Visual Quality Assessment of Historical Structures and Their Surroundings: The Sample of Kars City

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Keywords	Abstract
Historical structure and surroundings, Landscape analysis and inventory, Visual quality analysis, Kars, Turkey.	Historical Structure and Environments (HSE) are significant cultural assets which have historical, artistic and regional values and establish a bridge between past and present. HSE significantly affect the identity of a city they take place. Because of their such characteristics, they need to be protected, sustained and transferred from generation to generation. Kars, determined to be study area, is a city located in the east of Turkey, and has hosted many civilizations for centuries thus enriching its cultural structure with historical buildings. In the study, carried out to analyze the visual quality of some HSE in the city of Kars and its surroundings, Visual Quality Assessment included in landscape analysis among the landscape planning process stages. In this respect, a photo survey, prepared to make Visual Quality Assessment was applied to 74 students at Atatürk University Architecture and Design Faculty. Results of the survey were analyzed through SPSS software. As the result of the study, it was found that the highest visual quality score was at HSE 5 (Ani Cathedral; 4,39) followed by HSE 4 (Cheltikov Hotel; 4,07), HSE1 (Katerina Palace; 4,03. One of the Evaluation Criteria (**EC 1**:4.21), historicity is the criterion that has the highest visual quality score among all departments of Atatürk University Faculty of Architecture and Design. In addition, it was determined in the study that several parameters (being historic, naturalness, spatial identity etc.) are associated significantly with the department of the participant students (P <0.05). With the study, it was concluded that the city of Kars and its surrounding represent high historical, cultural and visual values. Their importance was highlighted in the respect of conservation – utilisation balance and sustainability.

1.Introduction

Due to the rapid changes in today's cities, the reshaping of the physical and social structure, the settlements are gradually losing their traditional values and identities. The studies within the scope of visual impact assessment that examine the lost natural and cultural characteristics, the present and future physical developments of settlements and their social lives in a visual context are becoming increasingly important [1,2].

Increasing the visual value of the environment through human use of land and creating artificial structures, in the process of environmental planning and design, requires the analysis of the environmental visual qualities of new elements as well as the cost-benefit relationships on which the control of development is based. Today, the solution of environmental planning and design problems is closely related to the evaluation of the abstract and concrete qualities of the environment. A visual evaluation method should be developed that will give the visual possibilities and constraints of the existing environmental system depending on the natural and cultural environment sub-systems in the design of negative images that occur as a result of increasingly unplanned urbanization [3-5].

The common goal of visual impact assessment studies is to expand the range of environmental data required for environmental protection and development by developing visual criteria and modeling processes that can be used in planning and design processes. Special purposes of the studies; providing data to identify land use and development strategies; comparing different environments, revealing the visual impact areas of the proposed developments in order to guide development control decisions; adding new elements or investigating the change direction of the environment in terms of existing elements. Therefore, methods for evaluating the visual qualities of the environment should be developed and applied. The visual values of the environment, which has deteriorated due to rapidly increasing population, internal migration and unplanned urbanization, should be preserved [3,6-7].

Today, as a result of rapidly developing cities and increasingly uniform and complex structuring, physical environments, thus historical environments, are changing negatively. Historical environments began to deteriorate or even disappear in new buildings and were pushed to the second plan. Historical circles face various dangers such as neglect, abandonment, public works activities and rent pressure. While some places are abandoned and deprived of destruction, intense desire for structuring and opening

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new roads in settlements where life continues cause the historical texture to change and disappear. Opening new roads or expanding existing ones also damages the texture of the historical environment and causes both visual and physical deterioration [8].

Historical buildings are cultural heritage pieces that establish an important link between the past and present, present and future. Sociological, economic, political and religious life in the past constitutes the body of historical structures [9]. Especially historical textures have a great impact on the identity of the city. These spaces are renewed with urban landscape designs to increase their quality of life and preserve their identities. Since it is desired to increase the quality of life in urban design, the living environment of the urban person is an important criterion. In this environment, it meets human physical and social needs. The same is true in historical circles.

Onem (2005), the perception of the environment, the continuity of knowing and evaluating it, is the process of making a decision and making a decision as a result of feeling the environment with its sense organs, understanding the way of perception of the environment and

recognizing the characteristics of the environment. In order to define the environment according to the formal approach of perceiving the environment, the environment should be comprehended in depth as a whole and evaluated as a whole. Each of the parts that make up a whole has a distinct feature and identity. When these separate parts combine and form the whole 24, the identity of that region is formed. In order to determine the identity of the region exactly, the identity must be defined according to the results obtained by analyzing the parts and the necessary environment must be provided to ensure the sustainability of this definition.

This study has been handled within the scope of the visual impact assessment of the Double Minaret Madrasa, Kale, Mecidiye Bastion, Üç Kümbetler and Yakutiye Madrasa located in the city of Kars, which has been home to many civilizations for centuries, and its immediate surroundings (Figure 1) and it is aimed to increase the visual quality of these environments. As a result of the evaluations, proposal designs were presented, an evaluation was made in terms of the current status of these works, and suggestions were made to increase environmental quality.
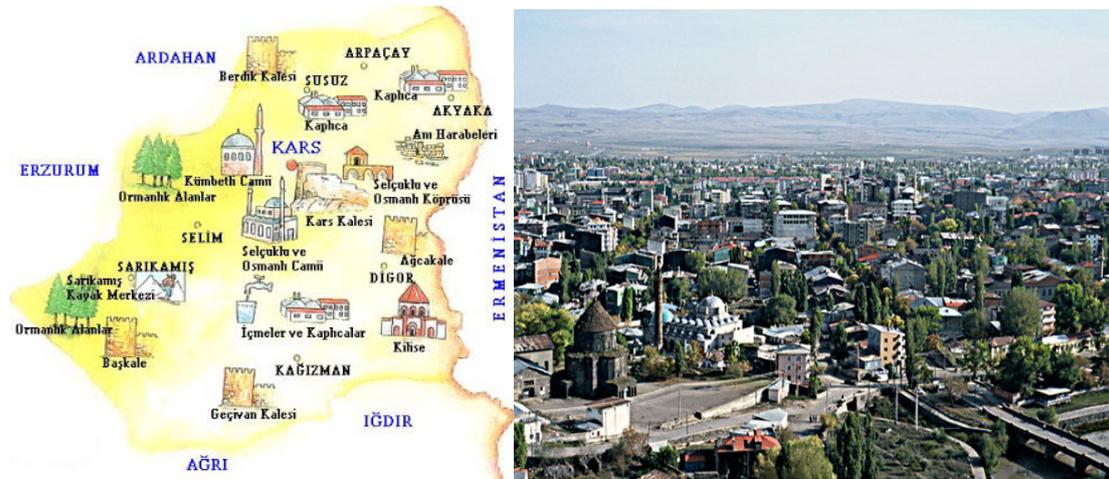

Figure 1. As seen from the location of Kars city center and historical buildings [10]

The city of Kars, which has been determined as a research area; It is a city that has hosted many civilizations for centuries and has historical and cultural richness. Purpose of the research; It makes suggestions to ensure the sustainability of environmental perception and quality by analyzing the visual quality of some historical buildings and surroundings in the city of Kars and its immediate surroundings.

2. Material and method

The research material consists of 5 different historical buildings in the city of Kars. In the research method, the visual quality analysis included in the landscape analysis, one of the stages of the landscape planning process, was used. It is thought that the different types of historical and cultural structures existing in the area have high potential in terms of visual landscape. While HSE 1 (Katerina Palace), HSE 2 (Revenue Office Building), HSE 3 (Ghazi Ahmet Headman Pasha Culture House), HSE 4 (Cheltyköy Hotel) and HSE 5 (Ani Cathedral) were selected as Historical Structure and Environments Historicity (EC 1), Naturalness (EC 2), Space-Identity (EC 3), Fascination (EC 4) and Vitality (EC 5) were preferred.

In the study, on-site inspection and evaluation of the expert group were used as research methods to make observations about the field. He benefited from written and visual sources related to the region and the subject, field research was conducted, and oral interviews were made with the relevant people and institutions. In this study, the visual quality assessment of the landscape related to the historical and cultural structure of the city of Kars; It is independent from the perception factor and in the formal direction, and the parameters for this have been taken into account.

The questionnaire prepared for this research on the Visual Quality Analysis of Kars City Historical Building and its Environment was applied to the students of Atatürk University Faculty of Architecture.

The main body size consists of students of Atatürk University Faculty of Architecture. For this purpose, one-to-one questionnaire was applied to 784 people studying at the faculty at the time of the research. The simple random sampling method used by İslamoğlu (2003) [11], Özdamar (2003) [12] and Büyüköztürk (2008) [13] was used to determine the sample size.

The formula used to determine the sampling size is as follows:
$$n = Z^2 NPQ/ND^2 + Z^2 PQ$$
n = Sample Size
Z = Confidence coefficient (1.96)
P = Probability of the feature to be measured to find a mass (95% = 0.95)
Q = 1-P (0.05)
D = Accepted sampling error (5% = 0.05)
N = Population size (Total number of Architecture and Design students: 784)

Within the scope of the study, when the data was placed in the above formula, the total sample size was determined as (n= 74) at 95% confidence interval.

A photography study was carried out in October 2018 in order to capture autumn colors in the locations selected for the research. Various photographs representing the areas were preferred in order to determine the visual landscape quality in 5 places that have landscape character of historical structure and environments. The photos were taken with a digital camera between 10:00 and 16:00. 273 photographs were taken in order to enable the evaluation of areas with near and far views from various angles, and a total of 70 images (3 to 4 photographs for each historical building) were evaluated. Visual quality survey; The landscape architecture was applied to the students of the department of city and regional planning, architecture, studying in 3rd and 4th grade within the faculty of architecture and design. Since the sample size is 74, 74 questionnaires were evaluated.

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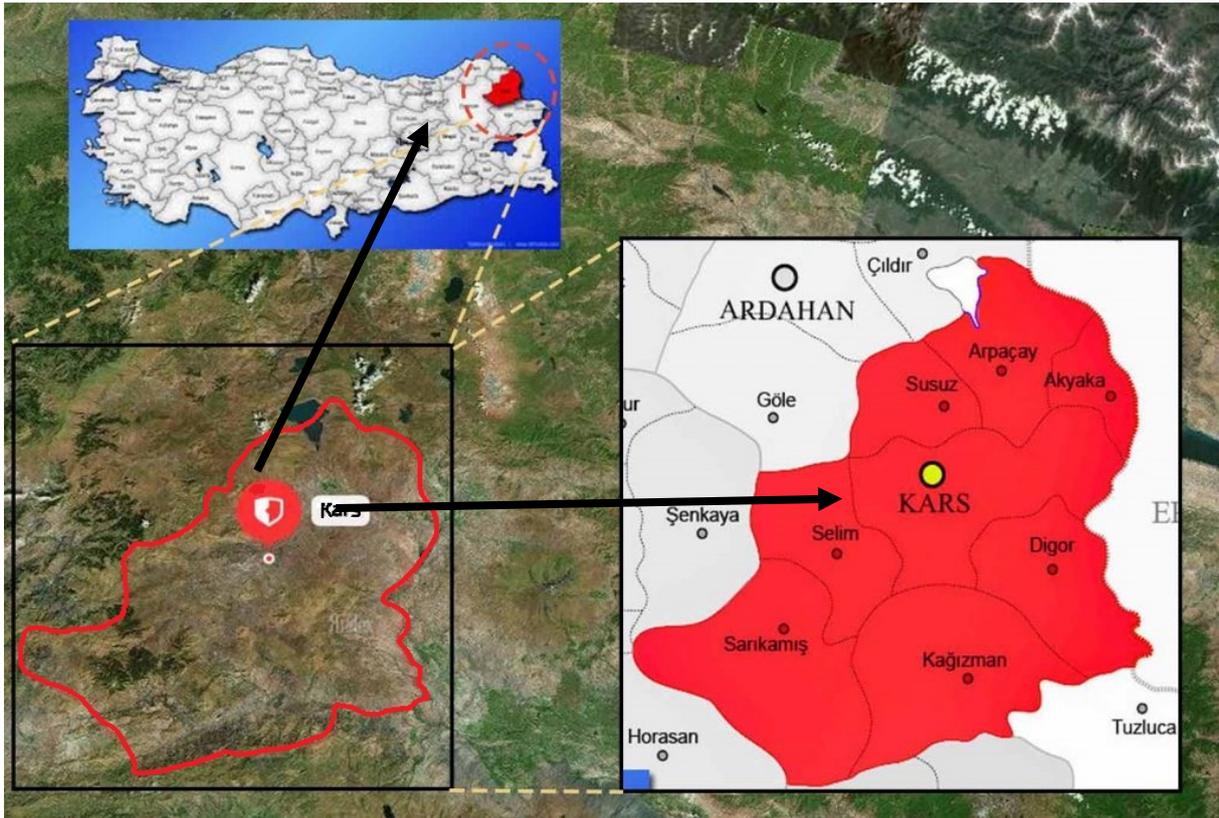
Figure 2. Location of the research area [14]

Kars City Historical Structure and Environments				
HSE 1 Katerina Palace				
HSE 2 Revenue Office Building				
HSE 3 Ghazi Ahmet Headman Pasha Culture House				

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HSE 4 Cheltykov Hotel				
HSE 5 Ani Cathedral				

Figure 3. Views from the historical and cultural buildings of Kars city and its close surroundings

Table 1. Landscape characteristics and average values taken into account in the visual quality assessment of photographs

Evaluation Criteria (EC)	EC	Evaluation Criteria (EC) ORT EC 1.............EC 5	Historical Structure and Environments	HSE	Historical Building and Circles (HSE)ORT HSE1...HSE5
Historicity EC 1)	EC1	4.21	Katerina Palace	HSTS 1	4,10
Naturalness(EC 2)	EC2	3.96	Revenue Office Building	HSTS 2	3.49
Place- Identity (EC 3)	EC3	4.08	Ghazi Ahmet Headmen Pasha Culture House	HSTS 3	3.77
Fascination(EC 4)	EC4	4.09	Cheltykov Hotel	HSTS 4	4.32
Vitality (EC 5)	EC5	3.87	Ani Cathedral	HSTS 5	4.52
EC ORT		4.04	HSTS ORT		4.04

The visual quality questionnaire was applied as a Power Point presentation. In the presentation, no comments were made about the photographs taken from the historical building and its surroundings, and no information was given about where the photographs were taken. Scoring was provided by giving a period of approximately 60 seconds for each photo. In the evaluation of the photographs, the historicity, naturalness, spatial identity, fascination, vitality, uniqueness, harmony with the environment, perceptibility, integrity with the landscape, emphasis and imaginary effect, visibility, originality used by Yardimci et al. [15] for visual quality analysis of historical structures and environments, mystery, width, spaciousness, structure and ground harmony, symmetry-balance, texture, proportion-scale, form, color effect criteria were used. In order for the photographs selected from historical buildings to be compared, they were asked to score each building independently from 1 to 5 (including 1 and 5).

the T test in paired comparisons based on gender, and with the Duncan Multiple Comparison Test in the multiple comparisons of the departments. According to the results of the Analysis of Variance (ANOVA) conducted in the survey study conducted, the difference between the data of five different Historical Structure and its Environment (HSTS) between genders was statistically significant at $p < 0.05$ significance level only in HSTS 2 (0.030) ($p < 0.05$). This difference was not found to be statistically significant in HSE 1, HSE 3, HSE 4 and HSE 5 (Table 3)

3. Findings

The photographs taken from 5 different historical buildings and their surroundings and their criteria are shown in Figure 3 for the visual quality analysis of the historical buildings and surroundings of Kars city and its surroundings, which form the research area.

In Table 2, the landscape features and their average values taken into account in the visual quality assessment of the photographs of the historical buildings and their surroundings of the province of Kars are included. According to this, the highest average value in terms of Evaluation Criteria (EC) in Historical Structure and Environments (HSE) is seen in Uniqueness (EC 5: 4.52) criteria, respectively, Vitality (EC 4: 4.32), Historicity (EC 1: 4.10) and Fascination (EC 3: 3.77). followed. The lowest value was determined in the Naturalness (EC 2: 3.49) criterion. In the visual quality assessment of the photographs of Historical Structure and Environments (HSE) has the highest average value with 1 (4.21 p), followed by HSE 4 (4.09 p) and HSE 3 (4.08 p), respectively. The lowest average value was determined in HSE 5 (3.87 p).

The research data were subjected to variance analysis and compared to the main sources of variation found statistically significant with

Table 2. Landscape characteristics and average values taken into account in the visual quality assessment of the photographs of the city of Kars and its vicinity Historical Structure and Environments (HSE).

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Evaluation Criteria (EC)	Historical Structure and Environments (HSE)					EC_ORT
	Score Range (1,2,3,4,5)					
	HSE 1				HSE 5	
Historicity (EC1)	4.28	4.16	4.13	3.95	3.97	4.10
Naturalness (EC2)	4.19	3.41	3.58	3.27	3.00	3.49
Place- Identity (EC3)	3.91	3.72	3.97	3.65	3.62	3.77
Fascination (EC4)	4.39	3.91	4.14	5.00	4.19	4.32
Vitality (EC5)	4.26	4.61	4.59	4.57	4.55	4.52
HSE _ORT	4.21	3.96	4.08	4.09	3.87	4.04
						(HSE _ORT=EC _ORT)

Table 3. Analysis of variance for the image quality assessment of gender differences (ANOVA) and T Test Results

Group Statistics								
	Gender	F	df	N	MeanT	Std. Mean	ErrorSignificant Degree	
HSE 1	Woman			39	3.96	1.89	.117537	0.082
	Man	5.472	2	35	3.86		.129403	
HSE 2	Woman		2	39	3.82	0.659	.130383	0.030**
	Man	12.24		35	3.70		.155355	
HSE 3	Woman		2	39	3.77	0.144	.105785	0.066
	Man	7.541		35	3.67		.147849	
HSE 4	Woman		2	39	3.48	0.088	.138536	0.471
	Man	0.805		35	3.52		.123560	
HSE 5	Woman		2	39	3.33	1.829	.097207	0.243
	Man	13.72		35	3.40		.109667	

* Important, ** Very Important

Considering the difference between ages, only the average values of HSE 2 (0.000), HSE 3 (0.000) and HSE 4 (0.003) were found to be statistically significant, while the difference between the averages in other historical structures and their environments was not found statistically significant ($p < 0.05$). (Table 4).

Table 4. Variance Analysis (Anova) and T Test Results for visual quality assessment of differences between ages

Group Statistics								
	Age	F	df	N	Mean	T	Std. Error Mean	Significant Degree
HSE 1	18-25	1.791	2	66	3.91	1.159	0.031	0.181
	25 years and more			8	4.01		0.085	
HSE 2	18-25	20.493	2	66	3.74	2.595	0.030	0.000**
	25 years and more			8	3.98		0.073	
HSE 3	18-25	14.798	2	66	3.69	3.239	0.030	0.000**
	25 years and more			8	3.99		0.077	
HSE 4	18-25	8.975	2	66	3.47	3.180	0.031	0.003**
	25 years and more			8	3.77		0.078	
HSE 5	18-25	1.649	2	66	3.36	0.575	0.032	0.199
	25 years and more			8	3.41		0.086	

* Important, ** Very Important

When the difference between the departments Landscape Architecture (LA), City and Regional Planning (CRP), Architecture (ARCT) in five different Historical Structure and Environments surroundings (HES) is examined, the difference between the average values of HSE 2, HSE 3 and HSE 4 is found to be statistically significant, while the difference between the averages in other historical Structure and their surroundings is statistically was not found significant ($p < 0.05$) (Table 5).

Table 5. Analysis of variance for the image quality evaluation of the differences between parts (ANOVA) and T Test Results

ANOVA	Department	df	N	Mean	T	Std. Error Mean	Significant Degree
HSE 1	LA	3	25	3.76	1.159	0.093	0.181
	CRP		26	4.34			
	ARCT		23	3.60			
				3.92			
HSE 2	LA	3	25	3.71	2.595	0.090	0.000**
	CRP		26	4.16			
	ARCT		23	3.38			
				3.77			
HSE 3	LA	3	25	3.59	3.239	0.091	0.000**
	CRP		26	4.17			
	ARCT		23	3.37			
				3.72			
HSE 4	LA	3	25	3.43	3.180	0.094	0.003**
	CRP		26	3.79			
	ARCT		23	3.26			
				3.50			
HSE 5	LA	3	25	3.36	0.575	0.096	0.199
	CRP		26	3.58			
	ARCT		23	3.12			
				3.36			

* Important, ** Very Important

Duncan Multiple Comparison test results of average visual quality values of different sections from variation sources are given in Table 6. According to this, the highest value in HSE 2 (Historical Structure and Environments) in terms of average visual quality values is seen in CRP with 4.16, followed by LA and ARCT sections, respectively. In addition, the difference between all sections was found to be statistically significant ($p < 0.05$).

Table 6. Duncan Multiple Comparison Test results for the average visual quality value of HSE 2 (Naturalness)

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HSE 2 (Naturalness)			
Abbreviations	Departments	N	Average
ARCT	(Architecture)	25	3.38a
LA	(Landscape Architecture)	26	3.71b
CRP	(City and Regional Planning)	23	4.16c
Significant Degree		74	0.000**

* Important, ** Very Important

Average visual quality values of Atatürk University Faculty of Architecture and Design (Landscape Architecture, Architecture and City and Regional Planning) of HSE 3 are included in Table 7. Accordingly, the highest average score was seen in CRP with 4.17, followed by LA (3.59p) and ARCT (3.37), respectively. In addition, statistically significant differences were observed between the average visual quality scores of HSE 3 between all sections (p <0.05).

Table 7. Duncan Multiple Comparison Test results for the average visual quality value of HSTS 3 (Space-Identity)

HSE 3 (Location-Identity)			
Abbreviations	Departments	N	Average
ARCT	(Architecture)	25	3.37a
LA	(Landscape Architecture)	26	3.59b
CRP	(City and Regional Planning)	23	4.17c
Significant Degree		74	0.000**

* Important, ** Very Important

The Duncan Multiple Comparison test results of the average visual quality scores of HSTS 4 can be seen in Table 8. Accordingly, the highest average score was seen in CRP with 3.79, while the lowest average score was seen in the ARCT section with 3.26. The difference between all parts was found to be statistically significant (P <0.05).

Table 8. Duncan Multiple Comparison Test results for the average visual quality value of HSTS 4 (Fascination)

HSTS 4 (Fascination)			
Abbreviations	Departments	N	Average
ARCT	(Architecture)	25	3.26a
LA	(Landscape Architecture)	26	3.43b
CRP	(City and Regional Planning)	23	3.79c
Significant Degree		74	0.003**

* Important, ** Very Important

4. Discussion and Conclusion

As a result of the research; All of the participants stated that the visual quality of Historical Structure and Environments (HSE) is important, and the visual quality of the historical building and its surroundings attracts their attention. Since the participants of the survey are students of architecture and design faculties, it is an expected result

Declaration of Conflict of Interests

The authors declare that there is no conflict of interest. They have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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that the interest in the historical building and its surroundings is high. With this research, historicality got the highest score among the evaluation criteria used to determine the visual quality of the city of Kars, its historical structure and its surroundings. It has been determined that the Ani Cathedral, which is an important historical heritage in the region, is the historical building with the highest average visual quality. The fact that this building is very large, unity with the landscape, strong and perceptible is considered to be an important factor in getting the highest score. Ghazi Ahmet Headman Pasha Culture House), received the lowest visual quality score. It is thought that the weakness of the landscape integrity of this building and the lower quality of the visual landscape among other historical buildings are an important factor in taking this value.

The average values obtained were considered separately on the basis of gender, age and departments. While all the evaluation criteria on the basis of departments and the differences between the historical building and its surroundings are statistically very important at 95% confidence interval, the scores given by the City and Regional Planning students on the visual quality of the historical building and surroundings were higher than the other departments. These students are thought to have developed a different perspective in terms of focusing on the building and its surroundings, its connections with its surroundings, landscape quality, and the composition it creates with the natural and cultural environment. When the Variance Analysis (Anova) and T Test results for the visual quality assessment of the differences between ages were examined, it was revealed that there were statistically significant differences between the age differences and the average visual quality scores given to some Historical Structure and Environments (HSE 2, HSE 3, HSE 4). . In terms of gender, this difference was detected only in HSE 2 (Revenue Office Building). This assessment for this building, which has a long history, is an expected result.

It is very important to transfer historical environments to future generations with a sustainable approach and to use them together with their immediate surroundings in a balance of protection and use. As a matter of fact, Arabacıoğlu and Aydemir [16] stated in their studies that historical environments reflect the social, cultural and economic structure, life style and philosophy of the past periods and that they are the expression of a great accumulation in terms of the accuracy of the relationship they establish between nature, building and building-human relations.

Today, the rapid urbanization and population growth, which are devoid of order and plan, cause the historical environments to be damaged or even destroyed. In addition to the restoration and conservation works carried out in these areas, the increasing importance and widespread of the concept of re-evaluation will also increase the visual landscape perception of these areas. This will only be possible by considering all aspects of environmental and social sustainability in the context of conservation. Today, although there are many studies on the redesign and handling of historical environments, examples in which these are based on an analytical study remain in a minority [17-20]. However, especially in historical circles, it is inevitable that these analysis studies should be carried out meticulously and the decisions made should be re-evaluated with continuous feedback and the interventions made should always be reversible.

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