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THE EVALUATION OF HISTORICAL URBAN AREAS BY URBAN USERS IN THE CONTEXT OF A SUSTAINABLE ENVIRONMENT: THE CASE OF ERZURUM

TARİHİ KENTSEL ALANLARIN SÜRDÜRÜLEBİLİR ÇEVRE BAĞLAMINDA KENT KULLANICILARI TARAFINDAN DEĞERLENDİRİLMESİ: ERZURUM ÖRNEĞİ

Merve SİPAHİ [1]
Serkan SİPAHİ [2]
İrem KIRMIZIBIBER[3]

ORCID: M.S 0000-0002-3246-6302
S.S 0000-0002-5684-8671
İ.K 0009-0003-4198-9863

Corresponding author/Sorumlu yazar:

[1]Merve Sipahi
Osmaniye Korkut Ata University, Turkey
mervesipahi@osmaniye.edu.tr

[2]Serkan Sipahi
Osmaniye Korkut Ata University, Turkey
serkansipahi@osmaniye.edu.tr

[3]İrem Kırmızıbiber
Ataturk University, Turkey
iremkrmzbbr1@icloud.com

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ABSTRACT

As a result of urban development, historical areas are often found to be located at the very centre of the city. This situation poses several challenges for the planning and management of historical districts located in city centres. To overcome these challenges, various approaches to the planning of historical areas have been developed. These planning approaches are designed to address the urban issues in the region. Moreover, integrating sustainability into planning practices is essential for preserving historical areas for future generations. Erzurum has continued to develop throughout history and is a city that stands out as a crossroads for major trade routes. Urban development and growth began around the castle and its surroundings. Therefore, today, the historical area of the city is located at the very centre. There have been studies aimed at planning the historical area of the city. However, the sustainability of the outcomes of these studies and the extent to which sustainability has been successfully achieved remains a topic of debate. This study discusses the sustainability of the historical city centre of Erzurum. As part of the study, the sustainability criteria that were identified were applied to a survey administered to urban users. Through the survey, the sustainability of the historical city centre was assessed and discussed. The study revealed significant deficiencies in the sustainability of the historical areas within the city, starting with the historical city centre of Erzurum. Based on these findings, recommendations have been developed to increase the sustainability of the region.

Keywords: Sustainability in historical area, Sustainable planning, Erzurum, Historical environment, Urban planning

ÖZ

Kentsel gelişim sonucunda tarihi bölgelerin genellikle kentin tam merkezinde kaldıkları görülmektedir. Bu durum, kent merkezinde kalan tarihi bölümlerin planlanmasında birtakım zorlukları beraberinde getirmektedir. Bu zorlukların aşılmasına yönelik olarak tarihi bölgelerin planlamasına yönelik farklı yaklaşımlar mevcuttur. Planlama yaklaşımları bölgedeki kentsel sorunların çözümlerine yönelik olarak geliştirilmektedir. Bununla birlikte sürdürülebilirlik kavramının da gözetilerek planlama yapılması tarihi bölgenin gelecek nesillere aktarılması açısından önem kazanmaktadır.Erzurum tarih boyunca gelişimini sürdürmüş, önemli ticaret yollarının kesişim noktası olarak ön plana çıkan bir kenttir. Kentsel gelişim ve büyüme kale ve çevresinden başlayarak gerçekleşmiştir. Dolayısı ile günümüzde kentin tarihi bölgesi kentin tam merkezinde yer almaktadır. Kentin tarihi bölgesinin planlanmasına yönelik yapılan çalışmalar mevcuttur. Bununla birlikte yapılan çalışmalar sonuncunda bölgede gelinen noktanın sürdürülebilirliği; sürdürülebilirlik konusunda ne kadar başarılı olunduğu bir tartışma konusudur. Bu çalışmada da Erzurum tarihi kent merkezinin sürdürülebilirliği tartışılmıştır. Yapılan çalışma kapsamında belirlenen sürdürülebilirlik kriterleri hazırlanan anket kent kullanıcılarına uygulanmıştır. Uygulanan anket yardımı ile tarihi kent merkezinin sürdürülebilirliği tespit edilerek tartışılmıştır. Yapılan çalışma ile Erzurum tarihi kent merkezinden başlayarak kent içerisindeki tarihi bölgelerin sürdürülebilirliklerinde önemli eksikliklerin bulunduğu tespit edilmiştir. Yapılan tespit doğrultusunda bölgenin sürdürülebilirliğinin arttırılmasına yönelik öneriler geliştirilmiştir.

Anahtar Kelimeler: Tarihi alanda sürdürülebilirlik, sürdürülebilir planlama, Erzurum, Tarihi çevre, Kentsel planlama

INTRODUCTION

Throughout history, the city of Erzurum has been an important urban centre due to its location at the intersection of major roads and its strategically advantageous position for defence (Zaman, Sevindi, & Salih, 2018). Due to its significance, Erzurum has been a region of continuous conflict between Mesopotamia, Anatolia, and the Caucasus since ancient times (Özgül, 2016). As a result, Erzurum has hosted numerous civilisations and accommodated many cultures over the centuries. Today, it remains one of Turkey's important cities (Cengiz & Akkuş, 2012).

Due to the city's significance, Erzurum has stood out as a developed settlement throughout history. When examining the urban development of Erzurum, it can be observed that the city has evolved from the castle and its surrounding area (Uludüz & Sipahi, 2024). It is known that between the 6th and 11th centuries, cities in Anatolia were typically organised around a small area consisting of a castle (Altınok, 2024). During this period, Erzurum was initially a fortress, but with the beginning of Turkish rule under the Saltukid Dynasty, new walls were added to those dating from the Roman era (Beygu, 1936). In addition to the walls, following the Seljuk tradition, a Turkish neighbourhood was established, and significant architectural works such as the Ulucami, the Double Minaret Medrese, and the Yakutiye Medrese were constructed during this time (Erdmann & Erdmann, 1961).

The substantial urban development of the city, following its growth around the castle and its surroundings, took place after its inclusion into the Ottoman Empire in 1514, during the reign of Sultan Suleiman the Magnificent (Özer, Aklıbaşında, & Zengin, 2010). Under the Ottoman Empire, the city expanded, confined by the castle, Palandöken, and the fortifications (Dursun, 2020).

With the establishment of the Republic of Turkey, the first urban plan for Erzurum was created in 1939 by Lambert under the name "Future Plan of Erzurum" (Dursun, 2020). When the plan is examined, it is observed that the settlement concentrated around the castle and its surroundings, with development shaped around Cumhuriyet Street. This indicates that the historical area was located at the city centre at the time the plan was made. It is known that the planning done by Lambert continued the city's development by focusing on the historical fabric at the heart of the city. Following Lambert's plan, the development and challenges within the city centre have also closely affected the city's historical fabric and the historical area.

In 2011, as part of the Attraction Centres Support Programme (ACSP), an urban redevelopment project aimed at transformation and revitalisation was initiated within the designated site area, which includes the Erzurum Castle and its surroundings, as well as the Three Tombs area, known as the historical city centre (Yeşilyurt & Toy, 2024). The project aimed to turn Erzurum's cultural and historical centre into a major tourism attraction, while also implementing measures to reduce the urban challenges within the region. An examination of the work carried out within the scope of the project reveals that it is focused on making the historical fabric more attractive. Furthermore, approaching the region with a holistic perspective will positively impact the sustainability of the historical environment. With the increase in communication and information across all sectors, various approaches have also emerged in urban studies to promote sustainability in urban areas (Shahmoradi, Abtahi, & Guimarães, 2023) (Kaya Köse, 2024). Efforts to increase the sustainability of urban areas and cities encompass studies on resilient cities, smart city initiatives (Pandya, et al., 2023), livable city projects (Alidoust, 2024), and Cittaslow (Amrhein & Hospers, 2025), among others, which address different urban scales. The methods and terms used in these studies are widely accepted and continuously employed. In addition to studies at the urban scale, when examining research on the historical districts of cities, it is evident that these studies are often structured around the establishment of criteria (Van Oers & Pereira Roders, 2012); (Landorf, 2011); (Haghighi Fard & Doratli, 2022). As shown in Table 1, the sustainability of historical areas in an urban context can be examined in terms of environmental, social-cultural, and economic sustainability.

Table 1. Sustainability of historical areas in the urban context.

Environmental	Urban and ecology (Wu, 2014).
	Sustainable energy in the city and promotion of sustainable energy (Sampaio, Dias, & Balestieri, 2013), (Webb, Hawkey, & Tingey, 2016).
	Infrastructure problems (Neuman, 2012), (Pollalis, 2016).
	Air pollution (Arshad, Hussain, Ashraf, & Saleem, 2024), (Lin, Waller, & Lin, 2024).
	Transportation and planning (Wey & Huang, 2018).
	Self-sufficiency (Medeiros, 2024).
	Water usage (Hurlimann & Wilson, 2018), (Liu & Jensen, 2018).
	Resilience (Haghighi Fard & Doratli, 2022).
Social-Cultural	Accessibility (Jiménez-Espada, Cuartero, & Breton, 2022), (Gargiulo & Sgambati, 2022).
	Promotion and preservation of local culture (Theodora, 2020).
	Provision of cultural infrastructure and acting as a tool for knowledge transfer (Kourtit, Macharis, & Nijkamp, 2014).
	Education of urban actors (Rojas, 2015).
	Supporting social development (Mirzakhani, Turró, & Behzadfar, 2023).
	Integration of different groups (Van Hoof, Marston, Kazak, & Buffel, 2021).
	Integration of disadvantaged groups into society (Altrock, 2022)
Economic	Economic contribution to local residents (Savini, Ferreira, & Von Schönfeld, 2022), (Dell'Ovo, Dell'Anna, Simonelli, & Sdino, 2021).
	Supporting local production (Moazzeni Khorasgani, 2024).

In urban planning, when examining historical areas from an environmental perspective, it is well known that the most important factor in ensuring sustainability is the protection of ecology (Wu, 2014). In addition, efforts should be made to minimise energy consumption, and sustainable energy sources should be promoted (Webb, Hawkey, & Tingey, 2016). Alongside the use of sustainable energy sources, reducing water consumption and preserving water are also critical aspects (Liu & Jensen, 2018). Not only in historical areas but throughout the city, infrastructure, air pollution, and transportation issues should be addressed through sustainable solutions (Moazzeni Khorasgani, 2024). Furthermore, the self-sufficiency of historical areas and cities, as well as their resilience to disasters, should be ensured (Haghighi Fard & Doratli, 2022).

In terms of social and cultural sustainability, ensuring the sustainability of historical areas within the city requires not only accessibility to the historical environment, the integration of different groups, and efforts to bring disadvantaged groups into society, but also the provision of cultural infrastructure to support social development. In this regard, the education of urban actors related to the city's historical environment is of great importance (Rojas, 2015). In ensuring the economic sustainability of historical environments within the city, it is expected that the economic contribution to local residents will be established, while promoting and contributing to the production of local products is another key issue (Moazzeni Khorasgani, 2024).

In conclusion, ensuring environmental, social-cultural, and economic sustainability in the historical environment within the context of urban planning will provide multiple benefits to the city, particularly in terms of tourism, and will play a significant role in the sustainable development of the region (Ragheb, Aly, & Ahmed, 2022).In achieving sustainability within the city, all urban actors have roles and responsibilities (Sipahi & Kulözü Uzunboy, 2021). In this sense, the first step is identifying the strengths and weaknesses by the urban actors. In this study, the sustainability of the historical area within the city will be assessed for the city of Erzurum.

METHODOLOGY

Study Area

Within the scope of the sustainability of historical areas, the study area was selected as the region extending from the Üç Kümbetler (Three Tombs) to the Erzurum Castle, which forms the central historical texture of Erzurum, located in the Eastern Anatolia Region (Turkey). Some of the oldest settlements of Anatolia have emerged from this region, which has hosted numerous civilizations. Some of the earliest settlement centers of Anatolia were established in this area (Figure 1). The reason for choosing the historical region of Erzurum in this study is that it is a city of significance due to both its geographical and geopolitical location. In prehistoric times, Erzurum witnessed the rise of great cultures and civilizations along the valleys of the Aras, Euphrates, and Çoruh Rivers, which originate from this region and flow into three different seas. It is a city that has been the scene of various life domains and ancient civilizations that flourished and vanished thousands of years ago (Erzurum Encyclopedia, 2020). The Erzurum Castle and its surroundings have been transformed into a recreational area through restoration and renovation works, in addition to preserving the historical fabric. Within this scope, the area includes historical buildings with various functions, such as cafes, seating areas, and a museum.

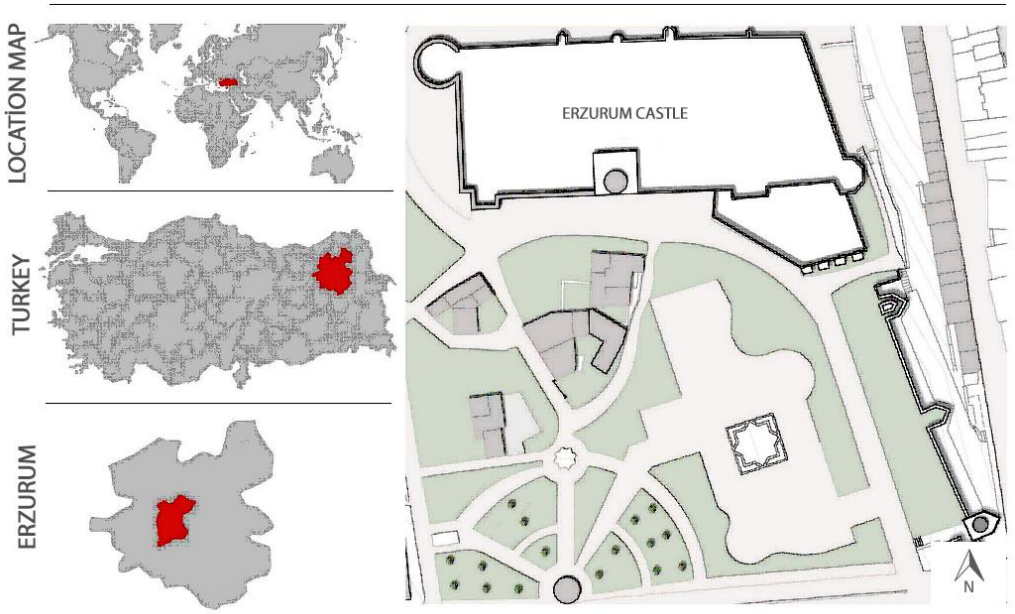


Figure 1. Study area (Location of Erzurum Historical Center)

Method

In the first stage of the study, a literature review was conducted to collect data and identify the problem, thereby establishing the theoretical framework. In this context, sub-criteria were determined for the main dimensions of sustainability: environmental, socio-cultural, and economic sustainability. The identified criteria are presented in Table 1.

In the second stage of the study, a questionnaire was administered to urban users based on the criteria obtained. The questionnaire, conducted online, consisted of two sections. The first section included questions related to participants' demographic information (gender, age, and education level); the second section included questions assessing the sustainability status of the historical region of Erzurum. The questionnaire was structured using a five-point Likert scale: (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, (5) Strongly Agree, and was applied to 100 participants.

The results obtained from the prepared questionnaire forms and tables were examined based on the evaluations of the 100 participants. In the statistical analysis of the data, the socio-demographic characteristics of the users (gender, age, education level) and the criteria related to the main dimensions of sustainability were determined. To identify the relationships among these criteria, reliability analysis, frequency distribution analysis, and correlation analysis were conducted. In the statistical analyses, the

SPSS (Statistical Package for the Social Sciences) version 16.01 software was used, and some of the data obtained from the questionnaires were evaluated using percentage analysis methods, presented in tables and graphs.

FINDINGS

The findings of the study were formed through the evaluation of the survey questions conducted within the scope of the sustainability of historical areas in Erzurum. In this context, the survey was administered to 100 area users, and the data were statistically analyzed.

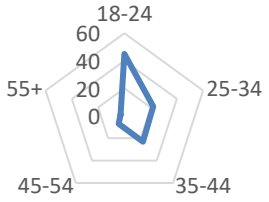
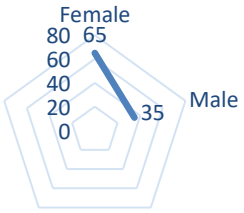
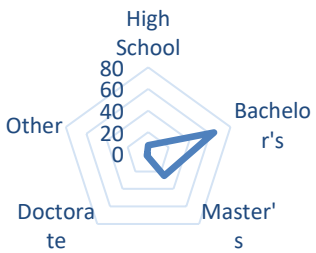
In the study, a Reliability Analysis was conducted to assess the reliability of the survey questions. The Cronbach's Alpha value calculated for scale reliability was 0.866 (>0.70), indicating that the scale is highly reliable. When the change in scale reliability upon item removal was examined, it was observed that removing any item did not increase the reliability of the scale (Table 2).

Table 2. Reliability analysis.

Cronbach's Alpha	Number of items
,866	24

When the socio-demographic characteristics of the participants in the study were examined, it was found that 65% were female and 35% were male. Regarding age distribution, 45% were between 18–24, 22% between 25–34, 23% between 35–44, 7% between 45–54, and 3% were aged 55 and above.
In terms of education level, 64% had a bachelor's degree, 25% a master's degree, 8% a high school diploma, 2% a doctorate degree, and 1% belonged to other education levels (Table 3).

Table 3. Frequency table of socio-demographic characteristics.

		n	%	
1. What is your age range?	18-24	45	45,0%	
	25-34	22	22,0%	
	35-44	23	23,0%	
	45-54	7	7,0%	
	55 +	3	3,0%	
2. What is your gender?	Female	65	65,0%	
	Male	35	35,0%	
	Other	0	0,0%	
3. What is your level of education?	High School	8	8,0%	
	Bachelor's Degree	64	64,0%	
	Master's Degree	25	25,0%	
	Doctorate	2	2,0%	
	Other	1	1,0%	

The survey questions were prepared and evaluated based on the principles concerning the sustainability of historical areas within the urban context. Descriptive analysis tables were used to briefly explain the variation and distribution of the analysis data related to these principles. According to the descriptive analysis table of the Environmental Sustainability principles, participants generally believed that initiatives contributing to urban ecology in the historical area were being carried out (3.09) and that the establishment of energy communities for the self-production and consumption of renewable energy in the historical city was rarely encouraged (2.71). Furthermore, it was found that there are infrastructure problems in the historical area of Erzurum (4.03), that non-polluting vehicles such as electric or non-motorized ones are not widely preferred over air-polluting vehicles (2.35), and that Erzurum is weak in terms of eco-transportation planning as an alternative to private vehicle use (2.53).

The historical city center of Erzurum is not perceived by users as a self-sufficient area (2.94); it was also identified that sufficient measures to reduce the unnecessary use of drinkable water in the historical city centers have not been taken (2.42), and that there are not enough resilience-oriented efforts encouraging the discussion of solutions related to existing crisis themes (2.46) (Table 4).

Table 4. Descriptive analysis of environmental sustainability.

ENVIRONMENTAL SUSTAINABILITY	N	Min	Max	Sum	Mean	Std. Deviation
1. Are there any initiatives contributing to urban ecology in the historical area of Erzurum?	100	1	5	309	3,09	1,074
2. Is the establishment of "energy communities" encouraged for the self-production and consumption of renewable energy in the historical city?	100	1	5	271	2,71	,844
3. Are there infrastructure problems in the selected historical study area?	100	2	5	403	4,03	,717
4. Are non-polluting vehicles, such as electric or non-motorized ones, preferred over air-polluting vehicles in the historical city center?	100	1	5	235	2,35	,936
5. Is Erzurum a city with an eco-transportation plan as an alternative to private vehicle use?	100	1	5	253	2,53	,904
6. Is the historical city center of Erzurum a self-sufficient area?	100	1	5	294	2,94	1,099
7. Are there any measures taken to reduce the unnecessary use of drinkable water in the historical city center?	100	1	5	242	2,42	,934
8. Are there any resilience-oriented efforts encouraging the discussion of solutions related to existing crisis themes in the historical city center?	100	1	4	246	2,46	,926

When the questions related to socio-cultural sustainability in the study area were evaluated, participants indicated that the areas in the historical city center of Erzurum were not fully accessible to all users (2.99), and that there were generally efforts to preserve and enhance the value of local and traditional cultural activities (3.44).

In addition, it was emphasized that there are not enough welcome/information staff, suitable infrastructure facilities for visitors, and information offices for those visiting the historical city (2.92), and that educators, administrators, and employees in Erzurum are not sufficiently provided with training on the sustainability of the historical environment (2.68).

Although people from different ethnic backgrounds generally coexist in historical areas of the city (3.88), it was observed that community partnerships/non-governmental organizations (NGOs) that allow individuals to socialize with one another are rarely available (3.29), and that no significant efforts have

been made for the integration of disadvantaged groups into society in Erzurum (2.68) (Table 5).

Table 5. Descriptive analysis of socio-cultural sustainability criteria.

SOCIO-CULTURAL	N	Min	Max	Sum	Mean	Std. Deviation
1. Are the areas in Erzurum's historical city center accessible to all users?	100	1	5	299	2,99	1,040
2. Are there efforts to preserve and enhance local and traditional cultural activities in Erzurum?	100	1	5	344	3,44	,935
3. Are there welcome/information staff, infrastructure facilities for visitors, and information offices in place for those visiting the historical city?	100	1	5	292	2,92	1,002
4. Are educators, administrators, and staff in Erzurum provided with continuous training on the sustainability of the historical environment?	100	1	5	268	2,68	,963
5. Do people from different ethnic backgrounds coexist in the historical city?	100	2	5	388	3,88	,700
6. Are there community partnerships/NGOs in the historical city that enable individuals to socialize with one another?	100	1	5	329	3,29	,891
7. Are there efforts in Erzurum aimed at integrating disadvantaged groups into society?	100	1	5	268	2,68	,898

In the analysis regarding the economic values, which constitute the final criterion in the sustainability of the historical area of Erzurum, it is observed that collaboration with other organizations promoting natural and traditional food products in the city of Erzurum is perceived to be limited (3.16). However, it is generally considered that taste education programs for personal use and the culinary sector are encouraged, and that, where possible, the use of organic local products is promoted (3.10) (Table 6).

Table 6. Descriptive analysis of economic sustainability criteria.

ECONOMIC	N	Minimum	Maximum	Sum	Mean	Std. Deviation
1. Does the city of Erzurum collaborate with other organizations that promote natural and traditional food products?	100	1	5	316	3,16	,873
2. In Erzurum, is the use of organic local products encouraged, and are taste education programs provided for personal and culinary sector use?	100	1	5	310	3,10	1,040
Valid N (listwise)	100					

In the correlation analysis conducted to reveal the relationships between variables, statistically significant ($p < 0.01$) and moderately positive linear relationships were identified. In this context, a positive correlation was found between "whether Erzurum is a self-sufficient city" and "the accessibility of areas in the historical city center of Erzurum to all users" ($r = .521$). This finding indicates that increasing accessibility may strengthen the perception of urban self-sufficiency.

Similarly, a significant relationship was found between "measures to reduce the unnecessary use of drinkable water" and "the level of the city's self-sufficiency" ($r = .418$). This suggests that strategies for the efficient use of resources, such as water management, support the vision of a sustainable city. On the other hand, strong and statistically significant correlations were identified between "resilience efforts encouraging the discussion of crisis themes in the historical city" and "measures to reduce the use of

drinkable water" (r = .539), "providing continuous sustainability training for educators and administrators" (r = .522), and "collaborations related to natural/traditional foods" (r = .658). These relationships reveal that resilience-oriented urban sustainability is directly related not only to physical infrastructures but also to educational, administrative, and economically based practices.

In addition, a significant relationship was found between "efforts aimed at integrating disadvantaged groups" and the presence of community partnerships/non-governmental organizations (r = .437). This indicates that social inclusion policies are directly linked to the effectiveness of social networks and local civil structures. Similarly, significant relationships were found between "encouraging the use of organic and local products" and both "sustainability education" (r = .456) and "resilience efforts addressing crisis themes" (r = .430). These findings demonstrate that environmental sustainability can be strengthened through both social and administrative support mechanisms (Table 7).

Table 7. Correlation analysis

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	r	s	t	u	v
a. What is your age range?	1																				
b. What is your gender?	0,031	1																			
c. What is your level of education?	-0,057	-,233**	1																		
d. Are there any initiatives in the historical area of Erzurum that contribute to urban ecology?	0,193	-0,121	0,040	1																	
e. Is the establishment of "energy communities" encouraged for the self-production and consumption of renewable energy in the historical city?	0,186	0,054	-0,126	,508**	1																
f. Are there infrastructure problems in the selected historical study area?	-0,038	0,057	-0,121	-0,161	-0,186	1															
g. Are non-polluting vehicles, such as electric or non-motorized ones, preferred over air-polluting vehicles in the historical city center?	0,171	0,017	-0,055	0,169	,206**	-0,106	1														
h. Is Erzurum a city with an eco-transportation plan as an alternative to private vehicle use?	0,095	0,010	-0,045	,252*	,256*	-0,072	,352**	1													
ı. Is the historical city center of Erzurum a self-sufficient area?	-0,008	0,021	-0,063	,330**	,362**	-,241*	0,158	,327**	1												
j. Are there any measures taken to reduce the unnecessary use of drinkable water in the historical city center?	0,180	0,029	0,047	,395**	,348**	-0,049	,396**	,392**	,418**	1											
k. Are there any resilience-oriented efforts encouraging the discussion of solutions related to existing crisis themes in the historical city center?	0,085	-0,091	0,115	,318**	,491**	-0,155	,239*	,231*	,339**	,539**	1										
l. Is the sustainable use of water in environmental areas ensured in the historical city center?	0,103	0,066	0,097	,324**	,327**	-0,188	,407**	,370**	,414**	,721**	,614**	1									
m. Are the areas in Erzurum's historical city center accessible to all users?	0,061	-0,013	0,018	,381**	,388**	-,203*	0,139	,307**	,521**	,473**	,446**	,488**	1								
n. Are there efforts in Erzurum to preserve and enhance local and traditional cultural activities?	0,083	-,212*	0,039	,392**	,381**	-0,020	0,157	0,056	,380**	,353**	,368**	,289**	,534**	1							
o. Are there welcome/information staff, appropriate infrastructure facilities for visitors, and promotional offices available for those visiting the historical city?	0,136	-0,088	-0,016	,345**	,307**	-0,081	,235*	0,114	,207*	,403**	,450**	,454**	,319**	,264**	1						
p. Are educators, administrators, and staff in Erzurum provided with continuous training regarding the sustainability of the historical environment?	0,022	-0,039	-0,021	,292**	,282**	-,293**	,383**	,290**	,488**	,421**	,522**	,462**	,370**	,382**	,340**	1					
r. Do people from different ethnic backgrounds coexist in the historical city?	-0,128	0,096	-0,067	-0,147	0,060	0,108	-0,012	-0,090	0,017	0,093	0,103	-0,070	0,040	0,128	-0,028	-0,013	1				
s. Are there community partnerships or non-governmental organizations (NGOs) in the historical city that enable individuals to socialize?	0,048	-0,004	0,052	,289**	0,153	-,219*	,253*	,346**	,410**	,423**	,331**	,486**	,341**	,245*	,332**	,309**	0,040	1			
t. Are there efforts in Erzurum aimed at integrating disadvantaged groups into society?	0,084	0,005	0,096	0,166	,343**	-,205*	,327**	,261*	0,154	,307**	,508**	,410**	,202*	0,169	,376**	,278**	0,147	,345**	1		
u. Does the city of Erzurum collaborate with other organizations that promote natural and traditional food products?	-0,095	-0,063	0,089	,254*	,447**	-,298**	0,153	,237*	,400**	,313**	,658**	,458**	,402**	,371**	,407**	,542**	0,081	,368**	,440**	1	
v. In Erzurum, is the use of organic local products encouraged, and are taste education programs offered for both personal use and the culinary sector?	-0,036	-0,111	-0,020	,281**	,390**	-,221*	0,192	,276**	,430**	,310**	,430**	,351**	,440**	,391**	,270**	,456**	0,031	,437**	0,186	,439**	1

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

This study aimed to evaluate the sustainability of Erzurum's historical city center from an urban planning perspective, and based on the findings, it has revealed that the region is particularly inadequate in terms of environmental sustainability. Within the scope of the study, participants indicated that infrastructure problems in and around the citadel are highly prevalent (mean: 4.03), emphasizing that this issue should be addressed as a priority area of intervention. In addition to infrastructure improvements, the use of alternative fuel technologies in vehicles, the development of bicycle and pedestrian paths, and the promotion of public transportation are recommended to reduce environmental pollution. In this context, transportation planning based on clean energy and eco-mobility is expected to contribute both to the improvement of air quality and to the overall enhancement of sustainability.

Another key finding related to environmental sustainability is the efficient use of water and energy resources. Participants expressed that measures to reduce the unnecessary use of potable water are insufficient. Furthermore, the widespread implementation of practices such as the use of greywater and the collection and purification of rain and snow water is recommended. Similarly, there is a need for sustainable strategies aimed at reducing energy consumption. As in the general context of Erzurum, the use of renewable energy sources, particularly solar energy, is also of significant importance for the historical city center. Additionally, the identification and implementation of energy-saving systems are also considered critical.

These environmental themes are supported by the correlation findings of the study. The significant

relationships established between potable water management and urban self-sufficiency (r = .418**) and resilience to crises (r = .539**) demonstrate the strong link between the efficient management of natural resources and the perception of sustainability. These findings reflect the frequently emphasized relationship in the literature between resource management and resilience (UN-Habitat, 2020).

Although the historical city center has not yet achieved full self-sufficiency, it is considered to be an area that can be developed more easily compared to other dimensions of sustainability. However, the region has been observed to lag behind in terms of urban resilience. Enhancing resilience would not only contribute to sustainability but also strengthen the capacity for effective management during disasters and crises. Indeed, the relationships established between accessibility and self-sufficiency (r = .521**) and resilience to crises suggest that physical and administrative infrastructures need to be addressed in an integrated manner (Ahern, 2011).

Other findings of the study show that the region's socio-cultural sustainability is stronger compared to its environmental sustainability. The historical city center of Erzurum supports the coexistence of individuals from different ethnic backgrounds. Moreover, various efforts are being made to preserve and promote local and traditional cultural activities. While the area is described as a space where different social groups can come together and socialize, there is room for improvement in areas such as accessibility, the inadequacy of social infrastructure, the integration of disadvantaged groups, and sustainability education.

At this point, correlation analyses support the relationship between the integration of disadvantaged groups and social partnerships (r = .437**), as well as the impact of sustainability education on the social structure. Additionally, significant relationships have been identified between the promotion of organic and local product usage and both sustainability education (r = .456) and resilience studies (r = .430). These findings indicate that cultural sustainability is not limited to the preservation of traditional heritage but is also directly linked to areas such as social innovation, food security, and participatory governance. Finally, the region's economic sustainability generally follows a moderate trajectory. Although inter-institutional cooperation is observed to be limited, the promotion of the use and sale of local products is evident. Correlation data reveal that these economic elements are also in mutual interaction with environmental and social sustainability. In particular, collaborations to be developed in the fields of food and energy constitute the building blocks of a holistic sustainability approach.

CONCLUSION

Within the scope of this study, it has been observed that the sustainability of the historical region of Erzurum is considerably lacking in terms of environmental aspects. Ensuring the environmental sustainability of the historical area will contribute to the preservation of the site, increase the well-being and comfort of the residents, and enhance the overall livability of the city. Additionally, it will increase the attractiveness of the region in terms of tourism and visitors. In this way, beyond the benefits provided to the city and its inhabitants, it will also offer significant economic advantages to the city, especially through tourism.

In terms of socio-cultural sustainability, several deficiencies have also been identified. These deficiencies are primarily related to accessibility, universal design, social infrastructure, and education. The region holds significant potential in the context of socio-cultural sustainability; however, this potential can only be realized by addressing the existing shortcomings. Developing the transportation network to support different modes of access, evaluating the area within the framework of universal design principles, improving the social infrastructure, and equipping relevant personnel with the necessary training are crucial steps to establish a well-structured social foundation.

Enhancing economic sustainability and recognizing the area as an economic asset for the city will facilitate investments by both citizens and local administrators. This, in turn, will have a fundamental impact on the overall sustainability of the region. Therefore, although the current level of economic sustainability may appear sufficient, it is essential to further develop initiatives aimed at strengthening it.

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