

Article

The Effect of Green Spaces on User Satisfaction in Historical City of Nicosia

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Abstract: Urban green spaces (UGS) are one of the most important issues regarding the sustainability of a city. In this study, we aimed to determine the effect of UGS on the historical urban texture by measuring user satisfaction. The city of Nicosia was chosen as a case study due to its rich texture. This texture has remained in the center of the modern city over time. In line with the purpose of this study, firstly, the existence of UGS, as well as their functionality and contribution to the texture of Nicosia (Walled City), were determined by literature review, field work, and appropriate computer programs. Then, a survey method based on functional factors was applied in order to measure the satisfaction of the users with UGS, and the results were statistically evaluated and compared with the Statistical Package for Social Sciences (SPSS) 26.0 software and the Pearson's chi-squared test. As a result of the survey, it has been revealed that the existing green areas are insufficient for the people living in the old city of Nicosia. This research has shown that quality green areas that can be used for social activity or relaxation are not available in the old city of Nicosia. In addition, it has been determined that the existing green areas are not clean and safe, there are not enough shading plants, and the existing plants are very neglected. In this context, it is essential to make proper plans for future urban developments in order to have green areas of sufficient scale in the urban fabric.

Keywords: urban green space (UGS); historic urban texture; user satisfaction; Walled City of Nicosia (old city); survey



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1. Introduction

Cities are the living space of the structural environment in which people live their common life. The urban texture consists of architectural structure, green spaces, and their mutual relations and integrity [1]. Urban green spaces (UGS) contribute to the city through economic, physical, social, and aesthetic functions; add value, [2–4]; and, when used correctly, they are important urban parts that give the city an identity and affect its character and livability [5–7]. Modern cities are the artifacts of many years of development, change, and transformation [8]. Therefore, every process leaves permanent traces and legacies on the city. The historical urban texture is the cultural heritage values that need to be preserved, which provide the transfer of culture and identity to the future by creating a connection between the past and the present [9]. According to Ref. [10], historical urban textures are cultural heritages that can be expressed with their natural, cultural, visual, and semantic qualities, which have gained value over time with the effect of mutual relations between the natural and cultural environment. In this context, the presence of UGS plays a very important role in historical cities in improving the quality of life of users and increasing satisfaction [8].

In these historical cities, which are defined as cultural landscapes with living traditional cultures, UGS should be placed under protection and utilized with sustainable uses in order to preserve them for future generations. Improper zoning practices that were created due to rapid urbanization and user damage can cause the deterioration of urban textures

and loss of historical texture [3,11]. Today, insufficient and unplanned green spaces in cities have brought various problems [11,12]. Green space systems developed for these reasons contribute to “urbanization” by creating more livable environments [2,13,14]. In terms of the physical dysfunctions or inadequacies of UGS and the limitations caused by this, it is essential to address the physical dysfunctions or inadequacies of the users and to suggest appropriate solutions in terms of equality of life and opportunity. Thus, it is possible for all people to socialize and benefit from the positive psychological effects of nature [15]. As the importance of this issue is becoming increasingly understood, many studies have been conducted to determine the positive benefits of green spaces in residential areas for the city and its inhabitants [16,17].

In the light of the related literature, comprehensive gaps, including the situation of UGS in historic cities, were determined. In this regard, the Walled City of Nicosia was chosen as the case for this research since it has been home to many civilizations and has been an important city to the island of Cyprus for many years. As a result of the literature review, it has been determined that the green spaces in the historical city of Nicosia have decreased with the building densities running parallel to this decrease due to the rapidly increasing urbanization and population growth due to migration from rural areas to the city [18]. Although the historical texture within the city walls of Nicosia is quite dense, it has many functions and is an important part of modern Nicosia. As well as the protection of historical and cultural values, the effective use of green spaces is also very important for quality of life. Studies on restoration, sustainable cities, urban regeneration, urban transformation, urban planning, and landscape planning in the historical urban texture have been carried out in the Walled City of Nicosia so far. However, it has been determined that there is no scientific study that analyzes the existence, benefits, and functions of green spaces, nor one that measures user satisfaction and makes a recommendation on this issue; however, all studies indicate the importance of the existence of UGS for the sustainability of cities [19,20].

In addition, it has been understood that measuring user satisfaction about UGS will be an important tool in determining the deficiencies of green areas, as shown Table 1. The deficiencies of UGS in the city were determined and recommendations have been made within this framework (Figure 1).

Table 1. The Green space averages of northern Nicosia [21].

Local Park	0.50 ha/1000 person
Children’s play areas	0.50 ha/1000 person
Green spaces (excluding urban parks, walled areas, Pedieos streams, and roadside green strips)	0.50 ha/1000 person
Sports playgrounds (dual function of community sports centers and school playgrounds)	0.33 ha/1000 person
Total local open spaces (including sports play areas)	1.83 ha/1000 person
Community sports centers	0.30–0.36 ha/1000 person

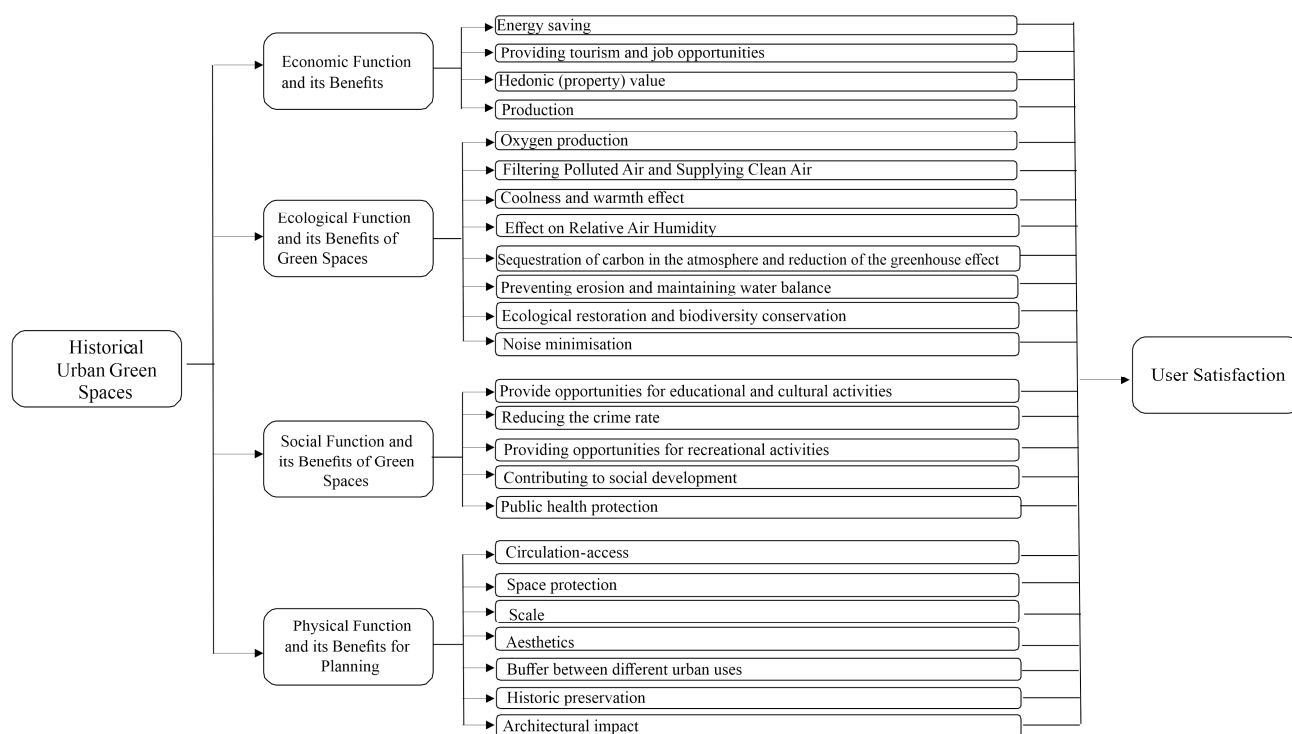


Figure 1. Functions and their benefits of urban green spaces in historical areas.

2. Materials and Methods

To achieve the study goal, a research framework was established to understand and analyze the effects of UGS in historical urban areas on user satisfaction. It was developed in four stages, as shown in Figure 1. The first stage, a literary review, was used to present and identify the functions and benefits of UGS (Figure 1) [5–7].

In this stage, UGS in the Walled City of Nicosia, which is also the study area, were examined in terms of their averages, benefits and functions, and their relations with each other, with the buildings and historical areas, and with the green spaces in their immediate surroundings. AutoCAD® 2012, Adobe Photoshop CS6, and ArcGIS® 9.3 programs were also used to determine the presence of UGS within the Walled City of Nicosia, and they are shown with a map (Figure 2). In the second stage, the relationship between UGS and user satisfaction was determined by the survey and statistical method. In this study, the existence of green spaces within the borders of the Walled City of Nicosia has been analyzed, and the benefits, functions, and user satisfaction have been measured with a survey conducted on 384 people. In light of the comparisons and results obtained by the data analysis, suggestions have been developed to ensure user satisfaction and a sustainable historical city with an effective green area.

The main materials used for this research are the UGS in the Nicosia Old City, which is the study area, and the 1/5500 scale state maps—from which the data of these areas were obtained—satellite images and pictures of the research area; and AutoCAD® 2012, Adobe Photoshop CS6, and ArcGIS® 9.3 programs. Additionally, the knowledge obtained from the literature study and the survey forms conducted throughout the Nicosia Old City constitute the data. The Statistical Package for Social Sciences (SPSS) 26.0 software was used to statistically analyze the survey data.

Ethical approval was given for the survey by the Near East University Scientific Research Ethics Committee. The corresponding ethical approval code is NEU/FB/2021/136.

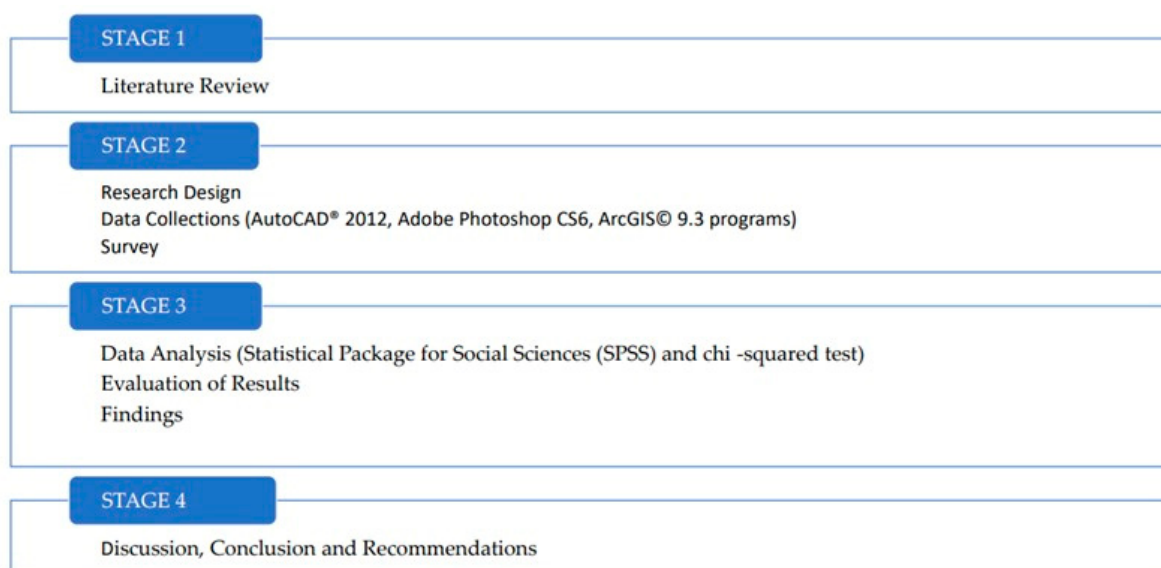


Figure 2. Theoretical framework of this research.

2.1. Study Area

The study area is the historical texture of the city of Nicosia, one of the oldest settlements on the island of Cyprus (Figure 2).

The city, located between $35^{\circ}10'15''$ north latitude and $33^{\circ}21'48''$ east longitude, was established in the green area within the bend of the Nicosia Pedieos stream (Kanlıdere) [22] as it changes direction from the plain to the east (Figure 3). The soil of the city, which is located in the Mesarya Plain, was fertile due to the alluvium deposited by Pedieos, and the water of the region was abundant due to the underground springs fed by the stream. Due to the existence of this natural structure, the city has had a green texture throughout history [23,24] (Figures 4 and 5). In addition, Nicosia, which has been the capital for centuries, harbors many historical and cultural buildings. The intensity and continuity of the green texture and the presence of this cultural heritage will ensure a livable city where the user is satisfied.

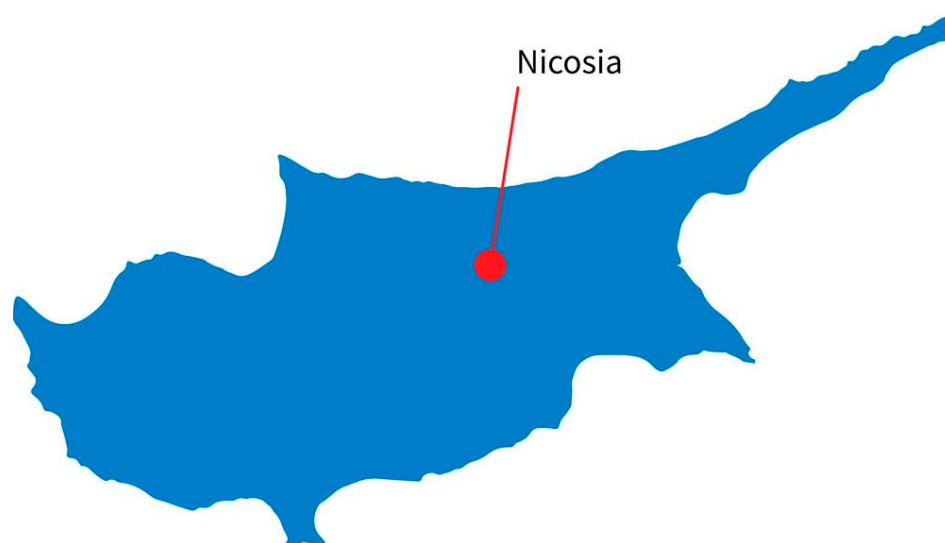


Figure 3. Cyprus map, indicating Nicosia city.

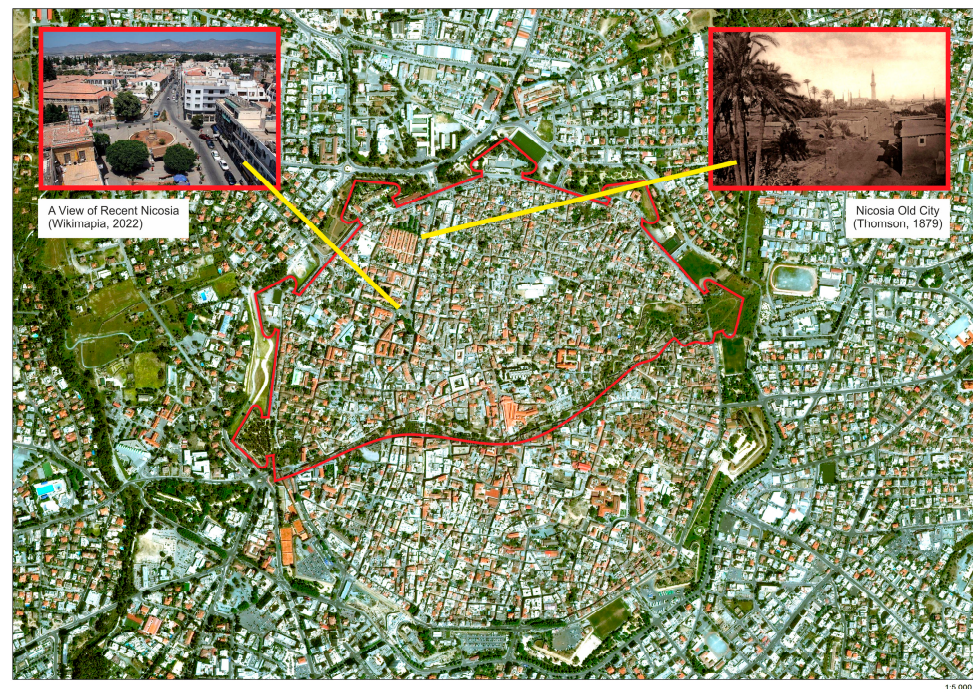


Figure 4. Contemporary and 19th century spotlights on a top view of the present-day Walled City of Nicosia <http://wikimapia.org/1869893/tr/Atat%C3%BCrk-Meydan%C4%B1-Saray%C3%B6n%C3%BC> (Edited by İnançoğlu) (accessed on 1 October 2022) [25,26].

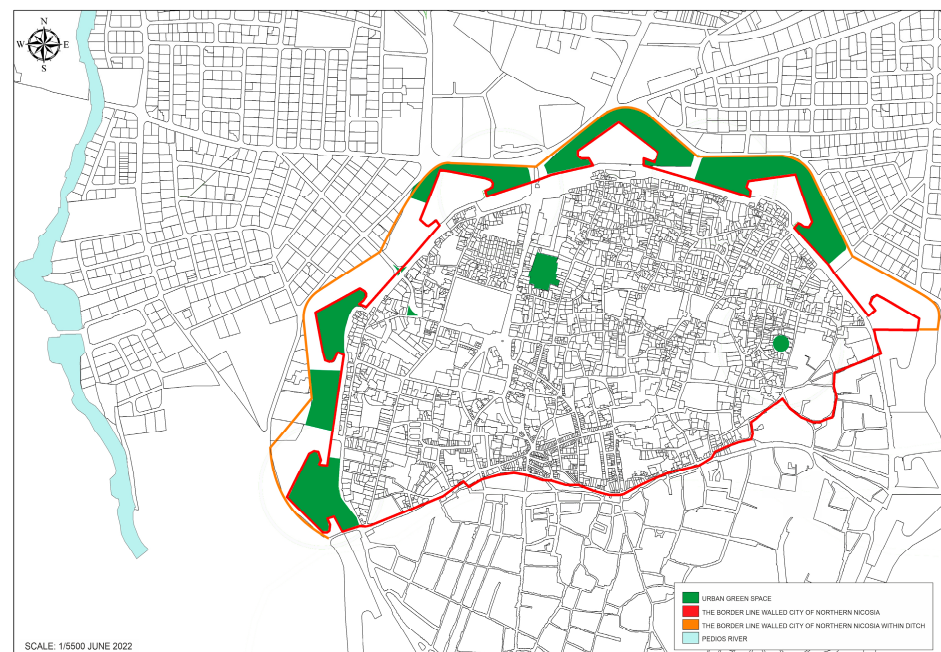


Figure 5. The Spots of UGS on a map of the Walled City of Northern Nicosia.

In 2011, according to the last census, the number of inhabitants of the Walled City of Northern Nicosia reached 6800. Today, this number is known to have increased even more [27]. External, permanent users, such as business owners, visitors, students, and members of the public, far outnumber the residents. However, as these users are temporary and constantly changing and increasing, it is difficult to identify this population. As the user population increases, residents' demands for UGS are also increasing rapidly.

Today, since the city of Nicosia is divided, the study is limited to the northern part. Therefore, most of the information about the study area is within the scope of Northern Nicosia. The reason for this limitation is the two administrations of the divided city of Nicosia, so there are differences in functions and averages. For this reason, firstly, the northern part was chosen as a study area. In future studies, the southern part should be chosen to ensure the integrity of the study.

2.2. GIS Research

In order to map the existence of UGS in the study area and to draw more accurate and qualitative results, important information, such as the acreage of the area, was obtained by using the ArcGIS© 9.3 program. Accordingly, while the total acreage of the city walls of Nicosia (North) is 97.842 ha, the total acreage of green spaces within it is 9.343 ha (Figure 4). When this ratio is compared with the green area averages of Nicosia, it seems to be consistent.

2.3. Averages of Green Spaces

In order for green spaces to fulfill their functions, they must be designed in accordance with some standards (averages). The green area standard is expressed as the number of green spaces per capita in m^2 , and as the division of all areas with green tissue on the city by the general population of the city. The green area norm is a phenomenon that can vary from country-to-country, as well as between cities in a country. Since there will be differences in the age, culture, occupation, and economic status of urban people, green space requirements also differ. In the determination of green spaces, the physical environmental characteristics of the city (climate, topography, location of the city) as well as social, cultural, and economic factors, and intensity of use, play an important role.

For the green space averages of Northern Nicosia, the recommendations in the 1985 bi-communal Zoning Plan and the text consolidated by the Town Planning Department of Northern Cyprus in 2012, which includes the amendments of these recommendations over time, are used [28]. There is no official text on the changes made after 2012. According to this text: 0.5 hectares of local green space, 0.5 hectares of park area, and 0.5 hectares of children's playground per 1000 inhabitants are proposed for the planned area. In addition, 1.32 hectares of sports area are planned to be used by schools and local communities. Thus, there are 2.82 hectares of green and open space per 1000 inhabitants [29].

2.4. Content of the Survey

For the purposes of this article and to measure users' satisfaction, the survey was conducted with 384 people. Based on the fact that most of the users do not live in the area, 314 people were determined to be non-residents, and 70 residents were determined for the survey. In the survey, the variables of whether the participants lived in the Walled City of Nicosia or whether they had a workplace in Nicosia were used. The purpose of using these variables is to measure whether the results show similarity even if the users have different conditions (such as the time spent within the city walls), so that the result is more accurate. The Statistical Package for Social Sciences (SPSS) 26.0 software was used for the statistical analysis of the research data. Statistical evaluations and comparisons were made with the Pearson chi-square test and the accuracy of the survey was tested.

2.5. Limitations of the Study

Today, besides modern cities, there are many historical cities that are still in use. These cities developed and grew over time and remained as a core within the modern city. Some of these historical textures have remained in a sustainable position together with the modern city. Others are experiencing various problems. This is also the case for the existence of green areas. The existence of green areas is also very important for cities to be sustainable. Considering the historical texture, which is an important part of today's cities, the existence of green areas in these cities are also important for the sustainability of the

cities. The city of Nicosia is also an important city that has lived and become a center for residents for centuries. The historical urban fabric of Nicosia, which is the core of today's city, contains many problems. The city of Nicosia has been discussed in many ways related to the concept of sustainability.

3. Results

A growing body of literature indicates that the existence of UGS provides many benefits due to its health, environmental, social, and economic functions [5,30]. They ensure the users' satisfaction, in particular, as well as the sustainability of cities as a whole. A survey was conducted to measure whether these functions and their benefits provide user satisfaction or not.

3.1. Survey Results

The distribution of the participants according to their socio-demographic characteristics and the status of living and having a workplace in the Walled City of Nicosia have been determined. The method for evaluating their leisure time; their opinions on the adequacy of green spaces in the Walled City of Nicosia; its planning and importance; some characteristics related to the situation of visiting green spaces in the Walled City of Nicosia; the method for evaluating the security, cleanliness, maintenance, vegetative material, and equipment elements of the Walled City of Nicosia; and the opinions and wishes regarding the realization of social and recreational activities in green spaces in the Walled City of Nicosia were determined by frequency analysis.

As a result of the distribution of the participants according to their socio-demographic characteristics, 53.91% of the participants in this study were female and 46.09% were male; 28.91% of the age groups are 30 years old and below, 34.38% are between 31–40 years old, 21.35% are between 41–50 years old, and 15.36% are 51 years old and over; 73.44% of participants' place of birth is TRNC, 21.35% is TR, and 5.21% is other; 28.65% of participants' education level was high school or below, 45.05% of them were undergraduate graduates, and 26.30% of them were post-graduates; the marital status of the participants were 36.46% single, 55.47% married, and 8.07% divorced; with regards to having a child, 56.51% of participants had a child, while 43.49% did not have a child; of the participants who had children, 40.55% of the children are under the age of 5, 26.73% are between the ages of 6–11, 15.21% are between the ages of 12–17, and 17.51% are 18 years or older; 5.47% of them are retired, 14.58% are public employees, 40.89% are private sector employees, 13.02% are students, 16.41% are self-employed, and 9.64% of them are working in other professions; it has been determined that 34.90% of participants' income status is less than income and expense, 48.96% is equal to income and expense, and 16.15% is more than income and expenses.

When the distribution of the participants according to the type of dwelling they live in is analyzed, it is seen that the participants who live in detached houses with gardens have the highest rate of participation, while those that live in apartments with four floors or more have the lowest rates of participation.

According to the status of the participants living and having a place of work in the Walled City of Nicosia Walled (within the city walls), 18.23% of the participants lived within the Walled City of Nicosia, and 81.77% do not live within the Walled City of Nicosia; it was determined that 5.73% of the participants lived within the Walled City of Nicosia for 10 years or less, 9.11% lived in the city for 11–20 years, and 3.39% lived in the city for 21 years or more; additionally, 17.14% of participants lived in Arapahmet, 7.14% lived on Atilla Street, 7.14% lived in Samanbahçe, 5.71% lived on Çanakkale Street, 5.71% lived on Devriş Paşa Street, 5.71% lived in front of the palace, 5.71% lived on Tanzimat Street, 4.29% lived on Barbaros Street, 4.29% lived on Beligpaşa Street, 4.29% lived on Karababa, 4.29% lived on Lale Street, 4.29% of them lived on Mehmet Ali Rıza Street, 4.29% lived on Pınar Street, 2.86% of them lived in Arasta, 2.86% lived on Kamil Paşa Street, 2.86% lived on Marmara Street, 8.57% of the population live in Pencizade and on other (Çağlayan,

Yenicami, Büyükhan, Karababa, Turgut Reis) streets; moreover, it has been observed that 29.17% of the workplaces of participants are within the Walled City of Nicosia and 70.83% of the workplaces are not.

When the distribution of the participants according to the way they spend their free time is examined, it is seen that 58.59% of the participants spend their free time following social media, 44.79% participate in sports and exercise, 39.84% spend their free time reading books, 51% spend their free time going to natural green areas or parks, 19.27% participate in cultural activities, 51.56% watch TV, 39.32% listen to music, 35.42% spend their free time by going on a trip, 20.83% of them spend their free time walking their dog, and 30.47% of them go shopping; furthermore, it was observed that 84.90% of them spent their free time at home, 20.57% in coffee shops, 27.08% in parks, 22.40% in the bazaar, and 14.32% in the square.

In the survey (Table 2), 21.88% of the participants stated that there is enough green space in the Walled City of Nicosia, 59.90% stated that there is not enough green space in the Walled City of Nicosia, and 18.23% have no idea whether there is enough green space in the Walled City of Nicosia. Furthermore, 6.77% of the respondents stated that planning was performed when green spaces were constructed, 42.45% stated that planning was not performed when green spaces were constructed, and 50.78% had no idea whether planning was performed when green spaces were constructed. Last, 5.47% disagreed with the statement, “Green spaces are very important places for people,” 2.86% were undecided whether to agree or disagree with the statement, “Green spaces are very important places for people,” and 91.67% agreed with the statement that “Green spaces are very important places for people”.

Table 2. Participants’ opinions on green spaces in the Walled City of Nicosia and its importance.

	Number (n)	Percentage (%)
Opinion on enough in green area in Walled City of Nicosia		
There is	84	21.88
None	230	59.90
No opinion	70	18.23
Opinion on status of construction and planning of green spaces		
Done	26	6.77
Not done	163	42.45
No opinion	195	50.78
Agreement with statement: “Green spaces are very important places for people.”		
Not participating	21	5.47
Undecided	11	2.86
Attended	352	91.67

The distribution of the participants according to some characteristics related to the situation of going to green spaces in the Walled City of Nicosia was determined. According to this, 79.17% of the participants went to green spaces and 20.83% did not go to green spaces. In terms of activities, 66.78% went to green spaces in the Walled City of Nicosia to rest, 15.79% went to green spaces for picnics, 70.07% went to get fresh air, 41.12% went to participate in sports (running, walking), 17.76% went to walk their dog, 6.91% went to play games, 17.43% went for transit purposes, and 29.28% went to play with their children. In terms of the amount of people who went to green spaces, 46.38% of the respondents went to the green area in the Walled City of Nicosia alone, 91% went to the green area with their friends, 51.64% went to the green area with their spouse, and 53.95% went to the green area with their children. In terms of when participants visited green areas in the city, 70.07% of the respondents visited the green area in the Walled City of Nicosia in spring, 54.28%

visited in summer, 40.13% visited in autumn, 11.84% visited in winter, and 51.64% visited the green area in the Walled City of Nicosia all year round.

In terms of the frequency of visits, 4.28% of the participants visited the green area in the Walled City of Nicosia every day, 19.41% visited once a week, 26.64% visited several times a week, 39.14% visited twice a month, and 30.59% visited once a year. In terms of the time of day, 24.34% used the area between 08.00–12.00 h, 93.09% used the area between 12.00–16.00 h, 94.08% used the area between 16.00–20.00 h, 21.05% used the area between 20.00–24.00 h. In terms of the length of stay, 22.70% used the area for less than 1 h, 62.83% used the area for 1–2 h, 26.32% used the area for 2–3 h, 6.58% used the area for 3–4 h, and 2.63% used the area for more than 4 h.

When the distribution of the participants according to the areas where they are mostly located in the Walled City of Nicosia (Figure 6) is examined, it is seen that 24.34% of the respondents are mostly located in the Arabahmet Neighborhood, 71.38% are located in the Arasta Shopping Area, 57.57% in are located in the Bandabulya (shopping building) and its surroundings, 7.57% are located in the Presidency of the Republic, and 49.37% are located in the Kyrenia Gate. Furthermore, it was found that 12.17% of them were mostly located on Mısırlızade Street, 49.01% were mostly located in Saray Önü Square, 50.66% were mostly located in Selimiye Square, 24.67% were mostly located in Yiğitler Bastion, and 43.09% were mostly located on Zahra Street.

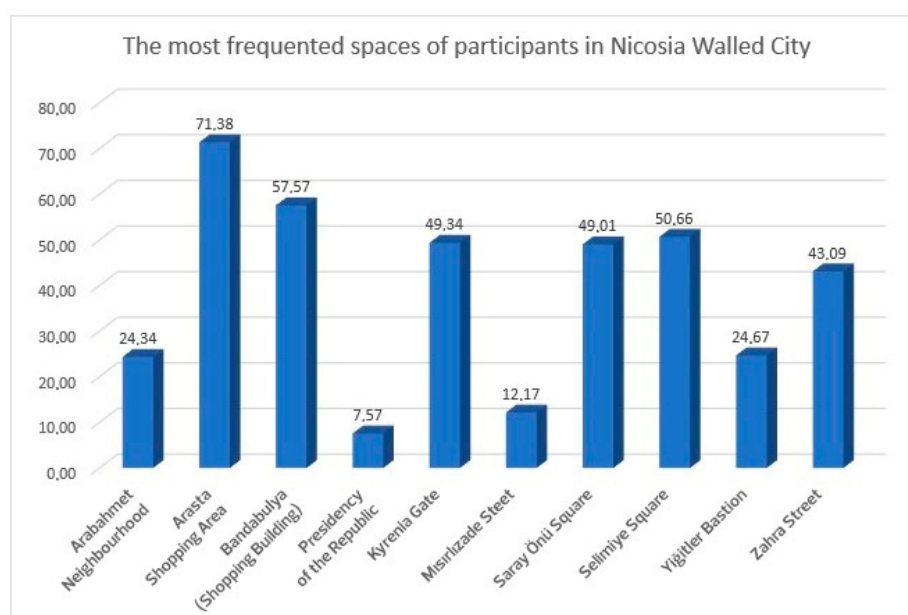


Figure 6. Distribution of the participants according to their most frequent neighborhoods in the Walled City of Nicosia.

In order to understand user satisfaction, the analyses obtained from the survey questions and answers were determined according to functional factors (safe, clean, well-maintained, vegetation, and equipment elements) and were evaluated, as shown in Table 3. Firstly, the participants' evaluation of the Walled City of Nicosia according to the safety factor is given. Here, the respondents evaluated Nicosia according to the safety factor, and 30.21% of them found Nicosia to be safe, while 69.79% of them found Nicosia to be unsafe. Among the respondents who found Nicosia unsafe, 26.49% stated that they found Nicosia unsafe due to stray animals, 89.55% stated it was due to insufficient lighting, and 78.73% stated it was due to dangerous people.

Table 3. UGS evaluations of participants according to different factors.

	Number (n)	Percentage (%)
Evaluation according to safety factor		
Safe	116	30.21
Insecure	268	69.79
Reason for finding it unsafe (n = 268) *		
Stray animals	71	26.49
Inadequate lighting	240	89.55
Dangerous people	211	78.73
Evaluation according to cleanliness factor		
Clean	91	23.7
Dirty	293	76.3
Reason for finding it dirty (n = 293) *		
Ugly writings on walls and benches	198	67.58
Rubbish and vegetable waste in the area	280	95.56
Failure to clean the roads	123	41.98
Evaluation for maintenance factor		
Groomed	63	16.41
Unmaintained	321	83.59
Reason for finding it neglected (n = 321) *		
Poor condition of plant material	226	70.4
Poor condition of park furniture	274	85.36
Poor condition of the floor covering	186	57.94
Evaluation for plant material factor		
Adequate	32	8.33
Inadequate	352	91.67
Reason for finding inadequate (n = 352)		
Tree	232	72.27
Bush	124	38.63
Lawn areas/Seasonal flowers	283	88.16
Evaluation according to equipment elements factor		
Adequate	32	8.33
Inadequate	352	91.67
Reason for finding it insufficient (n = 352) *		
Lighting elements	269	83.8
Children's playgrounds/tools	209	65.11
Toilets	209	65.11
Shading elements	164	51.09
Seating elements	228	71.03
Plastic items (sculptures, etc.)	98	30.53
Garbage bins	191	59.5
Floor coverings	138	42.99
Sports fields (basketball, football, tennis, etc.)	174	54.21
Sales kiosks/cafeterias	112	34.89
Fitness equipment	96	29.91

* More than one answer given.

Then, the participants' evaluation of the Walled City of Nicosia according to the cleanliness factor is given. Here, the participants evaluated the Walled City of Nicosia according to the cleanliness factor, and 23.70% of them found Nicosia to be clean, while 76.30% found Nicosia dirty. Of those who found Nicosia dirty, 67.58% stated that they found Nicosia dirty because of the ugly writing on the walls and benches, 95.56% found

it dirty because of the garbage and vegetable waste in the area, and 41.98% found it dirty because of the dirty roads.

Thirdly, the evaluation of the Walled City of Nicosia according to the factor of being well-maintained is given. According to the results, 16.41% of the participants found Nicosia to be well maintained, while 83.59% found that Nicosia is poorly maintained. Additionally, 70.40% of participants underlined that they found the Walled City of Nicosia to be poorly maintained due to the poor condition of the vegetation.

For the fourth criterion, the evaluation of vegetative material (vegetation) is given. According to this criterion, the participants evaluated the Walled City of Nicosia according to the vegetative material factor, and 8.33% of them found the Walled City of Nicosia to have sufficient vegetation, while 91.67% found the Walled City of Nicosia to be insufficient in this category. According to the factor of vegetative material, 72.27% of those who found the Walled City of Nicosia inadequate stated that they found it inadequate due to the trees, while 38.63% stated this due to the shrubs, and 88.16% stated it was due to grassy areas and seasonal flowers.

Finally, the participants' evaluations of the Walled City of Nicosia according to the factor of equipment elements are given. The participants of the research evaluated the Walled City of Nicosia according to the factor of equipment elements, and 8.33% of them found the Walled City of Nicosia was sufficient in this category, while 91.67% found the Walled City of Nicosia insufficient. Of the participants who found the Walled City of Nicosia to be inadequate according to the factor of equipment elements, 83.80% stated it was due to the lighting elements, 65.1% found it was because of the children's playgrounds, 65.11% stated it was the toilets, 51.09% stated it was the shading elements, 71.03% stated it was the seating elements, 30.53% stated that it was the plastic learners, 59.50% of the participants stated it was the garbage bins, 42.99% of the participants stated that it was floor coverings, 54.21% stated that it was the sports fields, 34.89% stated that it was the sales kiosks/cafeterias, and 29.91% stated that they found the fitness equipment inadequate (Table 4).

Table 4. Comparison of the opinions and evaluations of the participants regarding the green space issue in the Walled City of Nicosia.

	Living		Not Living		X2	p
	n	%	n	%		
Favourable opinion of the green area in the Walled City of Nicosia						
There is	14	20.00	70	22.29	3218	0.200
None	38	54.29	192	61.15		
No opinion	18	25.71	52	16.56		
Opinion on status of construction and planning of green spaces						
Done	3	4.29	23	7.32	10,840	0.004 *
Not done	19	27.14	144	45.86		
No opinion	48	68.57	147	46.82		
“Green spaces are very important places for people.”						
Not participating	5	7.14	16	5.10	1132	0.568
Undecided	3	4.29	8	2.55		
Attended	62	88.57	290	92.36		
Availability of green space						
Outgoing	54	77.14	250	79.62	0.213	0.645
Not going	16	22.86	64	20.38		
Evaluation according to safety factor						
Safe	8	11.43	108	34.39	14,320	0.000 *
Insecure	62	88.57	206	65.61		

Table 4. Cont.

	Living		Not Living		X2	p
	n	%	n	%		
Evaluation according to cleanliness factor						
Clean	6	8.57	85	27.07	10,833	0.001 *
Dirty	64	91.43	229	72.93		
Evaluation according to the factor of maintainability						
Groomed	4	5.71	59	18.79	7136	0.008 *
Unmaintained	66	94.29	255	81.21		
Evaluation according to plant material factor						
Adequate	2	2.86	30	9.55	3361	0.067
Inadequate	68	97.14	284	90.45		
Evaluation according to factor for equipment elements						
Adequate	4	5.71	36	11.46	2029	0.154
Inadequate	66	94.29	278	88.54		
Opinion on status of development of social and recreational activities in green spaces						
Yes	5	7.14	64	20.38	20,680	0.000 *
No	17	24.29	127	40.45		
No information	48	68.57	123	39.17		

*: $p < 0.05$ —The assumptions of the chi-square analysis could not be met.

When the distribution of the participants according to the issues they would like to change regarding green spaces in the Walled City of Nicosia was analyzed, 33.59% of the participants would like to create green spaces near their houses, 71.35% would like to create green spaces that are safe places, 80.73% would like to make green spaces clean and well-maintained, 88% of the participants stated that they would like to increase the equipment elements in green spaces, 70.05% would like to increase the vegetative material in green spaces, 62.24% would like to increase social and recreational activities in green spaces, and 58.59% would like to make green spaces more useful by improving system planning.

When the opinions and wishes of the participants regarding the development of social and recreational activities in green spaces in the Walled City of Nicosia were analyzed, 17.97% of the participants stated that they had developed social and recreational activities in green spaces in the Walled City of Nicosia, 37.50% stated that they had not developed social and recreational activities in green spaces in the Walled City of Nicosia, and 44.53% stated that they did not have information on the subject. In addition, 44.79% of the participants stated that they would like to see bicycle festivals, 48.96% stated they would like to see kite festivals, 55.47% would like morning sports/walking, 44.27% would like theatre performances, 44.79% would like concerts, 26.04% would like exhibitions, and 24.74% would like various sports competitions in green spaces in the Walled City of Nicosia.

3.2. Analysis of the Survey According to Various Factors

In order to ensure the accuracy of the survey, the analysis and comparisons were made according to various factors, such as the living situation of the participants in the Walled City of Nicosia and the status of the participants' workplace in the Walled City of Nicosia. Pearson's chi-squared test was used in these comparisons. The obtained findings are shown with cross tables and the statistical significance level was taken as $\alpha = 0.05$.

It was determined that there was no statistically significant difference between the participants' opinions on the existence of sufficient green spaces in the Walled City of Nicosia according to their living status in the Walled City of Nicosia, their agreement with the opinion that "Green spaces are very important places for people," and their state of visiting green spaces in the Walled City of Nicosia ($p > 0.05$) (Table 4).

It was determined that there was a statistically significant difference between the opinions of the participants regarding the planning of green spaces in the Walled City of

Nicosia according to their living status in the Walled City of Nicosia ($p < 0.05$). The rate of participants who do not live in the Walled City of Nicosia who say that the planning of green spaces in the Walled City of Nicosia has not been performed is higher than those who live in the Walled City of Nicosia (Table 4).

It was found that there was a statistically significant difference between the way the participants evaluated the Walled City of Nicosia according to the factors of safety, cleanliness, and maintenance according to their living status in the Walled City of Nicosia ($p < 0.05$). The rate of participants who do not live in the Walled City of Nicosia who found the Walled City of Nicosia to be unsafe, dirty, and poorly maintained was found to be lower than the participants who live in the Walled City of Nicosia (Table 4).

It was determined that there was no statistically significant difference between the evaluations of plant materials and equipment elements according to the living conditions of the individuals included in the research ($p > 0.05$) (Table 4).

It was observed that there was a statistically significant difference between the opinions of the individuals included in the research regarding the development of social and recreational activities in green spaces in the Walled City of Nicosia according to their living status in the Walled City of Nicosia ($p < 0.05$). The rate of participants who do not live in the Walled City of Nicosia who say yes to the development of social and recreational activities in green spaces in the Walled City of Nicosia was found to be higher than those who do (Table 4).

It has been determined that there is no statistically significant difference between the opinions of the participants regarding the availability of sufficient green spaces in the Walled City of Nicosia, the planning of green spaces, the agreement with the opinion that “Green spaces are very important places for people,” and the status of visiting green spaces according to the status of having a workplace in the Walled City of Nicosia ($p > 0.05$) (Table 5).

Table 5. The comparison of the opinions and evaluations of the participants regarding the green spaces in the Walled City of Nicosia according to the status of having a workplace in the Walled City of Nicosia.

	Yes		No		X2	p
	n	%	n	%		
Opinion on the green area in the Walled City of Nicosia						
There is	23	20.54	61	22.43	2215	0.330
None	73	65.18	157	57.72		
No opinion	16	14.29	54	19.85		
Opinion on the status of construction and planning of green spaces						
Done	11	9.82	15	5.51	2552	0.279
Not done	48	42.86	115	42.28		
No opinion	53	47.32	142	52.21		
“Green spaces are very important places for people.”						
Not participating	7	6.25	14	5.15	0.202	0.904
Undecided	3	2.68	8	2.94		
Attended	102	91.07	250	91.91		
Availability of green space						
Outgoing	91	81.25	213	78.31	0.416	0.519
Not going	21	18.75	59	21.69		
Evaluation according to safety factor						
Safe	29	25.89	87	31.99	1397	0.237
Insecure	83	74.11	185	68.01		
Evaluation according to cleanliness factor						
Clean	21	18.75	70	25.74	2141	0.143
Dirty	91	81.25	202	74.26		

Table 5. Cont.

	Yes		No		X2	p
	n	%	n	%		
Evaluation according to the factor of maintainability						
Groomed	18	16.07	45	16.54	0.013	0.909
Unmaintained	94	83.93	227	83.46		
Evaluation according to plant material factor						
Adequate	5	4.46	27	9.93	3.099	0.078
Inadequate	107	95.54	245	90.07		
Evaluation according to equipment elements factor						
Adequate	12	10.71	28	10.29	0.015	0.902
Inadequate	100	89.29	244	89.71		
Opinion on status of development of social and recreational activities in green spaces in the Walled City of Nicosia						
Yes	21	18.75	48	17.65	0.422	0.810
No	44	39.29	100	36.76		
No information	47	41.96	124	45.59		

It was determined that there was no difference between the way the participants evaluated the security, cleanliness, maintenance, vegetative material, and equipment elements of the Walled City of Nicosia according to the status of having a workplace in the Walled City of Nicosia ($p > 0.05$) (Table 5).

It was determined that there was no statistically significant difference between the opinions of the participants regarding the development of social and recreational activities in green spaces in the Walled City of Nicosia according to the status of having a workplace in the Walled City of Nicosia ($p > 0.05$) (Table 5).

3.3. Comparison of Nicosia with the Green Area Averages of Various Cities

It has been determined that the amount of green space in the cities of many developed countries in the world is quite high. Nicosia's averages have a very low place among them. As can be seen from Figure 7, these averages should be increased in order for green spaces to fulfill their functions.

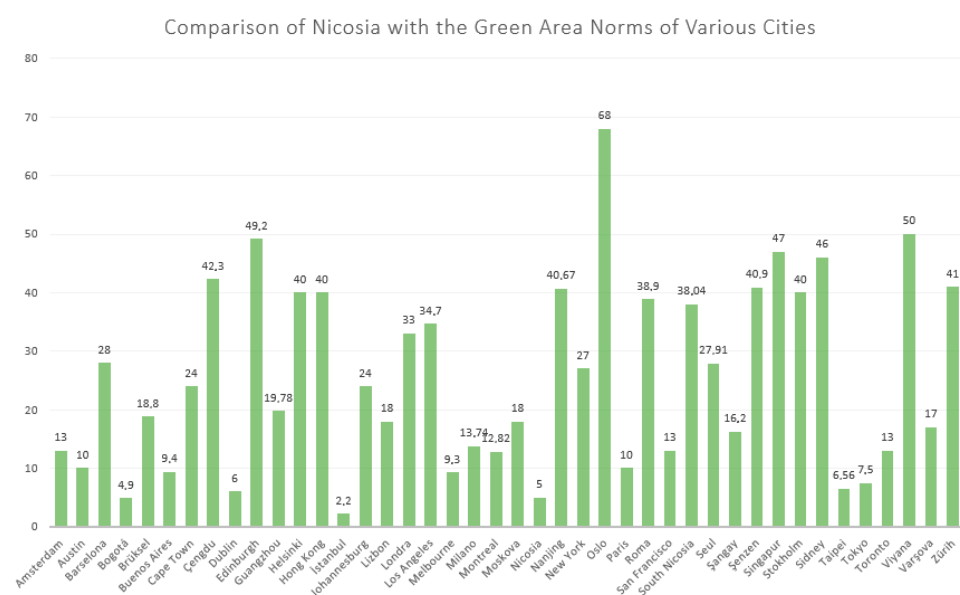


Figure 7. Comparison of Nicosia with the green area averages of various cities [21,31]. (Edited by İnançoğlu).

4. Discussion

The aim of this study is to understand the effect of UGS on user satisfaction in a historical city and to reveal the necessity of UGS with its effective use, wherein all its functions and benefits are provided; this is the difference between this study compared to the existing studies in the literature. Given the fact that cities in the past were peaceful and had greenery, the gradual increase in construction and the decrease in greenery in today's cities has been a factor in conducting this study in a historical texture. In this texture, the question of whether UGS is sufficiently intensive and effective as in the past was answered by measuring user satisfaction.

The majority of the respondents that were surveyed (91.67%) stated that green spaces are very important places for people, showing that they are aware of the importance of the issue. While many respondents (59.90%) think that there are not enough green spaces in the Walled City of Nicosia, the fact that most of them (50.78%) did not have an opinion on whether planning was performed when green spaces were built indicates that although there is a lack of green spaces, there is little awareness of the need for improvement.

In the survey conducted to understand user satisfaction, the findings obtained, especially according to the functional factors (safe, clean, well-maintained, vegetation, and equipment elements), indicate the absence of these factors. For the safety factor, the city was mostly (69.79%) found to be unsafe mostly (89.55%) due to insufficient lighting and mostly (78.73%) due to dangerous people. For the cleanliness criterion, the city was mostly (76.30%) found to be dirty. The reason was mostly (95.56%) garbage and vegetable waste in the area, which draws attention to the lack of maintenance of the existing green spaces. The fact that a large proportion (83.59%) of the respondents found the city to be poorly maintained, especially due to the poor condition of the vegetative material (70.40%) and park furniture (85.36%), reveals the situation in terms of the UGS. The same situation is also supported by the findings for the factor of vegetative material and equipment elements. Accordingly, almost all of the participants found the Walled City of Nicosia to be inadequate according to both factors, at the same rate (91.67%).

In the survey, it was understood that there are many factors that the participants would like to change regarding the green spaces in the Walled City of Nicosia. When the opinions and wishes regarding the development of social and recreational activities in the green spaces in the Walled City of Nicosia were examined, it was revealed that the majority of the respondents (44.53%) did not have any information.

As a result of the comparison of the opinions and evaluations of the participants regarding the green spaces in the Walled City of Nicosia according to whether they live in the Walled City of Nicosia or have a workplace in the Walled City of Nicosia, the analysis indicates that there is no significant difference in the findings. This result indicates that despite the differences in the conditions of the users, there are similar satisfaction situations.

To verify these analyses, UGS were identified, measured, and compared with the green area averages in Nicosia using the ArcGIS program, as many studies on green spaces use GIS [18,32,33]. According to these averages, the green space is sufficient within the city walls of Nicosia. However, it was understood from the comparison made with the averages from around the world that these averages need to be reviewed (Figure 5). With a new evaluation to be performed, more effective and sufficient averages should be determined for Nicosia.

On the other hand, because of these findings, it has been determined that although the UGS is sufficient, its distribution is not planned and it is not effective, so there is no user satisfaction in the Walled City of Nicosia. This is in line with many studies that have identified a lack of user satisfaction due to a lack of planning for UGS in various cities [34–42]. Our research supported previous studies and underlined the importance of green spaces in cities.

5. Conclusions and Recommendations

UGS is the most crucial part of built cities. UGS ensures the sustainability of cities as it provides benefits with many functions, such as health, environmental, social, and economic factors. This situation has the same effect in historical cities as life continues. However, these venues are often overlooked in terms of UGS. This study deals with the historical texture of a city as a case study in the city of Nicosia, which has existed for years, and revealed the effect of UGS on the urban texture through user satisfaction.

First, it has been determined that although UGS has enough space, it is limited in certain regions and its functions are not used effectively given the data collected from the field work, literature review, and use of programs, such as GIS. Then, as a result of measuring user satisfaction with survey and statistical methods, it was confirmed that the functions and benefits of UGS were not effective.

As a result of the study problem, it has been understood that many functions of the UGS located in the Walled City of Nicosia do not meet user needs because they are not used effectively. Moreover, the study reveals the importance of planning for UGS to be effective in cities with a historical texture, such as Nicosia. In order for UGS to be effective in these cities, it is recommended that future studies develop a system analysis that can be used in historical cities, including planning, and that local governments make plans that will increase the impact of these functions and benefits.

In addition, due to climate change and global warming problems, the importance of green areas in newly formed cities or old city is crucial. Urban planners and politicians have a significant issue in the unbalanced provision of green spaces for densely populated places since it jeopardizes both local ecological justice and the enjoyment of city life. In this context, it is essential to develop plans for future developments in order to have green areas of sufficient scale in the urban fabric.

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