/Karahayit-Ksb-Pansiyonlar>

A total of 125 different types of facilities in Karahayit have 4,101 rooms and 9,891 beds (Table 7). This small settlement can host 7-8 times of its own population overnight.

Type of Facility	Units	Number of rooms	Number of Beds
Tourism Operation Certified Hotels	8	1165	3308
Municipal Certified Hotels	11	872	2267
Hostels	106	2064	4316
<b>Total</b>	<b>125</b>	<b>4101</b>	<b>9891</b>

The tourism sector has high employment power. Employment opportunities are provided not only for accommodation but also for the sub-sectors supplying goods and services to the tourism sector. The effect of employment increases according to the intensity and development of tourism, while the increasing demand in tourism boosts tourism investments which in turn create new job opportunities and increase the number of new employees in the tourism sector (Manap-Davras and Aktel, 2018). Due to the increasing demand for tourism in Karahayit, an increase is observed in the number of enterprises belonging to nearly thirty different business lines in recent years (Photo 4 a, b, c, d), (Table 8).

Type of Facility	Number	Type of Facility	Number
Hotel and Hostel	110	Car Service	5
Store	47	Turkish Bath	3
Restaurant	40	Shoemaker	3
Textile Products	34	Dry Nuts Seller	3
Housewares & Souvenirs	22	Massage parlor	3
Buffet	20	Swimming pool	3
Drapery and Haberdashery	19	Butcher	2
Coffee shop	18	Pharmacy	2
Grocery	11	Phone Accessory	2
Cafe Bar	10	Package Store	2
Flannel Cake	10	Ice Cream Parlor	1
Patisserie	7	Greengrocer	1
Tea House	6	Florist	1
Pita Lounge	6	Jeweler	1
Barbershop, Hairdresser	6	Fun fair	1
Herbalist	5	Construction material	1
		<b>Total</b>	<b>405</b>

Source: Denizli Metropolitan Municipality



Photo 4 (a, b, c, d): Different Businesses in Karahayit

**SURVEY DATA FINDING**

In line with the aim of the study, gender, age group, occupational and educational status, and monthly average incomes of the participants were determined.

Table 9 shows that 57.3% of the participants are male and 42.7% are female; the majority (56%) are between the ages of 45-64; 33.3% are high school graduates, while 30.0% have associate /university degrees; and 58% have a monthly average income level below TL 1500. 51.3% of the tourists visiting the region are retired and civil servants.

Table 9: Demographic Characteristics of Tourists Participating in the Survey			
Demographic Characteristics		F	%
Age Group	15-24	8	5,3
	25-34	10	6,7
	35-44	25	16,7
	45-54	48	32,0
	55-64	36	24,0
	65 +	23	15,3
	<b>Total</b>	<b>150</b>	<b>100</b>
Occupation	Retired	42	28,0
	Civil Servant	35	23,3
	Housewife	27	18,0
	Self-Employed	20	13,3
	Student	14	9,3
	Worker	9	6,0
	Other	3	2,0
	<b>Total</b>	<b>150</b>	<b>100</b>
Sex	Female	64	42,7
	Male	86	57,3
	<b>Total</b>	<b>150</b>	<b>100</b>
Income Leve (TL)	<900	29	19,3
	901-1500	58	38,7
	1501-2500	35	23,3
	2501-3000	21	14,0
	3001 <	7	4,7
	<b>Total</b>	<b>150</b>	<b>100</b>
Education Status	Illiterate	13	8,7
	Primary School Graduate	25	16,7
	Middle School Graduate	17	11,3
	High School Graduate	50	33,3
	Associate and University Graduate	45	30,0

	<b>Total</b>	<b>150</b>	<b>100</b>
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The tourists participating in the survey were asked about their most important objectives to visit the thermal facilities in Karahayit.

<b>Your Purpose of Visit</b>	<b>f</b>	<b>%</b>
Because it is beneficial to my health	63	42,0
Vacation	27	18,0
Resting	21	14,0
I was transferred by a health institution	19	12,7
I accompanied a relative in need	15	10,0
Other	5	3,3
<b>Total</b>	<b>150</b>	<b>100</b>

Table 10 shows that 42.0% of the tourists believe that thermal spring is beneficial to health; 18% of the tourists have come for holiday and recreation, 12.7% of the tourists are sent by the health institution. The number of tourists arriving without any health problems or any vacation-related purposes, or just as a companion to a relative is 10%.

The tourists participating in the survey were asked upon whose recommendation they chose this thermal facility. Table 11 shows that 46.7% of the tourists participating in the study came to the thermal facility with the recommendation of friends/relatives, while 20.0% had acquired information on the website. 16.7% of the participants stated that they came to the thermal facility with a doctor's recommendation. The number of tourists seeing the place on catalogs, newspapers, and magazines is 3.3%.

<b>Upon Whose Recommendation?</b>	<b>f</b>	<b>%</b>
Family/Relative	70	46,7
Website	30	20,0
Doctor	25	16,7
Radio-Tv	15	10,0
Catalogue	5	3,3
Newspaper and Magazine	3	2,0
Other	2	1,3
<b>Total</b>	<b>150</b>	<b>100</b>

49.3% of the participants stated that the publicity of the region was not done at an adequate level and 12.7% of the participants stated that they were made partially sufficient. However, 38% stated that the publicity was sufficient (Table 12).

<b>Publicity Status</b>	<b>f</b>	<b>%</b>
Sufficient	55	38,0
Insufficient	76	49,3
Partially Sufficient	19	12,7
<b>Total</b>	<b>150</b>	<b>100</b>

The tourists participating in the study were asked how and with whom they came to the thermal facility. Table 13 shows that 28.7% of the tourists came by a private vehicle, 57.3% came by bus, and 14% came with a tour company. While 55.3% of tourists came with their families and 38.0% with friends, it is evident that 6.7% of the respondent chose to participate in tourism activities individually.

<b>Type of Transport</b>	<b>f</b>	<b>%</b>	<b>With Whom</b>	<b>f</b>	<b>%</b>
Private Vehicle	43	28,7	Individual	10	6,7
Bus	86	57,3	Friend	57	38,0
Tour Company	21	14,0	Family	83	55,3
<b>Total</b>	<b>150</b>	<b>100</b>	<b>Total</b>	<b>150</b>	<b>100</b>

The tourists who chose this facility for treatment were asked about their disease. Table 14 shows that 27.3% of the participants did not come due to any inconvenience, and the remaining 72.7% preferred the Karahayit thermal region due to a disease (Table 14). Rheumatic diseases (28.7%), joint diseases (13.3%), skin disorders (11.3%) and gynecological diseases (8.0%) were among the most important diseases that were shown to cause tourists to arrive. They are followed by kidney diseases, stomach diseases, lung and heart diseases. It is noteworthy that the rate of incoming tourists due to psychological diseases is 0.7%.

Type of Disease	f	%
Rheumatic Diseases	43	28,7
Joint Diseases	20	13,3
Skin Disorders	17	11,3
Gynecological Diseases	12	8,0
Kidney Disorders	7	4,7
Stomach Disorders	3	2,0
Lung and Heart Diseases	2	1,3
Psychological Disorders	1	0,7
Others	4	2,7
Those without a disorder	41	27,3
<b>Total</b>	<b>150</b>	<b>100</b>

The tourists participating in the study were asked to evaluate the thermal treatment. Approximately 50.7% of the participants stated that thermal treatment should be carried out together with medical treatment. The rate of tourists who think that thermal treatments are an alternative treatment is about 32.7%. While 11.3% of the participants stated that medical therapy and thermal therapy were different treatments, the rate of tourists (5.3%) who think it should not be mixed with medical treatment was quite low (Table 15).

Evaluation of Treatment	f	%
Alongside medical treatment	76	50,7
As an alternative treatment	49	32,7
As a different treatment	17	11,3
Incomparable to medical treatment	8	5,3
<b>Total</b>	<b>150</b>	<b>100</b>

The tourists participating in the survey were asked about the reasons for choosing the thermal facility. Table 16 lists the reasons why tourists choose this thermal resort. Accordingly, 40% of the tourists took into account the characteristics of thermal water while 30% considered recommendations of relatives / friends. The affordability (12.0%) and the proximity to their residential addresses (6.7%) come to the fore as other factors affecting the thermal facility selection albeit in lower rates than previous options. Health services offered by the facilities (2.0%) and the convenience of the climate (1.3%) hold a considerably small rate in the selection of facilities.

Reasons for Selecting the Facility	f	%
Property of the Thermal Water	60	40,0
Relative/Friend	45	30,0
Affordability	18	12,0
Proximity to Residential Address	10	6,7
Ease of Travel	8	5,3
Health Services Offered	3	2,0
Climatic Convenience	2	1,3
Other	4	2,7
<b>Total</b>	<b>150</b>	<b>100</b>

The tourists participating in the survey were asked how they spend their free time in their thermal facility. Table 17 shows the distribution of tourists' views. Accordingly, 34.7% of the tourists spend their time walking, while 23.3% prefer resting. The number of tourists who read books and newspapers in their time is quite small.

**Table 17: Distribution of Participants' Views on Spending Leisure Time**

Leisure Time Activities	f	%
Walking	52	34,7
Resting	35	23,3
Shopping	31	20,7
Watching TV	11	7,3
Sightseeing	9	6,0
Reading a Book	7	4,7
Reading a Newspaper	5	3,3
<b>Total</b>	<b>150</b>	<b>100</b>

Tourists were asked about their stay in the thermal facility and the number of times they visited the place. Table 18 shows the distribution of tourists' views. Accordingly, approximately 76% of tourists stay in thermal facilities for a maximum of 3 days. This value gives the impression that tourists' main aim is to travel rather than seeking treatment. The percentage of those staying between 4-7 days is 14%, while those staying between 1-2 weeks' amount to only 7.3%.

**Table 18: Tourists' Accommodation Period in the Thermal Facilities**

Accommodation Period	f	%
1 day	15	10
2 days	45	30
3 days	54	36
4-7 days	21	14
8-14 days	11	7,3
More than 15 days	4	2,7
<b>Total</b>	<b>150</b>	<b>100</b>

When tourists were asked how many times they came to the thermal facility, 40.7% stated that they came to Karahayit for the first time. The ratio of those who came twice is 23.3% and the ratio of those visiting the facility for the third time is 36% (Table 19).

**Table 19: How Many Times Participants Have Visited the Thermal Resort**

How many	f	%
First time	61	40,7
Second time	53	23,3
Third time and over	54	36

The tourists participating in the study were asked about their views on the infrastructure of the region. Table 20 shows that 54% of the tourists see the infrastructure of the region as insufficient.

**Table 20: Distribution of Participants' Views on Infrastructure**

Satisfaction Status	f	%	Recommendation Status	f	%	Infrastructure Status	f	%
Yes	87	58,0	Yes	83	55,3	Sufficient	58	38,7
No	36	24,0	No	45	30,0	Insufficient	81	54,0
Partially Agreed	27	18,0	Partially Agreed	22	14,7	Partially Insufficient	11	7,3
<b>Total</b>	<b>150</b>	<b>100</b>	<b>Total</b>	<b>150</b>	<b>100</b>	<b>Total</b>	<b>150</b>	<b>100</b>

## DISCUSSION AND CONCLUSION

As a result of the study, it is seen that the thermal field of Karahayit has an important potential in terms of thermal tourism. Located 25 km away from Denizli city center, Karahayit supports the tourism activities with its climate activities that emerge due to its thermal springs, natural vegetation, and elevation. It is envisaged that the human element in the Karahayit thermal area will create a strong potential in the near future for both the locals and the environment as employment power. In addition, the sub-industries that supply goods and services to the sector will also have momentum in line with this development. This increase observed in accommodation centers in the last decade can be considered as one of the important indicators of this situation. In addition, the shift of the hotels which cannot be built in Pamukkale site to Karahayit campus can be expressed as an advantage in this table.

When this existing potential is evaluated from the perspective of respondents visiting Karahayit, it is seen that 57.3% of the participants are males, while females make up the remaining 42.7%. In terms of thermal tourism activities, in Karahayit, which is located within the boundaries of the Aegean region, this distribution is expected to be high in favor of females; however, the ratio of the male participants was also recorded high. Undoubtedly, the fact that female identity in tourism activities has not yet been defined for Turkey has been instrumental in this development. During the interviews with the tourists, it was stated that the women who came with their friends had spouses or at least some of the women who came from the same place as the group was accompanied by their husbands. It was determined that 55.3% of the tourists came with their family, 38.0% with friends and 6.7% of the tourists participated in tourism activities individually. This situation reveals the need to bring the female identity in the tourism activities in Turkey.

The most sensitive segment to services in thermal tourism activities is determined as retirees (Aymankuy et al., 2012: 237). In the study, the majority of the participants (28%) constitute the retirees in terms of occupational groups. Both time and economic freedom of this group increase the potential of thermal tourism. The preferences of this group, which constitutes an important potential demand, should be taken into consideration in the investments to be made in Karahayit.

In tourism types according to the aims of the participants, congress tourism, golf tourism, sports tourism, ecotourism, youth tourism, thermal tourism, etc. were previously mentioned. Thermal tourism, on the other hand, is the type of activity preferred by middle-aged and elderly group. As a matter of fact, the weighted average age of the participants in this study is between 45-54. Çetin's (2011) study in the Kozaklı sample reveals the weighted age group as 25-34, while Sandal and Karademir (2015) point to 25-45 as the weighted average age in their study on Ilica sample. This situation suggests that the average age varies according to the region. The fact that Kozaklı hot springs, located within the Cappadocia destination area, brings together youth tourism, sports tourism, and eco-tourism diversity in addition to thermal tourism has made the region an area of attraction for the young population. According to Sandal and Karademir (2015), the low average age of the Ilica sample was related to the tourists' seeking treatment for age-related diseases.

The level of education is one of the determinants of participation in tourism activities. In this study, it is important for the future of the region that more than 60% of the participants are high school and university graduates, and the individuals who have a high level of education are also in the region for improving their health, having fun and having a rest. However, the participants' low-income level, especially the 38.7% monthly average income level of tourists between the TL 901-1500, has negatively affected the quality and diversity of services purchased in the region. In this context, it can be said that the tourists coming to hot springs or thermal centers consist of people who are above a certain level of income (Tunçsiper and Kaşlı, 2008: 121). As a matter of fact, in the interviews with tourists in the region, tourists talked about the concerns they had associated with their income levels in purchasing services from businesses in the vicinity.

Table 11 shows that 46.7% of the tourists participating in the study came to the thermal facility with the recommendation of friends/relatives, while 20.0% had acquired information on the website. 16.7% of the participants came to the thermal facility upon a doctor's recommendation. In recent years, thermal tourism has started to be used as a treatment method in the treatment process of diseases together with medicine, especially in rheumatism and joint diseases. In this sense, it is promising that the proportion of participants who came to the region upon doctor's recommendation is high. The number of tourists reading about the region on catalogs, newspapers, and magazines is 3.3%. Especially in recent years, the widespread use of the internet has reduced the use of written and printed communication tools. New strategies should be followed while using these tools in promotional activities. 49.3% of the participants stated that the promotion of the region was not done at an adequate level and 12.7% of the participants stated that they were partially sufficient. In other words, 62% of the participants reported negative opinions about publicity. Similarly, Çetin (2011) and Sandal and Karademir (2015) found that written and printed communication tools were not used sufficiently in the thermal promotion process. Compared to other types of tourism, thermal tourism requires more cost during installation. Therefore, a good promotion process is very important in terms of the sustainability of small enterprises, especially meeting the costs in the early period.

Nearly half of the tourists (42%) came to Karahayit with the belief that thermal is beneficial to health. In addition, the number of tourists (18%) coming for holiday and recreation is quite high. The number of tourists coming from the health institution is very low (12.7%). This situation shows that the incentives for thermal treatment in the medical treatment process have yet to reach the desired level in Turkey. Some of the participants (10%) came to Karahayit to accompany one of their relatives. A large number of tourists in the over 55 age group and the necessity of companions in the thermal treatment of this age group can be regarded as effective instruments in this high rate.

It is seen that 59% of the tourists participating in the study came for treatment of a disease. Joint diseases (13.3%), skin disorders (11.3%), and gynecological diseases (8%) are the top three diseases that cause tourists to arrive in the region. It is noteworthy that the rate of incoming tourists due to psychological diseases is 0.7%. The diseases for which tourists seek treatment in Turkish thermal tourism are generally rheumatic diseases and joint disorders. According to the properties of mineral salts and minerals in the composition of thermal waters, it is considered medically effective in treating many diseases and gaining the old fitness and strength of the body through the treatment of muscle and neural fatigue (Şahin, 2007). However, it should not be overlooked that the majority of the tourists who came here (70%) took the characteristics of the water into consideration. In addition, approximately 50.7% of the tourists participating in the research stated that thermal treatment should be carried out concurrently with medical treatment. The rate of tourists who think that thermal treatments are an alternative treatment is quite high (33%). The recent state incentives for reducing drug use and the fact that doctors' views on alternative medicine are more positive than previous years are undoubtedly influential in the high rate.

The majority of tourists (70%) considered the characteristics of the thermal water and the relatives'/friends' recommendations when choosing the facility. The affordability of prices and the proximity to their residential addresses are other factors that influence the thermal facility selection. More than half of the tourists participating in the study (57.3%) stated that they came to Karahayit by bus. The number of tourists that arrived with a tour company is very low (1%). In this sense, tour companies should be more effective in building a more systematic and economic transportation network by establishing better interaction with tourism agencies and businesses.

Tourists have almost never paid regard to the healthcare services offered in the facilities. In thermal tourism enterprises, medical personnel such as doctors, nurses, specialists, physical therapists, masseur/masseuse, rheumatologist, and dietician are employed together with the usual hotel staff. However, in the interviews with the tourists and the field studies, it was seen that the health services in Karahayit, except the large hotels, were not adequately presented. A similar situation is observed in thermal fields. One of the most important problems for the Uşak-Kayaağıl thermal field is the lack of employment of medical personnel (Deniz, 2016). The fact that these services are not included in the accommodation price in hotels with tourism operating certificates has been shown as the reason why tourists are not able to benefit sufficiently in places where service is available. In these cases, the health services offered in the facility selection have been ignored. In this scope, it may be advisable to make an improvement in the area, especially in hotels and motels, and to open places where the municipalities can provide low-cost or free services.

Thermal resources are evaluated in Karahayit, but it is observed that the areas and activities where the people who go to the thermal springs can spend their spare time except thermal cures are limited. The tourists who participated in the study stated that they spent their leisure time walking (34.7%) and resting (23.3%). In the interviews, tourists stated that they did not engage in activities other than walking and watching television due to the low number of shopping areas. This situation creates a troubling environment for the tourists in general and shortens the length of stay. The period of stay of tourists visiting thermal tourism establishments varies between 1-3 days. Meanwhile, the recommended duration of treatment is 21 days (Göçmen, 2008). In Karahayit, it is seen that approximately half of the tourists (43.3%) stay in the thermal facility for 3 days. In the interviews with tourists, they relate the reasons for this situation to the idea that the expenses will increase depending on the increase in the time spent and the lack of various social activities to evaluate the leisure time. In this sense, measures should be taken for price and leisure time activities for tourists who want to benefit from thermal tourism.

Thermal tourism is a kind of tourism which causes habit in tourists. Tourists who participate in thermal tourism for the purpose of relaxation and/or treatment of diseases can gain the habit of coming to the region in the later periods when they encounter positive results for this purpose. As a matter of fact, in the study, the ratio of those coming for the third time and more is 12.7% higher than those coming twice. As a result of the study conducted by Organ and Soydaş (2012) to measure the perception of the local tourists visiting the Karahayit destination with respect to service quality and the intention to revisit, it was found that the local tourists intended to stay once again in proportion to their level of satisfaction. It was seen that 58.0% of the tourists staying in thermal facilities were satisfied with the thermal facility. However, the percentage of participants who were unsatisfied and partially satisfied was measured quite high (42.0%). This is also a suspicious situation. As a matter of fact, it is seen that 55% of the tourists recommend the thermal facility, while 45% have a negative opinion in this regard.

Thermal tourism is a kind of tourism which provides competitive advantage among countries. According to the studies, the reason why Turkey fails to adequately evaluate its thermal sources in terms of health tourism are listed as geographical distribution, lack of studies on thermals and resources with different quantity and quality, lack of assessment of applied

scientific studies, problems emerging in infrastructure and businesses, inadequate publicity, statistical deficiencies, keeping other tourism activities on the forefront, and lack of health personnel and health-related equipment (Bulut and Girgin, 2001; Taşlıgil, 1995; Sevindi and Özdemir, 2001; Çetin, 2010 and 2011; Akbulut, 2010). Similar results were found in this study as mentioned above. In other words, the inadequacies of infrastructure, the inadequacy of data on the tourists coming to Karahayıt, the inability to reach reliable results in the determination of the situation related to tourism, the fact that Karahayıt uses its advantage as a disadvantage even though Pamukkale stands out as a center of attraction, that fact that the health services offered in the hotels and pensions are subject to a fee, insufficient publicity of the region, and the tour companies' failure to actively operate in these tourism processes were found as a result of the studies conducted in the process.

In Karahayıt, it is necessary to establish high-quality thermal facilities and to create new areas and activities for recreation. Green spaces, walking trails, sports facilities, swimming pools, entertainment centers, recreation and picnic areas where people can chat and communicate should be built. By creating such areas, people who do not need thermal treatment will be encouraged to visit the region in order to relax and have fun. Thus, the region will become more attractive, the satisfaction level of the visitors will increase, and the locals will be able to gain a more economic return. The Ministry of Tourism and Culture should take on a mission for the tour companies to be active at the national and international level, as well as making use of Pamukkale, which is included in the UNESCO World Heritage List; the ancient city of Hierapolis; Laodicea, which houses one of the seven sacred churches; and Tripolis, which is the intersection of the three cities.

The implementation of projects that will reflect the historical texture and architecture of the region in the newly opened businesses on the main street in the center of Karahayıt, where thousands of people visit daily, as well as the construction of the shops in accordance with a certain standard, will eliminate visual pollution, bringing an aesthetic beauty and image into the region.

Although there is insufficient agricultural land in the region, the establishment of a few modern greenhouses and the use of at least a small part of the thermal waters which become idle after being used in thermal enterprises for heating the greenhouses especially in winter months is extremely important as it will provide a new business area and enable tourists to consume fresh vegetables and fruits on site. The establishment of greenhouses can stop immigration from small settlements to large centers, making a positive contribution to reverse migration (Kara and Gökburun, 2018, 5555). Families with an appropriate amount of agricultural land should be encouraged with information support to establish a greenhouse, and resource support should be provided with various projects.

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