

# A Comparative Study on the Landscape Memorability of two Urban Public Spaces emphasizing tourism *Naghsh-e-Jahan* and *Shahrdari* Squares

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## Abstract

Urban public spaces as the places of formation of social interactions have a very important role in our cities. Especially, considering the presence of tourists in that spaces, they also have a revenue-generating role in addition to the role of identity for a community so the need to pay attention to them, is quite clear. Each urban space has a different and unique effect on people according to its elements and characteristics, which is mainly a mental matter. In fact, it can be said that the memorable components of urban space vary in different examples. In this study, the main purpose is to investigate the memorable urban public space components on the minds of the tourists. In this regard, urban public space components were studied in three categories: physical, non-physical and activity indicators. Regarding the issue of memorability, the research method is mixed in nature and in terms of purpose, it is a combination of survey and field studies. Two case studies of *Naghsh-e-Jahan* Square in Isfahan and *Shahrdari* square in Rasht are analyzed and compared. The findings indicate that in general, the *Shahrdari* square, with a small difference, is more memorable than the *Naghsh-e-Jahan* square. Pearson correlation test results showed that a significant relationship is between the memorability of the totality of landscape components and total tourist attraction. Prioritization of the public space landscape components in terms of their memorability in the two squares is different, however, based on the aggregation of findings and their commons in both squares, it can be noted that buildings and retail activities are the most memorable in the tourists' minds. Other factors, such as sensory stimuli including scents, sounds, and the presence of water, as well as social interactions, are next in terms of memorability. Furthermore, a positive and significant relationship was not observed between the richness of the landscape and its memorability.

**Keywords:** Memorability, Urban Public Space Landscape, Tourism, *Naghsh-e-Jahan*, *Shahrdari* Square

## 1. Introduction

A city is not just a physical phenomenon or a place. The city is a memory, an influence from different times. Creating urban public spaces is a response to the need to establish social relationships. Such spaces, due to their symbolic physical characteristics and the current events in them, are identifying, and cause collective memories in the minds of individuals in the society; Something that gives a sense of belonging to the place and time and identifies them. Urban spaces become memorable due to incidents on the one hand and their physical elements on the other (Habibi & Berenji, 2017). The city scape is the output of the realities of that society, which are perceived in a phenomenological and semiotic relationship. City scape cannot be reduced to a physical matter that requires a cognitive mindset, nor is it a mental matter that is formed independently of the physical aspect (Shieh & Behzadfar, 2017). The information sent from the urban space is not only physical and visual, but also information that is perceived by all the senses. Therefore, the landscape of an urban public space is all available information from space that can be received by the senses and processed in the process of perception; Information

on the form, function and meaning of space (Pakzad, 2007). Reminiscences and disconnections from the past in the modern world have caused some of these shared memories to be ignored in the contemporary century, and memorable places to disappear or undergo fundamental changes; Examples of which can be seen in the cities of our country (Hosseini Koumleh, Sotoodeh, & Alambaz, 2014) The urban landscape is initially an objective thing that exists due to the quality of the appearance of the physical factors of the city and due to the passage of time and repetition, becomes a common connecting element of society. Since the urban landscape includes both the body and the quality of the city, it can be claimed that the perception of the city is the same as the interpretation of the urban landscape (Vahdat & Sajadzadeh, 2015). Throughout history, cities have been the focus of tourism-related activities such as accommodation, recreation and other facilities and services for the tourists. Therefore, most tourism-related activities are concentrated in cities, including large metropolises, and urban tourism as the most important and valuable part of tourism has been considered by academic communities. Recently, urban tourism is of particular importance due to rapid economic

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growth and rising incomes, especially in Asian countries and increasing competition between countries for tourism marketing (Teimouri et al., 2015). One of the most important places in the city are urban public spaces that attract the tourists; the physical and functional characteristics of urban public space are recorded in people minds and bring them back into the space. Therefore, by recognizing memorable factors in the urban public spaces and strengthening them, it is possible to create better spaces, but how effective is this memorability quality for tourists? And how much do the physical and non-physical properties of the space affect this quality? In this paper, the main purpose is to investigate the memorability of two urban public spaces components on the minds of the tourist. Two case studies of *Naghsh-e-Jahan* Square in Isfahan and *Shahrdari* square in Rasht are analyzed and compared. These two fields are very different in terms of history, importance and physical factors, and the main reason for choosing them was these very differences. The research main questions are:

1- How are *Naghsh-e-Jahan* and *Shahrdari* Squares in terms of memorability?

2- Which of the landscape components of those public spaces are more memorable from the tourists' point of view?

3- Is there a relationship between memorability of urban public space and its landscape richness?

And the research hypothesis is:

There is a meaningful relationship between memorability of urban public space landscape and tourist attraction.

## 2. Literature Review

### 2.1. Research Background

A collection of the latest and most relevant research on the subject of memorability and urban public space as well as the subject of tourism with their main results and achievements is collected in Table 1. As shown in the Table, on one hand, most of the researches have been on collective memorability; On the other hand, research conducted in the field of urban memorability has been mainly large-scale and in the field of a city or region. Accordingly, it was found that no research has been done on the memorability of urban public space in attracting tourists.

Table 1  
Recent related researches (Authors)

Authors	Article Title	Article Result
1 Esmaeilian, Ranjbar, 2014	Finding Main Effective Factors of Creating and Transition of Collective Memory in Urban Public Spaces	Combining the three concepts: physical aspects of place, meaning of place and activity, and place events are the basic concepts of collective memory formation. In Tajrish Square and Shahr Theater Square, the role of activities and place events and in Baharestan Square, the meaning of place have played a more effective role in the formation of collective memories.
2 Heidari, Amirhajlou, Karkhaneh, & Ahmadifard, 2014	The Quality Assessment of Public Spaces in the Urban Landscape.	The collective spaces often do not have all the characteristics of a suitable collective space and face confusion and turmoil. It is also necessary to create a collective space in the region and neighborhoods due to population growth and immigration of the region as a necessary element in the urban scale.
3 Vahdat, Sajadzadeh, 2015	Conceptualizing the Factors Affecting of Streetscape to Promote the Legibility of Urban Spaces	The quality of the landscape of the central streets of Hamedan is at a moderate level, which can be promoted by using factors such as improving the visual order of the street, organizing the walls and old buildings, paving for the presence of street and graphic arts, strengthening the signs in semantic and physical dimensions.
4 Ayati, Khoda Karami, Molaie & Afaghpour, 2016	Analyzing the Effect of Urban Physical Factors on Religious Tourism Development	Among the defined indicators related to objective factors, accessibility has the most impact while the confinement of the effective index is not known. Also, among the defined indicators related to mental factors, two indicators of peace and visual pleasure had the most impact, while security was not tracked as an effective indicator.
5 Habibi, SeyedBerenji, 2017	Investigation of the Relation between Memorability and Social Collaboration in Regeneration of Urban Identity	Three factors of place identity, memorability and social participation were the main variables of the research. Although there is a direct and positive relationship between recollection and social participation with the dependent variable of place identity, but the memorability index is more effective in increasing place identity.
6 Hasani mianroud, Majedi, Saeide Zarabadi, & Ziari, 2018	Exploring Concept of Collective Memory and its Retrieval in Urban Areas with Semiotic Approach	The memorability level of urban space in Hassanabad Square, based on the presented conceptual model, has diminished in recent years due to recent decisions of urban management.
7 Andaroodi, Taqipou Anari, 2019	Assessment of the Values of the Historic Urban Landscape of ValiAsr Street in Tehran	The evaluation of values from the people's point of view is not the same along the axis, and the values of natural landscape or commemorative values have been promoted by others.
8 Moghadasi, Yeganeh, 2019	Relationship between Memorability of Urban Green highways and Observers' social- spatial mental Schema	Attention to spatial-social schemes is one of the main components of creating a memorability for observers in the highway space, and memory and mental design are causal conditions for each other, and green walls and hills have a sense of confinement, tall buildings and structures. The initial and final index elements play an important role in memorability.
9 Pourmohammad, et al., 2021	Comparison and Analysis of the Cognitive Effect of the Role of Memory Index on Promoting the Sense of Belonging of Residents	Accordingly, the effect of social memories was greater than physical memories on promoting the sense of belonging of neighborhood residents

## 2.2. Theoretical Framework

### 2.2.1. Urban public space quality

The quality of urban public space, as a product of the process of interaction between human beings, activities and the body of the city, depends to a large extent on the quality of its visual components. Due to its objective and tangible nature, the visual components of urban space can be perceived by the human senses and provide the ground for citizens' perception, cognition and environmental evaluation. Cities with a favorable landscape and appearance are able to expand the aesthetic experience of citizens, promote the mental image of society and strengthen their civic pride, and ultimately improve the quality of urban living environment (Heidari, et al., 2014). Urban public space landscape has a dual nature of objective and subject. Human perception of urban public space is dependent on experiences, mental patterns, culture and history, physical characteristics of the environment and time (Kiani & Sargazi, 2014)

Many academics, in the field of urban design, have researched the quality of urban public space and each has provided specific criteria for it. One of the earliest is Ian Bentley et al. (1985), who believe that a responsive environment should have seven characteristics (qualities) which are: Permeability, variety, legibility, robustness, visual appropriateness, richness and personalization. Jan Gehl sees a successful urban public space, in general, in the three concepts of protection, comfort and enjoyment that each of them has sub-qualities such as protection against harm, possibilities for walking, standing and staying, sitting, talking and hearing, enjoyment of aesthetic quality and positive sensory experience. Mathew Carmona (2018) believes that good public spaces are: evolving, diverse, free, delineated, engaging, meaningful, social, balanced, comfortable, and robust. Sum of related theories and researches studied, is shown in Table 2 in more details.

Table 2  
quality of urban public space from the thinkers' point of view

Authors		Variables- Qualities
1	Jacobs (1961)	four conditions: mix use, small blocks, aged buildings and a sufficient concentration of buildings
2	Lynch (1984)	maintenance, safety and compatibility
3	Bentley et al., (1985)	Permeability, variety, legibility, robustness, visual appropriateness, richness and personalization
4	Rapoport (1994)	value, desirability, and uniqueness
5	Montgomery (1998)	Activity, Image
6	Landry (2000)	levels of activity, levels of use, levels of interaction, levels of representation
7	Paumier (2004)	accessibility, diversity of uses, concentration of uses and organizing structure
8	Adams & Tiedsell (2007)	Level 1- state of simply being alive and able to survive, level 2- the capacity not just to survive but to grow and develop and level 3- certain physical or intellectual energy or vigor
9	Siregar (2014)	GPSI: intensity of use, intensity of social use, people duration of stay, temporal diversity of use, variety of use and diversity of users
10	Clemente (2015)	security, environmental comfort, psycho-physical well-being due to the greenery presence, psychological comfort due to cognitive factors, accessibility and universal design, quality and maintenance condition of the materials, attractive public realm and opportunities
11	Carmona (2018)	evolving space, diverse space, free space, delineated space, engaging space, meaningful space, social space, balanced space, comfortable space, robust space

### 2.2.2. Memorability

Memorability of urban environment is a quality that expresses the power of recording the events and atmosphere of an urban space in the mind is related to the context of residence, and this constant connection in the form of accumulation of urban experiences is part of the process of forming a place and creating a sense of belonging to urban environments. In other words, it can be stated that memorability is a socio-spatial phenomenon that is formed in the city and citizens' interaction. This quality is not a product that can be produced all at once, but it should be considered as a process of continuous creation that requires planning and management measures to guide and control it (Karami, et al., 2016).

In part of his famous book, *The Architecture of the City*, Aldo Rossi mentions the city as history and points to two historical ways of looking at the city. First, "the city as a material artifact element on which the traces of time can be seen" and second, history as a study of the structure of the formation of city artifacts (Hosseini, Sotoodeh &

Alambaz, 2014, quoted from Rossi, 1982). Pakzad (2007) considers memorability of the spatial qualities of an element. In his view, it is the property of a phenomenon to create a memorable image of itself and the proportions between its components in the viewer's mind. This property is a most basic condition for remembering and reminiscing about a space.

Collective memory is the shared memory of individuals of the events and happenings experienced by them, as a member of the group, in a social and spatial context. Collective memories promote spatial identity by adding meaning to space, and this spatial identity seeks to recognize and enhance one's identity (Azad & Partovi, 2013). Events in the city create memories and memories create life, Aldo Rossi believed that cities are themselves the collective memory of citizens, memories formed in connection with objects and places (Hasani, et al., 2018). Of course, memory can be individual or collective; collective memories are events that are remembered by a group of people, people who are involved in building and shaping that memory. The more people remember that

shared memory, the higher the semantic and collective burden of that memory (Hasani, et al., 2018 quoted from Mirmoghtadaei, 2009). In some cases, the whole space has a memorability quality because the relationships governing its components induce this quality, and sometimes certain components or elements in the space induce this quality for three reasons: form, function or meaning. Identifying memorable points, elements and spaces is necessary not only to maintain the attractiveness of the space but also to maintain the belonging of the citizens and the identity of the city (Pakzad, 2007). Urban squares, by keeping memories alive, keep historical events alive too, thus forming a collection of people's memories. Memorable environments are ones that leave a visual expression in people's minds. Any environment stimulates the senses of sight, hearing, or touch. This sensory information may be intense, variable, or repetitive (Bozorgzad, 2017). Perceptual and mental components such as perception, readability, visual aspects and functional capabilities of public spaces are among the effective factors in the memory and permanence of the urban landscape in the mind of the audience and creating and strengthening memory and mental landscape (Heidari, et al., 2014).

### 2.2.3. Urban public space landscape

The city scape is a set of natural and artificial factors that have been formed under the influence of the specific natural, cultural, social and economic characteristics of that particular city. City scape, as an important category in the quality and desirability of cities, is real and objective and the result of observing and understanding the various and tangible manifestations of the city, including buildings, spaces, activities, sounds and scents when the citizen encounters the city phenomenon, at different scales, whether seeing the city from a distance or when being in the city or even settling in a building (Mahmeli Abyaneh, 2011). The city scape, through the presentation of its tangible characteristics on the one hand and mental

characteristics on the other, acts as a text in conversation with the observer and plays a role in the quality of the city. Collective spaces within the city are one of the most important and influential spaces in understanding citizens from the perspective of the city and creating collective memory of citizens (Heidari, et al., 2014). A better understanding of the concept of urban landscape requires a better understanding of the concept of urban public space. Otherwise, paying attention to the urban landscape as a physical aspect of the city, or the mental perception of the inhabitants of the city, is a degrading view that is not able to determine all aspects of the concept of city scape (Shieh, Behzadfar, & Namdarian, 2017). Therefore, the context of the formation of collective identity and memory is the three domains of physical characteristics, activity and meaning. Any action to improve the quality of public spaces and memories should be taken in order to balance between these three areas (Karami et al., 2016). The city scape can be examined in three scales: Large, medium and micro scale. The macro scale includes urban geography, city shape, distinct zones, important urban points and landmarks, and main roads and edges. Intermediate scale includes blocks and building blocks, passages, occupancy level, density, height, building style, vegetation and dominant human activities. And the micro-scale includes factors such as the style and architecture of the building, the condition of the passages, materials, side extensions, facilities, urban furniture and vegetation (Maroofi & Ansari, 2014). On the other hand, the city scape can be examined from functional, aesthetic and identity dimensions. The aesthetic dimensions of the urban landscape can be considered in both physical and perceptual dimensions. Jahanshah Pakzad (2007) has seen the landscape of urban space in three dimensions: physical, non-physical and activity dimension. The diagram below (Fig. 1) shows the components of the urban public space landscape, from Pakzad's point of view. In this study, this category was mainly used.

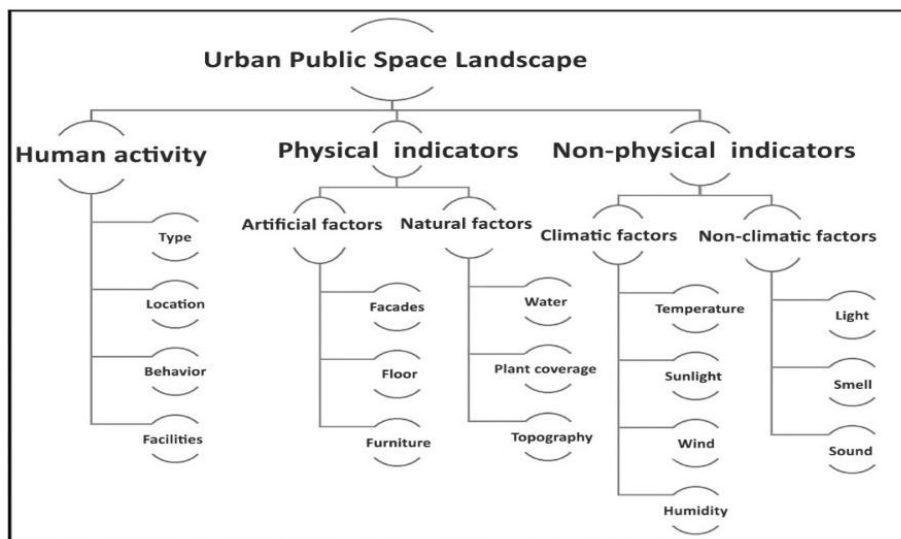


Fig. 1. components of the urban public space landscape (Pakzad, 2007)



**2.2.4. City and the tourism**

The attractions of a city influence the decision of a tourist to visit there, considering the urban environment as a recreational product, the elements of urban tourism are divided into three main elements, which are themselves divided into two groups of places of activity (cultural services, Sports and entertainment) and entertainment areas (physical characteristics of the city and socio-

cultural characteristics of the city) are divided, secondary elements (such as hotels, restaurants and shopping centers) and ancillary elements (parking, information centers, boards and maps). (Nasrolahi, Jahanbazi & Naseri 2015). Various factors in the city affect the attraction of tourists. The main ones from the researchers' point of view are shown in Table 3.

Table 3  
Factors and indicators affecting tourism from the researchers' point of view

<b>Factors and indicators affecting tourism</b>	<b>Researchers</b>
Optimal landscape (building appearance, painting, lighting, type of architecture) Accessibility (entrances and exits to the city and transportation system, etc.) Ancillary facilities and support (Resort, administrative, financial, food and entertainment services) enclosure (Wall to floor ratio, space length, fence and perimeter of the building)	Ayati, Khoda Karami, Molaie, & Afaghpour, 2016
Quiet environment, have beautiful visual, clean and waste-free environment, beautiful design of residential buildings, the level of recreation centers compared to other tourist areas, willingness to come back, remove all recreational needs in this area, informing and answering people's questions, access	Beishami, Mahmood, 2015
Physical-ecological indicators, demographic-social indicators, economic-institutional indicators	Esmailian, Ranjbar, 2014
Natural Attractions, Cultural Attractions, Historical Attractions, Human-Made Attractions, Income, Employment	Nasrolahi, Jahanbazi, & Naseri 2015
Location of tourist attractions, access to public transportation, convenient access to the whole city, registration of tourist attractions except national monuments, cultural and international heritage, existence of hotels and guesthouses and restaurants in the area, existence of urban security organizations and police within the tourist place, proximity to other tourist places	Teimouri, Karami, Teimouri, & Safdari 2015
Climate, Historical landscape , Beautiful natural landscapes, Cultural events, Recreational opportunities, Easy access (distance), Imagery of destination, Quality of services and facilities, Profitable expectations	Yaghubzade, Zandi, & Janalizade 2012
Physical factors, cultural factors, personal factors, credibility and environmental conditions	Camilleri 2018
Economic factors, social factors, environmental factors	Islam, Shafiqul 2015
Urban access and facilities, environmental quality, quality of urban services, cost of services, host behavior	Tapak, Abbasi, & Mirhashemi, 2019
Economy, infrastructure, attractions and seasonal factors	Yusup, Kanyan, Kasuma, Kamaruddin, & Adlin 2016

Based on the studies conducted in relation to the memorability concepts of urban public space and tourism, seen in the previous parts (regarding table 1, 2 and 3), a conceptual model of the research was developed (Fig. 2). In this model, two external and internal dimensions are subsets of urban space landscape, each of which can be divided into different parts. The external dimension includes major components such as economic, social and

physical, which are not mainly in the scope of this research. Internal dimension includes physical, non-physical components and activity components, each of which has its own unique indicators, for example, non-physical components including climatic indicators (temperature, sunlight, light, etc.) and non-climatic (scents, sounds etc.).

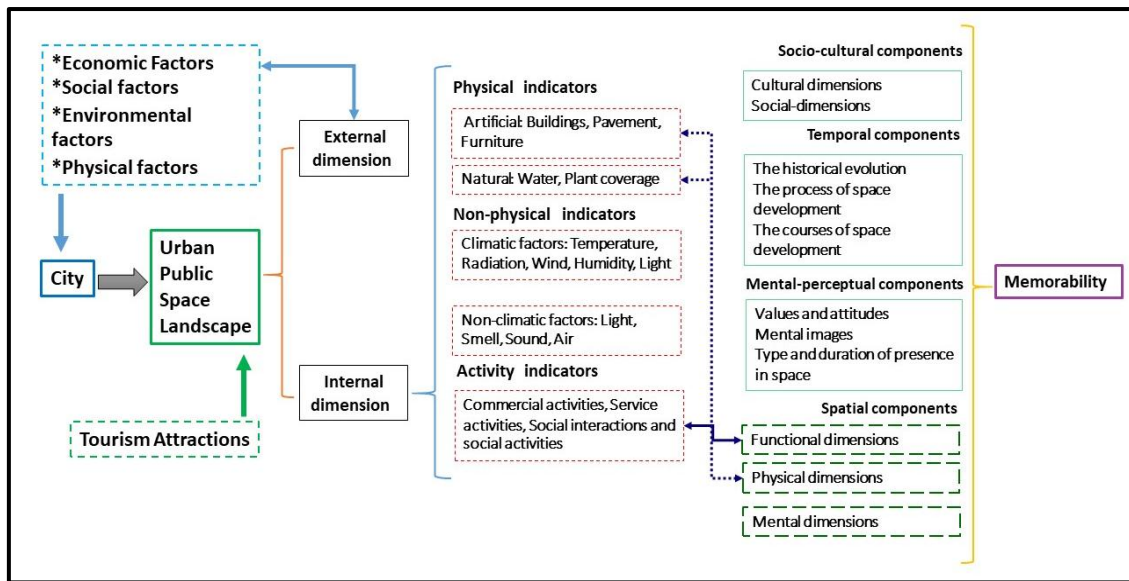


Fig. 2. Conceptual model of the research

### 3. Research Method

The methods used in the present study are documentary and survey. Due to the fact that the concept of memorability is a mental one and requires the opinions of individuals, so the survey method was used. At first, the main concepts of the research were studied by studying different texts, then by compiling a conceptual model, the dimensions, components and indicators necessary to study the relationship between urban space landscape and memorability were identified.

Two urban public spaces were examined and compared by the authors according to the components and indicators of the research. Based on the desired indicators, the questionnaires of the research were developed and distributed among non-native people (former tourists) who have visited those spaces over the past year. The questionnaires were designed based on a 5-point Likert scale (from very little to very much) and tourists were

asked about each of the 15 indicators of urban public space landscape. To analyze the questionnaires, the frequency of the responses was weighted from 1 to 5 based on their intensity.

The sampling method is random and the number of samples was calculated based on the Cochran sample size formula, 383 people. The results of Cronbach's alpha test on 20 items of the questionnaire (Table 4) show that the reliability obtained is at a desirable level because the value of the obtained reliability is equal to 0.996 which is greater than 0.7, therefore the sampling of the research is reliable.

In the inferential analysis section, one-sample t-test and independent t-test were used for memorability analysis of landscape dimensions and Pearson correlation test was used to investigate the relationship between the variables.

Table 4  
results of Cronbach's alpha test

Item-Total Statistics									
	Scale					Scale			
	Scale Mean if Item Deleted	Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted		Scale Mean if Item Deleted	Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
s1	96.7050	1009.072	.912	.996	q1	97.2715	1010.732	.928	.996
s2	97.4047	992.388	.962	.996	q2	97.3551	1007.512	.944	.996
s3	97.8747	1012.953	.931	.996	q3	97.4308	994.806	.972	.996
s4	97.3081	992.104	.973	.996	q4	97.2715	991.816	.968	.996
s5	97.5405	1002.239	.953	.996	q5	97.4700	1006.742	.954	.996
s6	97.9269	1004.649	.952	.996	q6	98.0209	1008.219	.938	.996
s7	97.9191	1019.415	.929	.996	q7	97.9086	992.586	.961	.996
s8	98.0757	1015.232	.929	.996	q8	97.5248	1003.596	.958	.996
s9	97.4099	983.546	.965	.996	q9	97.5979	992.723	.972	.996
s10	98.3420	1006.173	.917	.996	q10	97.1514	1007.836	.957	.996
s11	97.2663	1002.185	.963	.996	q11	97.2141	993.708	.968	.996
s12	97.0992	992.718	.954	.996	q12	97.8198	991.321	.967	.996

s13	96.9556	997.749	.939	.996	q13	97.2063	988.902	.963	.996
s14	97.7676	1001.524	.958	.996	q14	97.6162	1000.640	.958	.996
s15	97.4491	995.588	.962	.996	q15	97.0836	998.825	.957	.996

**Scale Statistics**

Mean	Variance	Std. Deviation	N of Items
100.8616	1070.643	32.72068	30

**4. Results and Discussion**

In this part, the two fields under study are introduced then they are analyzed:

*Naghsh-e-Jahan* square (Fig. 3) is one of the successful examples of urban spaces of Iran established in *Safavid* period, which through its high level of space values could become a thriving and glorious place so that many people who visited it, praised and admired it and spoke about its beautiful landscape, its lively and thriving areas and environmental welfare in different parts of it. In addition of the areas around the waterfront, the patios on the second floor had been also places for gathering the common people and watching the activities and special ceremonies which had been performing in the square. The king and lords of the government also would have been watching the activities such as polo, military parading, and also the illumination ceremonies and they had made communication with people from the column saloon of *Alighapou* which had been overlooked of all the square areas. However, the historical developments during the past few centuries have changed the square a lot, so that the current situation of the square is completely different from the past. (Shahabinejad, Abuei & Ghalenoei, 2017). *Naghsh-e-Jahan* Square was registered in the Iran National Heritage List on February 29, 1963. Also, this square was registered as a UNESCO World Heritage Site

in May 1979. This square is always full of people, especially tourists, and in the last 30 years, it has also been a place for Friday prayers and political gatherings.

Rasht *Shahrdari* Square (Fig. 4) was formed in the Pahlavi period. The existence of the municipal building, post office building and hotel of Iran, with a white facade and a red clay roof is one of the unique beauty of this square. On the other hand, there is a beautiful green space in the middle of the square with a fountain and a statue of *Mirzakoochak-Khan*, a collection of elements that have greatly added to the beauty of this square. Rasht *Shahrdari* Square can be considered as the center of gravity of the city and the location of important offices. Of course, at some times of the year, it becomes a gathering place for people and the main place for holding special ceremonies.

This square has been known for many years as the heart of the city and the center of important activities and traditional and cultural events. This square is located in the center of the city and is surrounded by cultural and administrative buildings. In the past, this square was a crossroads for stubble and had heavy traffic; in 1995, with the aim of paving and preserving its identity, the project of reviving Rasht *Shahrdari* Square was implemented and that area was closed to cars. After the implementation of this project, as the level of social activities increased, the vitality of the field increased (Askarizad & Safari, 2020).

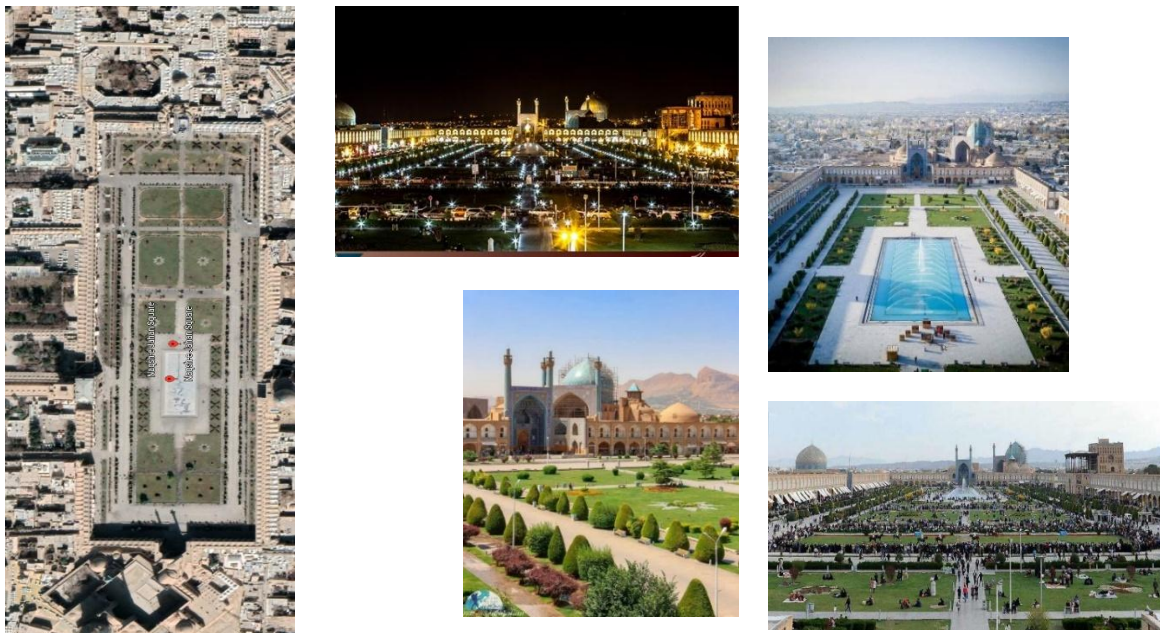


Fig. 3. *Naghsh-e- Jahan* Square (tehransuite.com, <http://binn.ir>, [www.tasnimnews.com](http://www.tasnimnews.com))



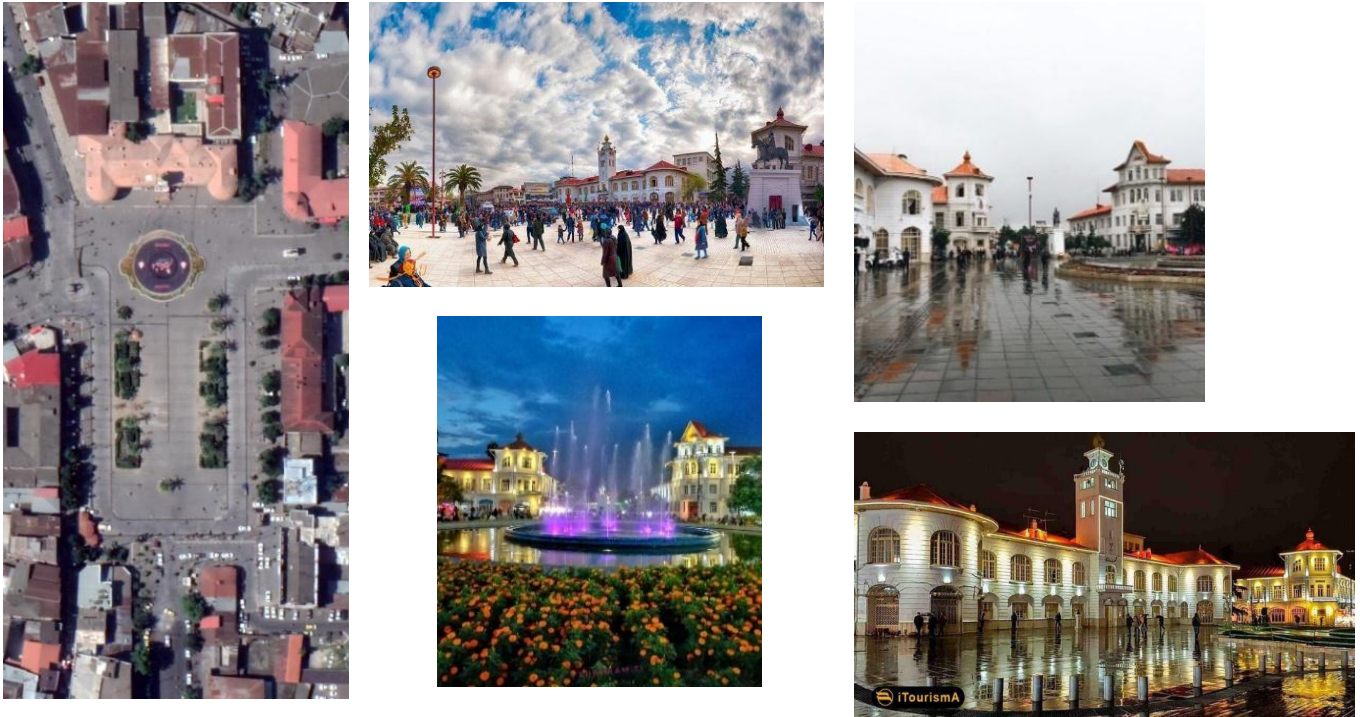


Fig. 4. Shahr-dari Square (selectpersia.com, gilnama.ir, Mohammadreza Soltani, Amir Amini)

According to the authors' observations and based on the conceptual model of the research and, Figure 5 to 7 is prepared; in Figure 5, the physical components in both fields are shown and located. As can be seen, *Naghsh-e-Jahan* Square, shown on the right, is richer in terms of physical and architectural components than the *Shahr-dari* Square (on the left). In figure 6, non-physical indicators

are shown and located included scents, sounds and wind. And activity dimension, as the third part of the public space landscape are shown in figure 7; in this picture, the amount of activities and their distribution in relation to the scale of the square is illustrated and shows that the *Shahr-dari* square is richer in this dimension.

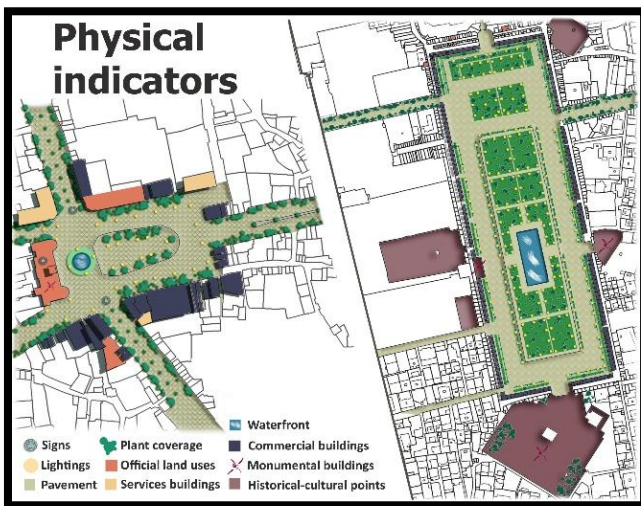


Fig. 5. Physical Indicators in the squares

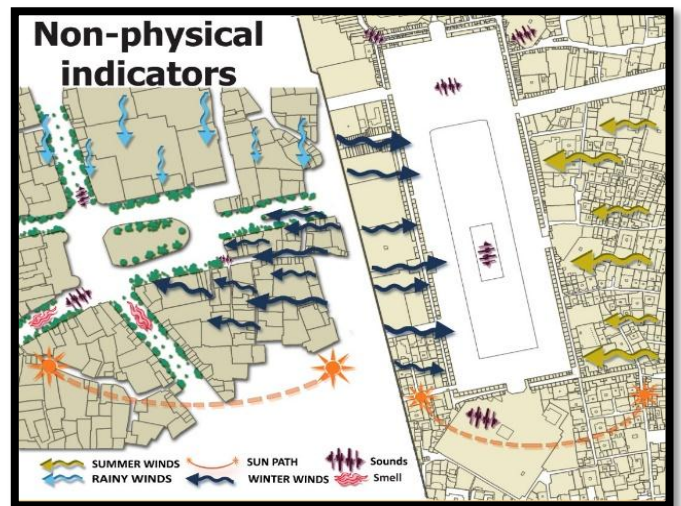


Fig. 6. Non-Physical Indicators in the squares



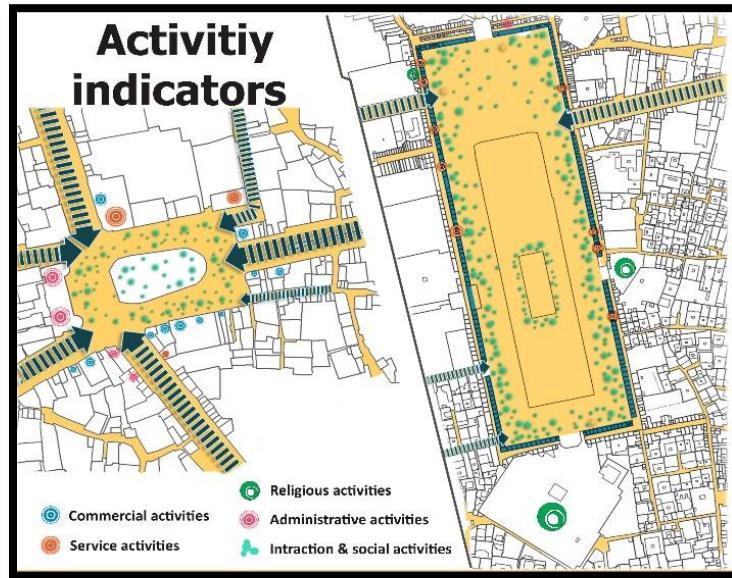


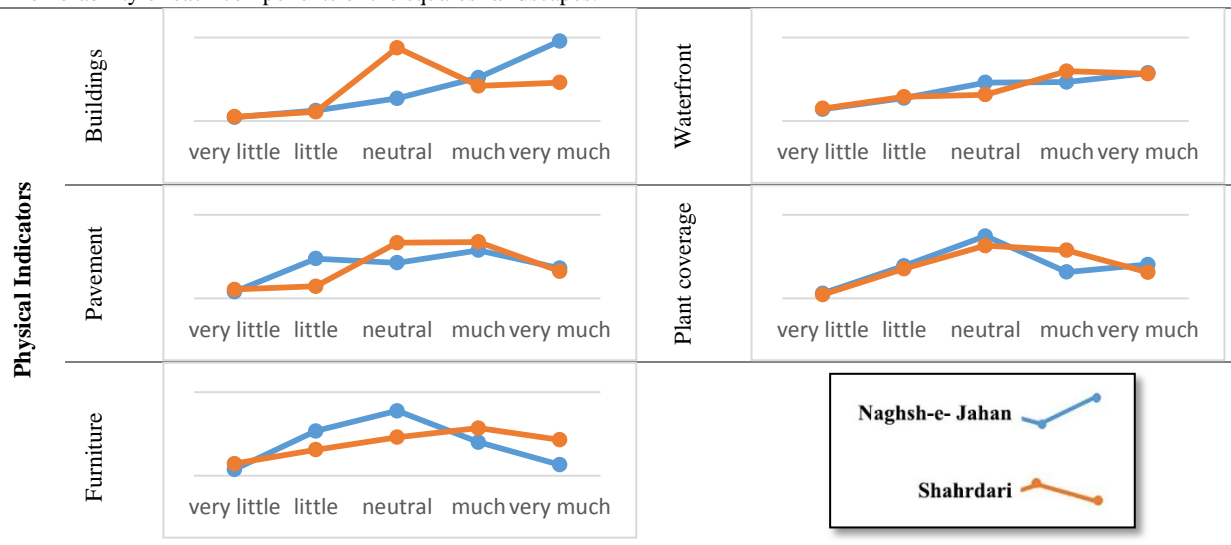
Fig. 7. Activity Indicators in the squares

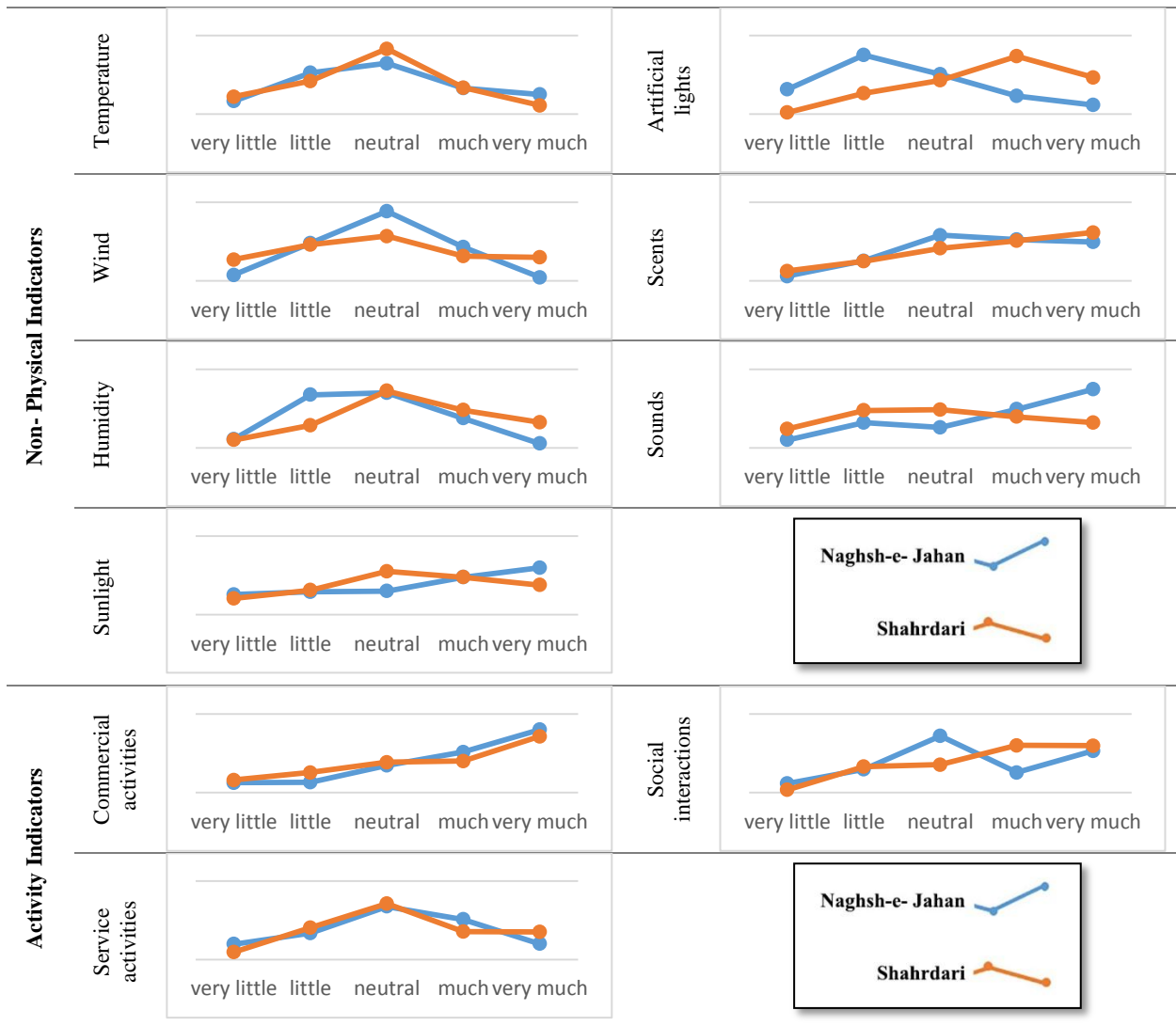
4.1. Results of the survey

In the survey part, people were asked which of the 15 factors you memorized the most in the two squares. Table 4 & 5 show the results. As mentioned, the results are based on the studies conducted on the two squares based on the landscape elements of the urban space (physical indicators, non-physical indicators and activity indicators) and their subsets in a memorable way by asking tourists who had traveled to these two squares. In the form of two tables, 4 and Table 5, the data indicate that the buildings have the highest rank with an average of 4.15 in *Naghsh-e-Jahan* Square compared to other titles. But in the *Shahrdari* square, with a slight difference, the two factors of urban artificial lighting with an average rank of 3.71 and social interactions with a rank of 3.72 are at the top of the table. Factors such as 3.76 votes and 3.9

commercial activities are in the second place in *Naghsh-e-Jahan* square, while in the *Shahrdari* square, all the factors are on the same level with a slight difference. As can be seen in Table 5, the slope of most diagrams is almost in the same direction except the factors of “buildings”, and “artificial lights”; The number and the qualitative value of historical and monumental buildings with unique architecture is higher in *Naghsh-e-Jahan* Square at the same time, because nightlife is stronger in the *Shahrdari* square, artificial lighting is more recorded in tourists’ minds. Based on the Table, it can be compared that factors such as urban furniture with a score of 3.43 in *Rasht Shahrdari* Square compared to *Naghsh-e-Jahan* Square in Isfahan. They play a more prominent role.

Table 5  
 Memorability of each components of the squares landscapes.





As it's mentioned before, the questionnaires were designed based on a 5-point Likert scale (from very little to very much). To analyze the questionnaires, the frequency of the responses was weighted from score 1 to 5 based on their intensity and the average of each indicator was calculated; thus, it was determined which indicator is more memorable (The last column of the Table 6). On the other hand, the average of the total indicators was calculated for each square and the memorability of the square was obtained in terms of the sum of its landscape factors: according to the table 6, the

scores of both squares are similar to each other on average, so that the *Naghsh-e-Jahan* square with score of 3.321 is a little less memorable than the *Shahrdari* square with an average score of 3.395.

In the descriptive part of the questionnaires, tourists were asked to mention the reason for visiting the square again; They mentioned such things as beautiful and magnificent architecture in *Naghsh-e-Jahan* Square, beautiful lighting and social interaction in the *Shahrdari* Square, as well as the vitality and presence of water in both squares.

Table 6  
Memorability score of each components of the squares landscapes.

Which of the following factors is most recorded in your mind in <i>Naghsh-e-Jahan</i> square?		Very little Score 1	little Score 2	neutral Score 3	much Score 4	Very much Score 5	average
1	Physical Indicators	Buildings	9	25	54	104	4.15
2		Pavement	16	95	85	115	3.344
3		Furniture	15	107	155	80	2.986
4		Waterfront	28	55	92	93	3.553
5		Plant coverage	12	78	149	63	3.321
6	Non-Physical Indicators	Temperature	33	105	129	66	2.986
7		Wind	15	96	177	86	2.942
8		Humidity	22	135	140	75	2.785

9		Sunlight	51	58	60	95	119	3.451
10		Artificial lights	63	150	101	46	23	2.519
11		Scents	12	51	116	105	99	3.5
12		Sounds	20	64	52	98	149	3.762
13	Activity Indicators	Commercial activities	25	26	69	103	160	3.906
14		Service activities	39	67	135	102	40	3.096
15		Social interactions	23	59	144	51	106	3.41
<b>average</b>			25.53	78.06	110.53	85.46	83.4	3.321
<b>Which of the following factors is most recorded in your mind in <i>Shahrdari</i> square?</b>			<b>Very little Score 1</b>	<b>little Score 2</b>	<b>neutral Score 3</b>	<b>much Score 4</b>	<b>Very much Score 5</b>	<b>average</b>
1	Physical Indicators	Buildings	10	22	175	84	92	3.59
2		Pavement	21	29	133	135	65	3.506
3		Furniture	29	62	92	114	86	3.43
4		Waterfront	30	58	63	119	113	3.592
5		Plant coverage	9	71	126	115	62	3.391
6	Non-Physical Indicators	Temperature	44	84	166	67	22	2.84
7		Wind	54	92	114	63	60	2.955
8		Humidity	20	57	145	96	65	3.336
9		Sunlight	41	62	110	95	75	3.263
10		Artificial lights	4	53	86	147	93	3.71
11	Activity Indicators	Scents	25	50	83	102	123	3.64
12		Sounds	48	95	97	79	64	3.041
13		Commercial activities	32	51	77	80	143	3.655
14	Activity Indicators	Service activities	19	81	142	71	70	3.240
15		Social interactions	7	66	71	120	119	3.725
<b>average</b>			26.2	62.2	112	99.13	83.46	3.395

At the same time, tourists were asked whether you would visit the square if you went to that city again. As it's shown in the Figure 8 and 9, the question was asked in *Naghsh-e-Jahan* Square, with a small difference than the *Shahrdari* square, tourists were more willing to visit it

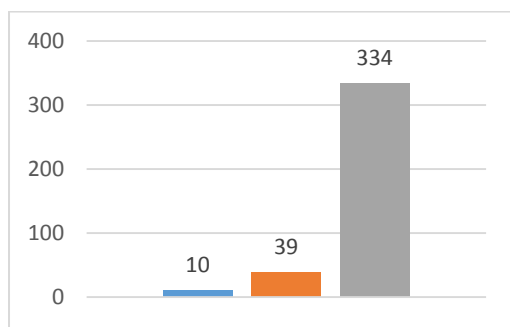


Fig. 8. The tourists' desire to revisit the *Naghsh-e-Jahan* square

again. In fact, the notable results show that although the *Shahrdari* square is a little more memorable than *Naghsh-e-Jahan* Square, but tourists are more inclined to go to *Naghsh-e-Jahan* again.

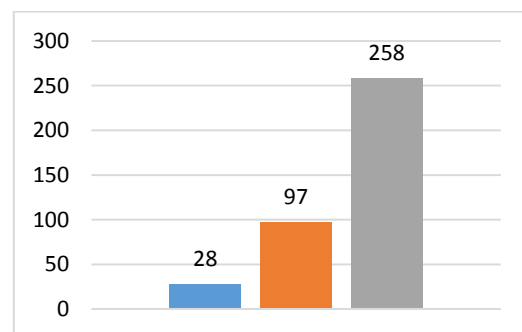


Fig. 9: The tourists' desire to revisit the *Shahrdari* square

And finally, based on the Table 5, Ranking of the two squares landscape components in terms of their memorability was done therefore they are shown in order of being memorable in Table 7. As it's indicated in table 6, In the *Naghsh-e-Jahan* Square, the "buildings" factor scored the highest and the "artificial lights" factor the lowest; and in the *Shahrdari* square, "social interactions"

have the highest score and the "temperature" factor is in the lowest rank. According to the Table, by comparing the two squares, it can be seen that the climatic elements of the non-physical indicators such as wind, temperature and humidity were the least memorable in the minds of tourists although the two fields do not have the same climatic conditions.



Table 7  
Ranking of the two squares landscape components in terms of their memorability

Naghsh-e-Jahan Square			Shahrdari Square			
Landscape Components	Dimension	Score	Landscape Components	Dimension	score	
1	Buildings	Physical Indicators	4.15	Social interactions	Activity Indicators	3.72
2	Commercial activities	Activity Indicators	3.90	Artificial lights	Non- Physical Indicators	3.71
3	Sounds	Non- Physical Indicators	3.76	Commercial activities	Activity Indicators	3.65
4	Waterfront	Physical Indicators	3.55	Scents	Non- Physical Indicators	3.64
5	Scents	Non- Physical Indicators	3.50	Waterfront	Physical Indicators	3.59
6	Sunlight	Non- Physical Indicators	3.45	Buildings	Physical Indicators	3.59
7	Social interactions	Activity Indicators	3.41	Pavement	Physical Indicators	3.50
8	Pavement	Physical Indicators	3.34	Furniture	Physical Indicators	3.43
9	Plant coverage	Physical Indicators	3.32	Plant coverage	Physical Indicators	3.39
10	Service activities	Activity Indicators	3.09	Humidity	Non- Physical Indicators	3.33
11	Temperature	Non- Physical Indicators	2.98	Sunlight	Non- Physical Indicators	3.26
12	Furniture	Physical Indicators	2.98	Service activities	Activity Indicators	3.24
13	Wind	Non- Physical Indicators	2.94	Sounds	Non- Physical Indicators	3.04
14	Humidity	Non- Physical Indicators	2.78	Wind	Non- Physical Indicators	2.95
15	Artificial lights	Non- Physical Indicators	2.51	Temperature	Non- Physical Indicators	2.84

4.2. Inferential statistics

After determining the frequency and average of the questions, a one-sample t-test was used by the respondents to obtain the quality of the memorability components of Naghsh-e-Jahan Square. To quantify them, scaling method was used. Since the questions were arranged in a 5-point Likert scale (from very low to very high), by giving codes 1 to 5, the score of each index was obtained. Finally, to calculate the overall score, the simple mean score of the factors was used and compared with the

theoretical median of the research (number 3). The results showed that the mean of the physical component was 15.38, the mean of the non-physical component was 17.93 and the mean of the individual component was 9.85. According to Table 1, it can be seen that the memorability components of Naghsh-e-Jahan Square have an average higher than 3 and have a desirable level. In other words, on average, people in Naghsh-e-Jahan Square form better memories in their minds.

Table 8  
one sample t-test results in Naqsh-e-jahan

	mean	Test Value = 3					
		t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Physical	15/3864	46.103	382	.000	12.38642	11.8582	12.9147
Non-Physical	17/9399	53.754	382	.000	14.93995	14.3935	15.4864
Activity	9/8538	39.460	382	.000	6.85379	6.5123	7.1953

a. group = nagsh-e-jahan

One-sample t-test was used by the respondents to evaluate the memorability components of the Shahrdari square. The results showed that the mean of the physical component was 16.03, the mean of the non-physical component was 17.64 and the mean of the individual

component was 10.47 (Table 9). According to the contents of Table 9, it can be seen that the memorability components of the Shahrdari square have also an average higher than 3 and have a desirable level.

Table 9  
one sample t-test results in Shahrdari

	mean	Test Value = 3					
		t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Physical	16/0313	43.192	382	.000	13.03133	12.4381	13.6245
Non-Physical	17/6449	50.707	382	.000	14.64491	14.0770	15.2128
Activity	10/4726	46.032	382	.000	7.47258	7.1534	7.7918

a. group = Shahrdari

Independent t-test was used to investigate the differences between memorability in the two groups of Naghsh-e-

Jahan and Shahrdari Squares. According to Table 10, there is a difference between Naghsh-e-Jahan and

*Shahrdari* among the three memorability components (sig = 0.009). The activity component average in *Shahrdari* Square is 10.47 and *Naghsh-e-Jahan Square* is 9.85, so the activity component average is more memorable in

*Shahrdari* Square. Regarding the other two components of memorability, namely physical and non-physical, there is no significant difference between *Naghsh-e-Jahan* Square and *Sahrdari* Square (all Fs are non-significant).

Table 10  
Independent t-test results

	group	N	Mean	Std. Deviation	Std. Error Mean
Physical	Naghsh-e-Jahan	383	15.3864	5.25796	.26867
	Shahrdari	383	16.0313	5.90448	.30170
Non- Physical	Naghsh-e-Jahan	383	17.9399	5.43925	.27793
	Shahrdari	383	17.6449	5.65216	.28881
Activity	Naghsh-e-Jahan	383	9.8538	3.39919	.17369
	Shahrdari	383	10.4726	3.17692	.16233

Pearson correlation test was used to investigate the relationship between the memorable landscape of the two squares and tourist attraction. As can be seen in Table 11 and 12, the correlation coefficients between all components of memory (physical, non-physical and

activity) and tourist attraction are significant. Accordingly, the research hypothesis was proved so there is a meaningful relationship between memorability of urban public space landscape and tourist attraction.

Table 11  
Pearson correlation results in Naghsh-e-Jahan

		Physical	Non- Physical	Activity	Attract tourists
Physical	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	383			
Non- Physical	Pearson Correlation	.960**	1		
	Sig. (2-tailed)	.000			
	N	383	383		
Activity	Pearson Correlation	.968**	.976**	1	
	Sig. (2-tailed)	.000	.000		
	N	383	383	383	
Attract tourists	Pearson Correlation	.854**	.825**	.881**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	383	383	383	383

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

a. group = nagshjahan

Table 12  
Pearson correlation results in Shahrdari

Tabl6. Correlations <sup>a</sup>					
		Physical	Non- Physical	Activity	Attract tourists
Physical	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	383			
Non- Physical	Pearson Correlation	.986**	1		
	Sig. (2-tailed)	.000			
	N	383	383		
Activity	Pearson Correlation	.987**	.986**	1	
	Sig. (2-tailed)	.000	.000		
	N	383	383	383	
Attract tourists	Pearson Correlation	.884**	.899**	.869**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	383	383	383	383

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

a. group = shrdary

## 5. Conclusion

The memorability of the urban environment is a quality that expresses the power of recording the sights, events and the atmosphere of the urban public spaces in the

mind; it is a social-spatial phenomenon that is formed in the interaction of the city and citizens. As mentioned earlier, the memorability of urban public space landscape is of great significance. On the other hand, the presence of

tourists in a public space is also of great importance as an economic stimulus for cities. There are many factors influencing the tourist attraction to the urban public space; according to the conceptual model of the research, external factors such as social, economic, environmental, especially physical dimensions, also have a significant impact that are outside the scope of this research, e.g. ease of access to the space, space security and etc. At the micro level and in the internal dimension, the issue of the memorability influence of space on the tourist attraction can be raised. To measure memorability, landscape components of urban public space are proposed.

In this study, the memorability of Urban Public Space in relation to tourism was analyzed. Accordingly, it was studied in three dimensions of physical, non-physical and activity with their 15 subsets, and tourists were asked about them. The results showed that despite the different

Table 13  
Ranking of the landscape components of urban public spaces in terms of their memorability

Ranking	Landscape Components	Score	Ranking	Landscape Components	Score
1	Buildings	3.87	9	Plant coverage	3.35
2	Commercial activities	3.77	10	Furniture	3.2
3	Waterfront	3.57	11	Service activities	3.16
4	Scents	3.57	12	Artificial lights	3.11
5	Social interactions	3.56	13	Humidity	3.05
6	Pavement	3.42	14	Wind	2.94
7	Sounds	3.4	15	Temperature	2.91
8	Sunlight	3.35			

Therefore, to answer the third question of the research, namely the relationship between the memorability of urban public space and its landscape richness, as mentioned earlier, attempts were made to select two case studies that differed in terms of physical components and richness of landscape elements. *Naghsh-e-Jahan* Square with a long and rich history, as well as a wider area, has a richer landscape, but the interesting point is that according to the opinions of tourists, *Naghsh-e-Jahan* Square is less memorable than the *Shahrdir*. Based on the observations, as well as the open-ended questions of the questionnaires, it was found that non-physical and activity elements, such as social interactions, retail activities, sounds, scents, lighting and generally the spirit of the space, have a great impact on the memorability of urban public space; Table 2 confirms it too. Accordingly, not necessarily a positive and significant relationship was observed between the richness of the landscape and its memory. Of course, these results may be true for similar samples in Iran, but by testing more samples, it can be generalized.

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conditions in the two squares, their memorability is not much different in the tourists' minds: the *Shahrdir* square, with a small difference, is more memorable than the *Naghsh-e-Jahan* square therefore the first question of the research was answered.

In response to the second question of the research, it was observed that prioritization of the public space landscape components in terms of their memorability in the two squares is different, however, based on the aggregation of findings and their commons in both squares (indicated in Table 13), it can be noted that buildings and interestingly, commercial activities are the most memorable in the tourists' minds; then waterfront, Scents and social interactions are in the next line. As can be seen, climatic factors such as temperature, wind and humidity are not very memorable in the minds of tourists, Regardless of the type of climate.

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