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Evaluation of Geomorphosite Potential and the Tourism Attractiveness of Uçansu Waterfall (Gündoğmuş-Antalya)

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Abstract

Natural resources are the basic elements that create attraction in tourism. Waterfalls, which can be natural or artificial, can be centers of attraction due to their unique sights, noises and ecosystem features in the immediate vicinity. In this study, the geomorphosite potential and the tourism attractiveness of Uçansu Waterfall was evaluated. The Geosite Assessment Model (GAM) which is supported by Analytical Hierarchy Process (AHP) was used to explain the geomorphosite and tourism attractiveness value. The basis parameters as the tourism-related natural features of the waterfall and the tourism-related human characteristics of the nearby environment were weighted in scores. Scoring was done by expert teams who visited the field and evaluated the waterfall and its surroundings through the visuals in the office. According to the evaluation, the geological, geomorphological and climatic parameters of the waterfall and its surroundings have a high weight value. Socio-cultural characteristics, current tourism conditions and transportation potential are the parameters that have relatively low weights. Geological and geomorphological values make the waterfall a unique natural resource, and the climate of the region supports this potential. However, in some years, the water scarcity that starts early in the summer, the inadequacy of tourism investments, the forestry and protected area features require the use of ecotourism, which is compatible with nature in and around the waterfall.

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1. Introduction

While water creates a source of life in nature, it is also an important attraction in tourism. Especially the landscapes created by the water in the topography motivate people to see these parts of nature closely or to be in them. Waterfalls are the units that attract attention as the sections where the normal flow of the stream is changed. Waterfalls are geomorphological elements where water falls due to high slope or flows very fast and creates noise. This rapid movement of water creates an aesthetic structure in terms of visual as well as sound and falling movement. In addition to these features of the waterfalls, the visuality and water ecosystem that they gain with the giant cauldrons formed in front of them attract the attention of tourists or excursionists (Canpolat et al., 2021). Waterfalls, in addition to giving pleasure due to their aesthetic stances, also provide activities for life incompatible, outdoor activities (Hudson, 2006; Zeybek et al., 2020). Knowing the effect of waterfalls on local tourism and revealing the tourism potential are important in determining and maintaining tourism investments. In recent years, waterfalls have been declared as landscape parks and geoparks with their visuals, biosphere reserves (Rutynskyi & Kushniruk, 2021).

Geomorphosite was first described by Panniza and it emerged in Piagente's (1993) study. Geomorphosites are landforms and they have scientific, historical, cultural, aesthetic, socio-economic values (Pereira et al., 2007). Geomorphosite; landscape, value by society social and economic, cultural and scientific measured by taking advantage of the angles it is a geomorphological resource (Jorge & Pereira, 2006; Panizza, 2001; Pereira & Pereire,

2010; Pralong & Reynard, 2005; Reynard, 2005). Geomorphosites, human perception or gaining special value because of its use are understood as landforms (Panizza & Piagente, 1993). These landforms contribution to the development of sustainable tourism is large (Corotza et al., 2008). Geomorphosites such as waterfalls, caves, canyons, cliffs, glacial landforms, coral reefs, atolls, sinkholes, sinkholes, travertines, volcanic areas, areas with biological differences attract attention are the subject of geomorphotourism (Canpolat et al., 2020).

The attraction of a tourism destination is any natural, cultural or man-made thing that is unique, attractive and has value. According to Pradana and Pantiyasa (2018), tourists are interested in those assets because they can give a different effect, a new understanding and gain to the tourist. According to some scientists, tourism attraction is being able to see, do, bought or enjoy certain things in a tourism destination (Werpani, 2007; Pantiyasa et al., 2018; Moridsadat et al., 2020).

The aim of the this study is to evaluate geomorphosite potential and tourism attractiveness of the Uçansu Waterfall. For this purpose, the natural factors that are effective in the formation of the visual characteristics of the waterfall and the human parameters that are effective in tourism have been determined. Weight values were assigned to the parameters. This scoring or weighting process was carried out by experts in geography and tourism.

Uçancu Waterfall is located in the administrative borders of Gündoğmuş District of Antalya province, southeast of Güzle Village, southwest of Kayabükü Village (Figure 1). It is also called Uçansu Waterfall, Uçan Waterfall, Cündere Waterfall. The names Uçansu or Uçarsu are frequently used for waterfalls in Turkey. The Uçarsu Waterfall in Antalya Elmalı (Bayrakdar & Görüm, 2012) and the Uçansu Waterfall in Antalya Gebiz (Atayeter et al., 2007) are examples of these. The Uçansu Waterfall, which is the subject of this study, is 164 km from Antalya, 76 km from Alanya, 90 km from Manvagat, and 24 km from Gündoğmuş district center. Transportation is provided through a partially tarmac road and a dirt road within the Güzle district. Waterfall has been registered as a "Natural Site-Qualified Natural Protection Area" with the approval of the Ministry of Environment, Urbanization and Climate Change, dated 28.04.2021 and E.870231 (Web 1).

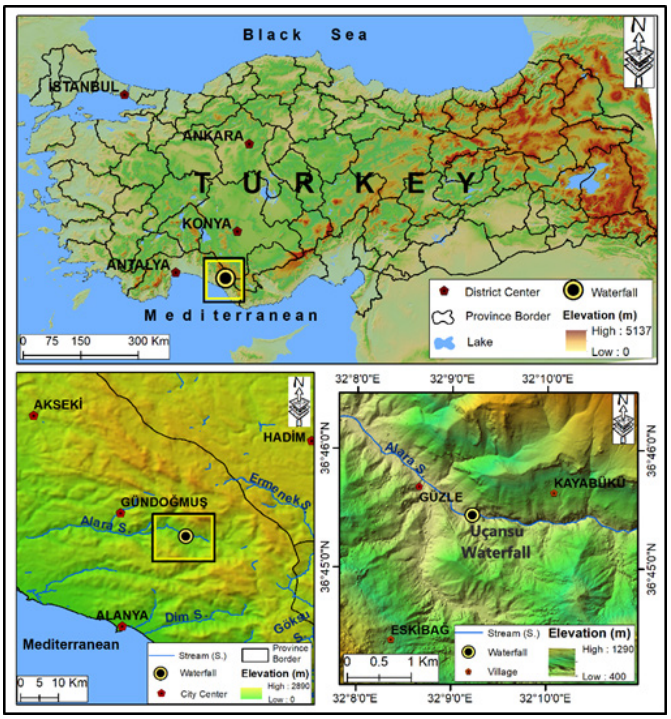

Figure 1. Location map of the study area.

Uçansu Waterfall was formed from the northern slope of Ulugüney Valley, which forms a part of the Alara Stream, by the semi-free falls of water from a height of 30 m, coming out of many points, including the large one in the middle. The waterfall part in the west is the part where the water falls from higher and is seen first by those who come to the site. The waterfall section in the east, on the other hand, has the characteristics of water falling from a relatively lower level in the part where the valley narrows. At the point where the waters fall from Uçansu Waterfall, the altitude of Ulugüney valley is 467 m.

The water of Uçansu waterfall is fed from karst springs. These springs are in the area where the Upper Jurassic-Cretaceous limestones are in contact with the lower Middle Triassic-Upper Triassic Sandstone-Mudstone. Since the waters infiltrating deep from the limestone ground cannot infiltrate deeper than the sandstone-mudstone ground, they emerge as water sources from the high inclined valley slope in this section. Faulting has also been effective in the outflow of water to the surface. These waters that make up the waterfall come from Akdağ, which is located in the north and has a peak height of 2720 m There are many dolines and uvalas, in other words karstic pit-like depressions, on this mass consisting of Upper Cretaceous Limestones (Şenel et al., 2016). In this mountainous mass, which receives snowfall in winter with the effect of altitude, the melting snow waters and the water leaking underground with precipitation are the source that feeds the waterfall. The waters of the waterfall are abundant in winter and spring. The waters gradually decrease in the middle of summer depending on the weather and temperature conditions of the current year. In fact, a very large part of the waterfall structure may not be observed after mid-summer (Figure 2).

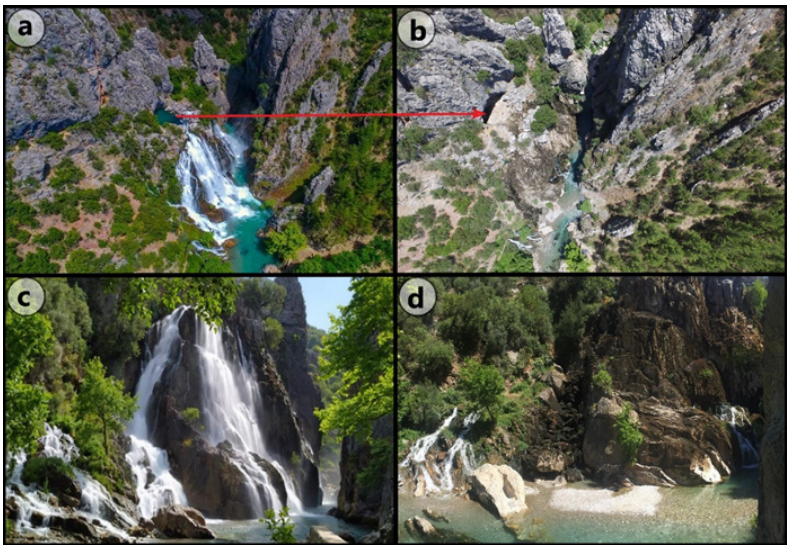

Figure 2. a-c: Spring season images (Source: https.www.ntv.com.tr.galeriseyahat-dagin-icinden-cikangizemli-guzellik-ucansu-selalesi) b-d: 3rd of July 2021.

The closest meteorology station to the waterfall is in Gündoğmuş. Gündoğmuş, which is 900 m above sea level, is in a region where the Mediterranean climate conditions partially approach the continental climate. Winters are relatively cold and summers are somewhat warmer. While the annual average temperature is 15,9 °C, the annual precipitation total is 930 mm (MGM, 2020) (Figure 3). According to the Köppen Climate Classification climate type of region is Csa which mean 'Temperate, dry summer, hot summer' (Yılmaz & Çiçek, 2018). Around the waterfall, Pinusbrutia Forests are widespread. Where there is no forest, macchia dominates. Vineyard and garden farming and olive growing activities are carried out in the vicinity.

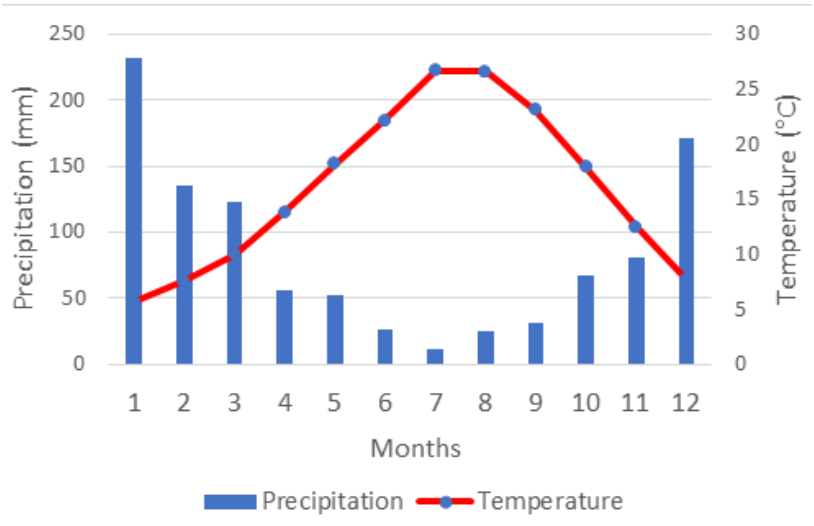

Figure 3. Climograph of Gündoğmuş Meteorology Station.

2. Material and Method

In the study, 30 m resolution SRTM DEM data was used to explain the topographic features. For the detailed topographic images of the section where the waterfall is located, 10 cm resolution DEM data produced by using DJI Phantom 3 Enterprise drone. Within the scope of field studies, 1/100 000 scaled geological map created by General Directorate of Mineral Research and Exploration (MTA) was used. Climatic data are from Gündoğmuş Forest Station. The data covers the years 2012-2020. Agisoft Metashape Professional Version 1.6.4 was used to process the images taken by drone with ArcMap-10.8 software was used to make morphometric analysis and make maps in print version.

The evaluation of the tourism attractiveness and potential with the quantitative and qualitative parameters collected through field studies was carried out by experts. In this study, Uçansu Waterfall Geomorphosite considering the evaluation criteria has been analyzed. In this context scientific value, landscape and aesthetic value, historical and cultural value, economic / tourism value, hazards and risks are taken into account. In order to evaluate the geomorphosite potential, the "Geosite Assessment Model (GAM)" which developed by Vujičić et al. in (2011) was used. According to the studies, the Geosite criterion can also be used for geomorphocytes (Aylar et al., 2022). This model uses a table, and this table includes parameter groups. There are a total of 5 parameter groups such as Scientific/Educational value (VSE), Scenic/Aesthetic (VSA), Protection (VPr), Functional (VFn), Touristic values (VTr). The first three parameter groups are the main parameter groups and the last two parameter groups are the additional parameter groups. A value between 0-1 is assigned to each sub-parameter under the parameter groups by using the findings obtained by the expert in the field. Evaluation is made over a total of 27 points, 12 points in the main parameter group and 15 points in the additional parameter group. The scores obtained at the end of the process are entered into the x-y matrix table as sign, where the main values score on the x-axis and the additional values score on the y-axis are located. Thus, the value of the geological or geomorphological element is explained.
In this study, the biggest difficulty encountered in data entry and score assignment to GAM is the numerical determination of parameter weights. Since GAM analysis is mostly done on a qualitative basis like SWOT analysis, the use of this analysis depends on the knowledge and skills of the experts involved in the planning process (Akbulak, 2016). It is difficult to state that the factor weights of the parameters evaluated in GAM are equally important in determining strategy. This situation is at least factors are not independent of each other, but comparative and simultaneous (Akbulak, 2016; Aylar et al., 2022; Kajanus et al., 2004;). In order to eliminate this deficiency, the AHP method, which is normally used in decision-making processes with multiple factors, was used and qualitative features could be expressed numerically.

AHP is based on the principle of subjecting parametric data with different characteristics to Multi Criteria Evaluation. Results are obtained by superimposing parameters with weight values (Saaty, 1990). AHP is one of the most used and most advanced science management and economics subjects. However, the method has a complex application. Especially developing software and computers provide some convenience in the use of this tool. In addition, the expertise of the decision makers in the field and their objective approach to the subject are effective in the success of the method. Because the parameters and sub-parameters and their evaluations depend on the expert's interpretation (Saaty, 1990). In AHP, each criterion in the hierarchy works depending on the previous criterion and is included in the model by calculating its weight according to this criterion (Bozdoğan & Canpolat, 2022). Researchers consider it possible to make some plans regarding land use as a result of the evaluations made with the AHP (Das et al., 2013; Kayastha et al., 2013; Klimes & Escobar, 2010). In addition, researchers believe that the AHP method is compatible with the data in the field (Bhatt et al., 2013; Komac, 2006). The Analytical Hierarchy Process (AHP) breaks down the items that are considered to be problems. AHP compares these disassembled items in a binary way; hierarchically determines their weight (impact power) and starts to operate consistently (Akıncı, 2011). In the system, each criterion works depending on the previous criterion and is included in the model by calculating its weight according to this criterion. The preference scale developed by Saaty (1980) is used in the creation of the weight score and the pairwise comparison matrix for these criteria. For each n item in the pairwise comparison matrix, n (n-1) /2 comparisons are created (Öztürk & Batuk, 2010).

In the AHP method, the goal is in the highest of the hierarchy. Criteria and sub-criteria are placed in sub-levels. Alternatives are given at the lowest level of the model. A comparison is made between the criteria at each step level. At this point, the expert makes his preferences or scoring according to the level of importance. The importance evaluation calculations given to the main parameter, sub-parameter and related elements in the alternatives can be applied for each step. Then the main parameters are synthesized. The main parameter weight value in the upper step is calculated with the sum of each weighted parameter in that category. Then precision or accuracy is calculated (Atanasova-Pacemska et al., 2014).

Possible inconsistencies that may arise in the AHP can be evaluated using the Consistency Ratio-CR developed by Saaty (1980). In fact, the consistency ratio is used to calculate the accuracy or consistency ratio, the upper limit of this value in the literature is 0.10 (%10). That is, if the value between the pairwise comparison parameters is 0.10 or lower than this value, there is generally a consistency between the relevant parameters; on the contrary, if the value is 0.10 or more, it can be said that there is an inconsistency between the relevant parameters in general.

In AHP method, geology (Presence of water, Rock feature and visuality, Fault), geomorphology (Uniqueness of geomorphological element, Construction suitability for tourism enterprises, Elevation, Slope, Aspect), climate (Sunbathing time, Relative humidity, Wind speed, Precipitation), Socio-cultural characteristics (Sociocultural activities in the region, Presence of handicrafts and local cultural items, Agricultural activities, The importance given to tourism by the local people, Promotion and advertisement of touristic items, Home type hostel presence, hygiene), Current tourism conditions (Alternative tourism assets such as trekking, rafting and mountaineering, Ecotourism potential, Availability of Accommodation and Recreation Facilities, Economic carrying capacity, Social carrying capacity, Environmental carrying capacity) and transport (Distance to villges roads, Distance to highways, Distance of the airport, Distance to marine transportation) parameters are used. These parameters were chosen by adhering to the geographical research approach. These parameters were chosen from recent studies that related to the attractiveness of tourism (Moridsadat et al., 2020; Pantiyasa, 2018; Rutynskyi & Kushniruk, 2021; Uzun et al., 2005).

Social media such as Twitter, Instagram, Facebook and Youtube were checked in order to evaluate the promotion and advertising parameters of Uçansu Waterfall. On these platforms, the name control of the Uçansu Waterfall was made and the number of times the name was mentioned on these platforms was counted, and the number of views of the videos related to the waterfall was calculated.Social media research also shows the current state of interest in the waterfall.

3. Results

The evaluation result of the parameters of the AHP is given in Table 1 and Table 2. GAM result is given in Table 3 and in matrix Figure 8. According to the AHP, the geology parameter is the parameter with the highest total weight (0, 32). The presence of water that forms the waterfall and the presence of water in the valley where the waterfall waters are poured have been seen as the most important actor of the tourism attraction and tourism potential. The water outflow created by faulting and digging of the valley, the stance of the rock layers, their plunges and the visuality they create are criteria that increase the value of the landscape. On the other hand, the decrease in water depending on the season or its drying in some years has relatively reduced the weight of the potential. The geomorphology parameter is the second parameter with the highest weight (0.25).

At a point in the valley where the geomorphological view turns into a canyon, the waterfall formed by the water coming out of a high point on the edge of the valley and the large water potential especially in the spring season creates an aesthetic appearance with little similarity (Figure 4a-b). In order to be in the waterfall environment, the elevation, slope and view of the geomorphological conditions are suitable for the construction of tourism establishments such as cafeterias, camping areas, dressing cabins, WC, parking lot, guardhouse and information office, which will increase the value of the touristic item and potential af attraction (Figure 5a-b). The location of the waterfall is suitable for tourism due to the Mediterranean climate conditions. For this reason, the climate parameter was a parameter with a relatively high weight (0,2). In addition to sunbathing opportunities, the presence of low-speed wind created by the canyon, the shadow opportunities created by the presence of trees, the ideal level of relative humidity created by the effect of waterfalls and streams will increase bioclimatic comfort. However, the fact that the water decreases in some years due to the summer drought creates a disadvantageous situation

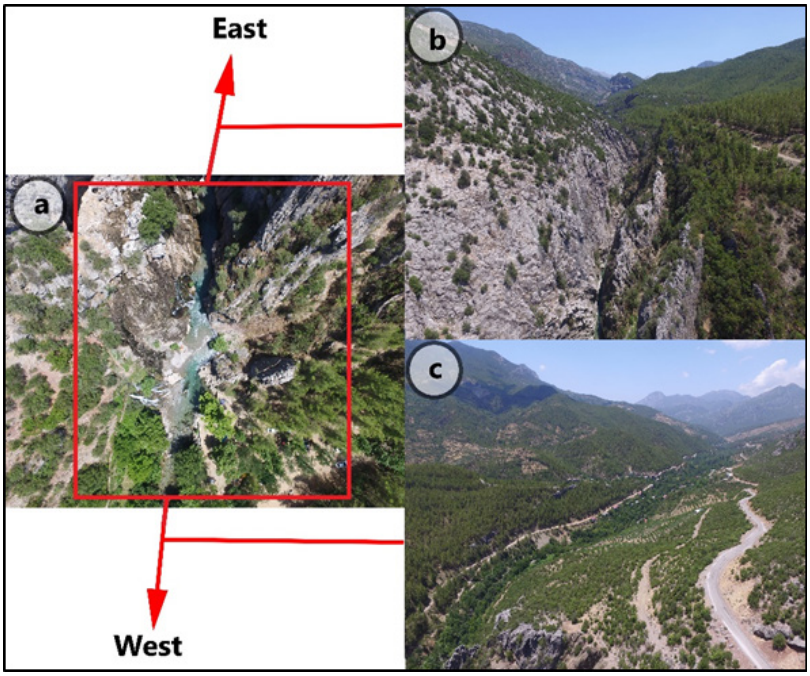

Figure 4. a. Areal photo of the waterfall b. View of valley to the east above waterfall. c. View of the valley to the west obove the waterfall.

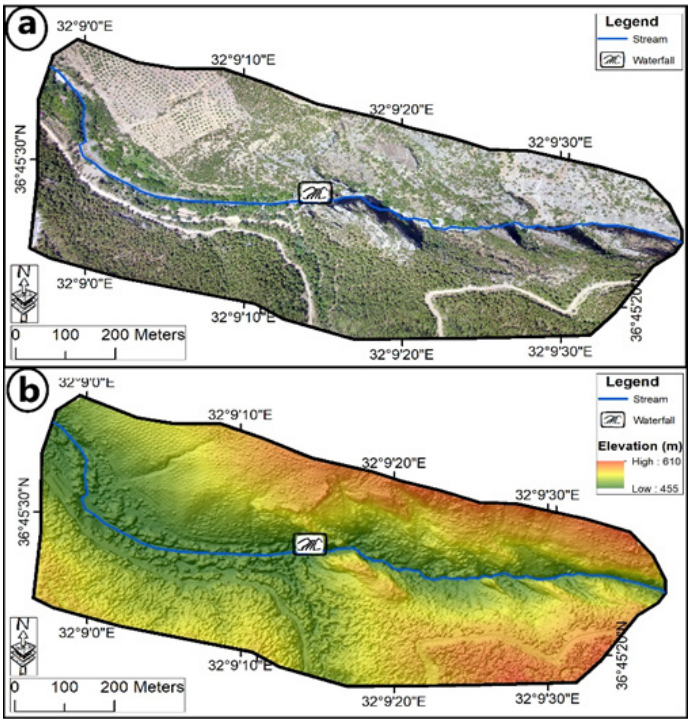

Figure 5. a. Ortophoto of the study area b. Digital elavation map of the study area.

Socio-cultural characteristics parameter (0,1) affects the readiness of the local people for tourism. In the nearby villages where rural living conditions prevail, socio-cultural activities are partially carried out in a traditional way. Barley, wheat production, beekeeping, viticulture and animal husbandry activities are carried out in a decreasing manner in Kayabükü (Beledan, Çündere) Village (Sezen, 2007; Özkan, 2010). Kayabükü village is an old settlement recorded during the reign of Yavuz Sultan Selim (Sezen, 2007). The young population mostly works in tourism facilities in the nearby Manavgat, Alanya, Side and Antalya regions. Accordingly, young people from the local people are knowledgeable about tourism and care about tourism. But the elderly population does not have this awareness much. Some local handicrafts are also sold as souvenirs, as initiatives have started to evaluate places with natural attractiveness. The restaurant and souvenir sales in the Güzle area and on the nearby Dağdere Stream are examples of this (Figure 6).

Figure 6. A resting place in harmony with nature, which also offers eating and drinking activities by the river in Dağdere.

In the current tourism condition parameter (0.07), alternative tourism assets such as trekking, rafting and mountaineering and Ecotourism potential parameters have high values due to reasons such as the rurality of the area, the suitability of the valley for hiking and the availability of camping opportunities in some locations. Beside this local people are conscious of protecting nature. The best example of this is their protest against the Hydroelectric Power Plant, which is planned to be built in the region in recent years and includes the Alara Stream, by taking actions together. This determination and stance of the people enabled the decision to build a hydroelectric power plant to be stopped.

According to research and evaluation, the promotion of Uçansu Waterfall is mostly carried out through local and national media. In addition, those who visit this place share their social media accounts. Waterfall has been the subject of more than 50000 interactions on social media such as Twitter, Instagram, Facebook, Youtube from 2013 to 2022. Some videos shown via Youtube have been watched more than 10000 times. Accommodation facilities in the research area are insufficient in terms of number and quality. One of the most important problems is neglect. In the past, the area around the waterfall was a location where plane trees were common and livestock activities in the form of goat breeding were carried out. Then, for about 10 years, a person hired this place from the forest administration and made it work. He built the picnic place etc. Later, the person stopped operating this place. Although some arrangements were made for picnickers before, there are problems such as the lack of WC, the garbage problem created by the picnickers, the lack of hygiene problems, the lack of dressing cabins, the unplanned and unorganized camping area, and the unplanned parking area (Figure 7). Therefore, the weight of these parameters was low (Table 1- 2).

Transport parameter (0.06) has the lowest overall weight. The scarcity of public transport facilities and the distance to the main roads are the reasons for the low value. On the other hand, the sub-parameters distance to villges roads and distance to highways were partially high values.

Table 1. Comparison matrix for parameters.

Parameter	1	2	3	4	5	6	Weight	Weight (%)
1) Geology	1	2	3	4	5	6	0,32	32
2)Geomorphology	1/2	1	2	3	4	5	0,25	25
3) Climate	1/3	1/2	1	2	3	4	0,2	20
4) Socio-cultural characteristics	1/4	1/3	1/2	1	2	3	0,1	10,2
5) Current tourism potential	1/5	1/4	1/4	1/2	1	2	0,07	7
6) Transport	1/6	1/5	1/5	1/3	1/2	1	0,06	6

Table 2. Weight score of the parameters related to the tourism potential of the waterfall.

	PARAMETERS	Weight (Total)	Weight
Geology	Presence of water	**0,32/1**	0,54
	Rock feature and visuality		0,30
	Fault		0,16
Geomorphology	Uniqueness of geomorphological element	**0,25/1**	0,42
	Construction suitability for tourism enterprises		0,26
	Elevation		0,16
	Slope		0,10
	Aspect		0,06
Climate	Sunbathing time	**0,2/1**	0,47
	Relative humidity		0,28
	Wind speed		0,16
	Precipitation		0,10
Socio-cultural characteristics	Sociocultural activities in the region	**0,1/1**	0,35
	The importance given to tourism by the local people		0,24
	Promotion and advertisement of touristic items		0,16
	Agricultural activities		0,11
	Presence of handicrafts and local cultural items		0,07
	Home type hostel presence		0,05
	Hygiene		0,03
Current tourism condition	Alternative tourism assets such as trekking, rafting and mountaineering	**0,07/1**	0,38
	Ecotourism potential		0,25
	Availability of accommodation and recreation facilities		0,16
	Economic carrying capacity		0,10
	Social carrying capacity		0,06
	Environmental carrying capacity		0,04
Transport	Presence of water	**0,06/1**	0,47
	Presence of water		0,28
	Presence of water		0,16
	Presence of water		0,10

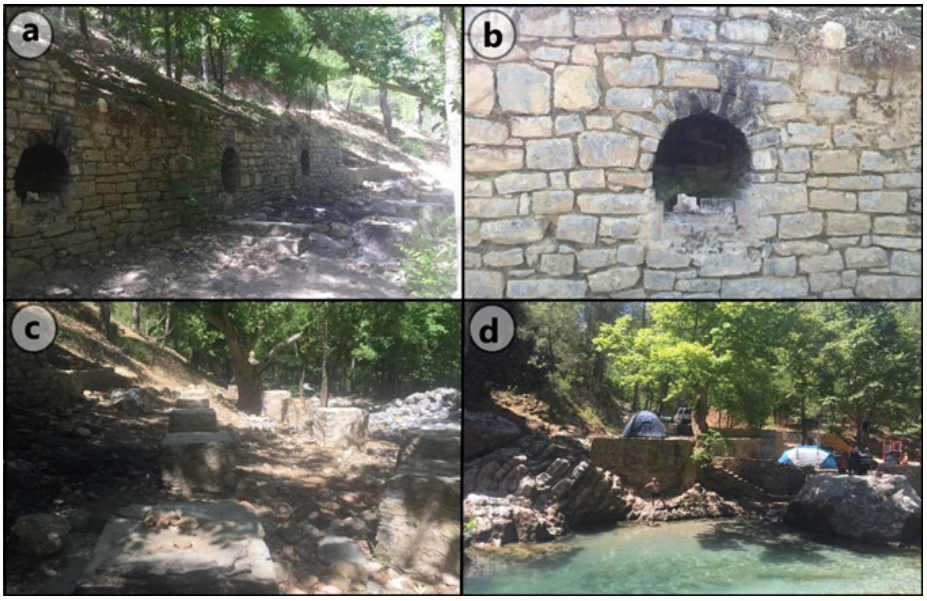

Figure 7. Some neglected structures around the waterfall, landscaping and waste problems.

In the study, the (GAM) scale was used to determine the geomorphosite value and the associated tourism value. In order to create this scale, AHP data, which performs value assignment by applying double comparison to the parameters, was used.

In the GAM model (Table 3), sum of the main parameters score is (VSE+VSA+VPr) 9,2. Scientific/Educational (VSE) value scored with total of 3,1 points. (VSE) consist of sub parameters such as Rarity, Representativeness, Knowledge on Geoscientific Issues, Level of Interpretation. Scenic/Aesthetic (VSA) value scored with total of 2,9 points. (VSA)

Table 3. The structure and scores of Geomorphosite Assessment Model (GAM) (Source: Vujičić et al. in 2011).

Indicators/Subindicators	Score
Scientific/Educational value (VSE)	
Rarity	0,8
Representativeness	0,8
Knowledge on geoscientific issues	0,5
Level of interpretation	1
Scenic/Aesthetic (VSA)	
Viewpoints	0,6
Surface	0,5
Surrounding landscape and nature	1
Environmental fitting of sites	0,8
Protection (VPr)	
Current condition	0,9
Protection level	0,8
Vulnerability	0,7
Suitable number of visitors	0,8
Sum of Main Parameters (VSE+VSA+VPr)	**9,2**
Functional (VFn)	
Accessibility	0,7
Additional natural values	0,5
Additional anthropogenic values	0,4
Vicinity of emissive centers	0,6
Vicinity of important road network	0,6
Additional functional values	0,4
Touristic values (VTr)	
Promotion	0,7
Organized visits	0,7
Vicinity of visitors center	0,3
Interpretative panels	0,4
Number of visitors	0,5
Tourism infrastructure	0,2
Tour guide service	0,2
Hostelry service	0,2
Restaurant service	0,6
Sum of Editional Parameters (VSE+VSA+VPr)	**7**
GAM Value	**16,2**

consist of Viewpoints, Surface, Surrounding Landscape and Nature, Environmental Fitting of Sites. Protection (VPr) value scored with total of 3,2 points. (VPr) consist of sub parameters such as, Current Condition, Protection Level, Vulnerability, Suitable Number of Visitors.

Sum of Editional Parameters (VFn, Vtr) score is 7. In this section Functional (VFn) scored with 3,2 points. (VFn) consist of sub parameters such as Accessibility, Additional Natural Values, Additional Anthropogenic Values, Vicinity of Emissive Centers, Vicinity of Important Road Network, Additional Functional Values.

Touristic Values (VTr) scored with 3,8 points. (VTr) consist of sub parameters such as Promotion, Organized Visits, Vicinity of Visitors Center, Interpretative Panels,Number of Visitors, Tourism Infrastructure, Tour Guide Service, Hostelry Service, Restaurant Service.

According to the result of the GAM table, which is the evaluation criterion of geomorphocytes and also reveals the attractive features of the geomorphological unit, the GAM value was determined as 16.2 out of 27 (Table 3). This score is then displayed in the matrix table. The Matrix table is a table divided into nine areas (regions). The value of the geomorphosite according to the score collected from the main or additional parameters is shown in the matrix table Z(i,j) (i,j=1,2,3). The main gridlines that make up the matrix area have a unit value of 4 for the X-axis and 5 for the Y-axis (Visicic). According to the evaluation made in this study, if the sum of the main values is 9.2 and the sum of the additional values is 7, the geosite will be in the Z32 area (Figure 8). This means that the main parameter values are very close to the top, and additional values are moderate.

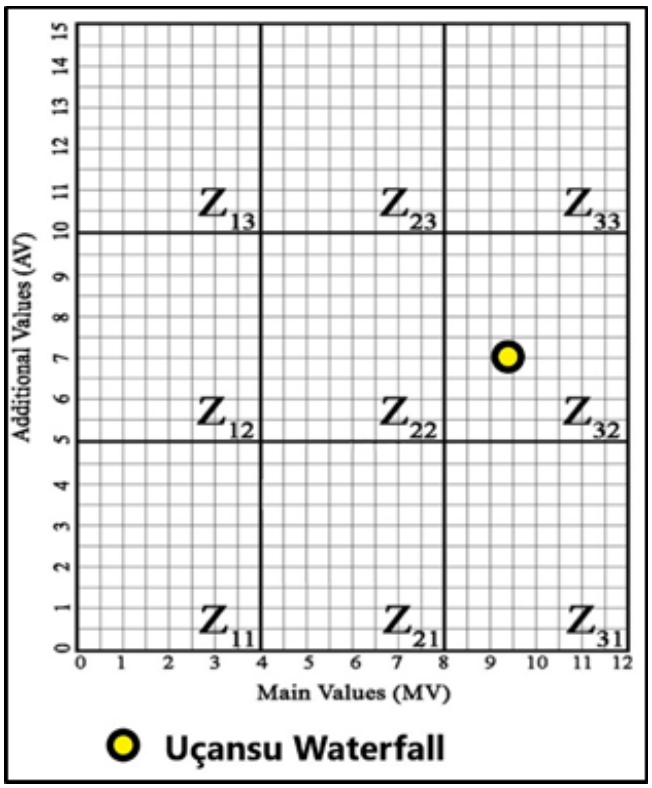

Figure 8. Disposition of geomorphosite to certain fields according to GAM (Source: Vujičić et al. in 2011) .

4. Conclusion

According to the AHP model applied to enumerate the qualitative data and compare the parameters among themselves, Uçansu Waterfall is a formation with high geological and geomorphological value. The slope formed by the effect of geological-geomorphological features and the presence of water have created an important landscape potential. In addition, the climatic conditions and vegetation of the area increase the tourism value of the landscape. In some years, the absence of precipitation in the high mountain areas feeding the waterfall creates water scarcity in the spring that forms the waterfall. This situation causes the tourism attractiveness and potential to be negatively affected. Socio-cultural features, existing tourism features, transportation features create a slightly lower value in tourism attractiveness and potential. The rural characteristics of the region, forest potential, nature of the protected area, natural beauties, hiking opportunities, the availability of water in Ulugüney Stream in all seasons, the waterfall and its surroundings reveal that it is a resource that can be benefited from in terms of ecotourism.

According to the Preliminary Geomorphosite/Geosite Assessment Model (GAM) Uçansu Waterfall is a geomorphological element of high value in terms of its scientific-educational, landscape and aesthetic features, as well as its preservation features. It offers a medium value feature in terms of transportation opportunities, proximity to the city center, social and cultural features in terms of human, presence of other items in the close environment, promotion, tourism organizations, tourism guidance, accommodation facilities and restaurant features.

Depending on all these, the ecology of the waterfall and its immediate surroundings should be protected, camping, accommodation, etc. tourism investments should be increased within the scope of ecotourism. More attention should be paid to the promotion of the waterfall.

Aknowledgement

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