

Original Research Article

An Analysis of Tourism Spaces in Ramsar City from the Perspective of Security Using Space Syntax Technique

(Case Study: 33-Hectare Garden in Ramsar City)

Seyedeh Masoumeh Fotokian^{1*}, Mohammad Reza Vaezi²

1. Ph.D. Student in Architecture, Faculty of Technology and Engineering, Damghan Branch, Islamic Azad University, Damghan, Iran.

2. Faculty Member of Architecture, Damghan Branch, Islamic Azad University, Damghan, Iran.

Received: 12/12/2021

Accepted: 10/01/2022

Available online: 21/01/2021

Abstract One of the important characteristics of citizens' presence in urban spaces is security in public places. Security creates prosperity and dynamism in the urban environment and is manifested by the culture of interaction, nightlife, stress reduction, and the active presence of people of different ages and genders. This issue becomes more important when cultural, age-associated, and economic differences among the users of a set are more diversified and the function of the environment requires two-way interaction between users, and from this case, tourist spaces can be considered as having this feature. This article examines the necessity of increasing security in tourist spaces of Ramsar city, which is very important due to the development and diversity of tourist spaces for a long time and the frequent travels of tourists on different days of the year in this region. Studies in the field of security and its parameters were examined through the bibliographic method. To verify the accuracy of the findings and examine the physical indicators affecting the security of the tourism space, the solutions by the space syntax technique were used. In the next step, a preliminary questionnaire is taken to identify different areas of the tourism complex, which zoning is based on behavioral mapping and is used for field understanding; Then, using Depth Map software, the components of the arrangement of spaces in the desired spaces are analyzed. This research seeks to answer the question of which parts of the tourism environment in Ramsar city create a greater or lesser sense of security for its users? What indicators of space syntax technique are more similar to the opinion of users of this site in recognizing place security? As a result of this study, it seems that each of the space syntax indicators addresses some of the security challenges of the thirty-three-hectare garden space of Ramsar city, and among these, the concavity and convexity of space and depth, play effective roles in natural and spatial monitoring.

Keywords | Urban space, Tourism, Space syntax, Security, Ramsar 33 Hectare garden.

Introduction Security in urban spaces is one of the most important factors affecting the presence of citizens and, consequently, the prosperity and dynamism of the urban environment (Montazer Al-Hijja, Sharifnejad & Rajabi, 2018, 91). Specifically, security in the public spaces

of a city will lead to the vitality and dynamism of the space, the symptoms of which can be seen in the active presence of people, creating a culture of cooperation and interaction, reducing stress and anxiety, the presence of different age and gender groups and nightlife (Izadi & Haghi, 2015, 5). This issue becomes more important when cultural, age-associated, economic and other

* Corresponding author: massi93arch@gmail.com, +989334369617

differences become more diverse among the users of a collection of which tourism spaces can be considered to have such features. An appropriate analysis of the security situation in tourism spaces can be provided when more comprehensive indicators are evaluated in the spatial analysis method. In this regard, the theory of syntax (arrangement) of space is one of the theories that has analyzed various types of evil spaces and architecture and is frequently drawn upon in the logical systems of architecture and urban planning research in the contemporary period (Grout, 2005, 307). One of the reasons for the popularity of this method among the common methods of architectural research and research is the comprehensiveness of this method and its wide application in different architectural and urban designs. So far, this method has significantly contributed to research in the field of architecture, architectural design, architectural morphology, historical evolution of architecture, modeling, spatial analysis, behaviorism, and spatial cognition (Hamedani Golshan, 2014, 86). As a result, the space syntax technique can provide an effective way to properly analyze the social relationships of architectural and urban spaces. One of the valuable areas for analyzing tourist spaces is the coastal city of Ramsar located in the west of Mazandaran, one of the tourist-coastal cities that welcomes many tourists every year, especially during the holidays (Nowruz and summer); Therefore, the influx of tourists in the region, in addition to the positive consequences for the development of a region, has imposed additional pressure on the region from economic, social and environmental perspectives (Adish & Ramezanifar, 2017, 151). This has had far-reaching negative social consequences on Ramsar tourism spaces. As a result, the rate of crime is on the rise in this area. These cases can adversely affect the appearance of the city from the users' point of view. One of these important tourist spaces in this city is the 33-hectare garden located in front of the old Ramsar Hotel, which has been built in a suitable place in terms of urban location in terms of access and proximity to tourist and commercial buildings. Regardless of its good geographical position, this urban space suffers from unsightly landscape and social anomalies, which are caused by neglecting the reconstruction required in the middle of this important touristy area.

Research questions

- What parts of the tourist environment of the 33-hectare garden of Ramsar city make its users feel more / less safe?
- Which indicators of space syntax technique are more

similar to the opinion of users of this site in recognizing place security?

Research objective

Identifying unsafe places in the tourist space of the 33-hectare garden of Ramsar city and preventing the occurrence of insecurity by providing solutions to improve security indicators related to the layout of the space, to increase the security of tourists and natives, is the main purpose of this study. Based on the theory of Space layout, it is possible to measure the communication of spaces and analyze them according to each function. Therefore, the analysis of tourism spaces in Ramsar city based on space syntax technique can respond to the challenges of safe spaces.

Literature review

In this research, the issues can be examined from the two perspectives of security of urban spaces and the relationship between space syntax technique and urban physical environments. Security in urban spaces is one of the most important factors affecting the presence of citizens and, consequently, the prosperity and dynamism of the urban environment (Montazer Al-Hajja et al., 2018, 91). The book "Simay-e-Shahr" examines the components that affect the quality of urban space and states that the clearer and more specific the perception of the environment in the mind, the more it creates a sense of security and the greater the depth and intensity of the spatial experience (Lynch, 2015). The book entitled "Environmental features of safe urban spaces" deals with the issue of security and sheds light on the concept of safe urban space and shows how rules and regulations contribute to crime prevention and its control. Moreover, it examines environmental factors and characteristics affecting the creation of crimes and urban violence (Salehi, 2008). Another study entitled "Assessment of physical factors affecting the sense of security in urban spaces from the perspective of the elderly" can be named that the statistical population selected the elderly in Khan Square, Yazd. They concluded that the components of safety, light, and urban lighting and texture are the most important physical components affecting the sense of security of the elderly in urban spaces, respectively (ibid., 91). Another group that considers the perspective of urban space security to be very important among the researchers is the feeling of security among women, among which we can refer to an article entitled "A practical approach to the feeling of women's security in inner-city parks" (Case study: Bojnourd), the results of this study showed that among all the indicators proposed for the CPTED¹ approach, the only indicator

is support for social activities that have no role in the sense of security of women in the parks studied in Bojnourd. But the readability, monitoring, and general perception of space among other indicators of lighting, management of maintenance, isolation and population density, signs and overall design of the space, were confirmed about their significant relationship with women's sense of security, have the highest impact on women's sense of security (Belali Oskoui, Sedaghati & Dartoomi, 2020, 65).

In the field of space syntax technique, several studies have examined architectural and urban spaces from different perspectives and each of the components of space depth, interconnection, concavity and convexity of space and physical and visual access, both conceptually and practically, have been studied using the tools of explanatory diagrams and Dep Map software. Among these, the article "Architectural space syntax" has given a general expression and the relationship between architecture and space syntax technique (Memarian, 2002). In another study entitled "Analysis of the spatial configuration of indigenous houses with a space syntax approach", the indigenous houses of the city of Boshrouyeh have been analyzed and the findings of this study show that the spatial configuration and organization of houses from the Safavid period to the early Pahlavi has continuity. It also indicates that indigenous culture has played an important role in the formation of space and its organization. Since the end of the Pahlavi era, the spatial configuration of houses has changed and the continuity in the existing spatial configuration has been disappeared, which can affect the culture of indigenous settlement and the behavioral system of indigenous inhabitants (Madahi & Memarian, 2016). According to the communication approach, security issue and space syntax technique, a dissertation entitled "The effect of space shape on the sense of security with emphasis on the theory of space syntax: a case study (Azimiyeh and Mehrshahr neighborhoods located in Karaj)" has been concluded that all three components of permeability, usability, and part size affect the feeling of security in urban space and are related to each other, and this shows the prominent role of physical components on the feeling of security in urban space (Baghaei, 2012). The classification of the study of the mentioned researches is related to the researches in the field of security in communication and the components of space syntax and also the application of this technique to recognize the effective strategies on increasing security in tourist spaces.

Research method

In the first phase of the study, we employed the bibliographic method to examine the concept of security, its parameters and reviewed space syntax techniques. In the second phase, we used the results of these studies and adopted space syntax solutions to identify the security of the place.

The initial interview was organized to identify different areas of the tourism complex (zoning based on cognitive mapping) and is distributed among tourists, natives, and tourism space officials, and the results were reviewed for the zoning of tourism spaces. Then, a questionnaire was developed to identify the security components of the desired space and classification according to the specified zoning. After that, field research was performed on the zonings extracted from cognitive mapping, and the researched spaces were analyzed using Depth Map software.

Theoretical foundations

• Urban security

Security is an Arabic word from the safe root that means comfortable and relaxed and fearless (Moin, 2001, 352). The concept of security in dictionaries is safety, peace and comfort, protection against danger (objective and material security) (Sadeghi, Bani Amerian & Zoghi, 2011, 3). Security, based on the theory of needs in the Maslow Pyramid in 1968, was introduced as one of the essential and basic needs for human excellence. Security is one of the most important components that give quality to urban public spaces. In other words, the lack of security, along with the existence of all quality components in a public urban space, indicates the failure of that space. Spaces such as markets, streets, and parks are expected to provide better security quality among urban public spaces due to their nature and special location. Fear of crime occurs in society as a bigger problem than the crime itself; Because people avoid being in spaces that feel threatened and damaged, and these environments gradually become unsafe places. Creating an environment where people can walk without fear increases the number of visitors and this increases the quality of the environment (Yaran, Arjomandi & Mesgarian, 2019, 25). The feeling of security in the urban environment has three main approaches: a social approach to urban environment security, an environmental-behavioral psychology approach, a physical approach to urban environment security (Baghaei, 2012, 65) (Fig. 1).

• Space Syntax theory

In this study, the term spatial syntax refers to the relationship between a space unit with an adjacent space set, just like examining a word within a text and in

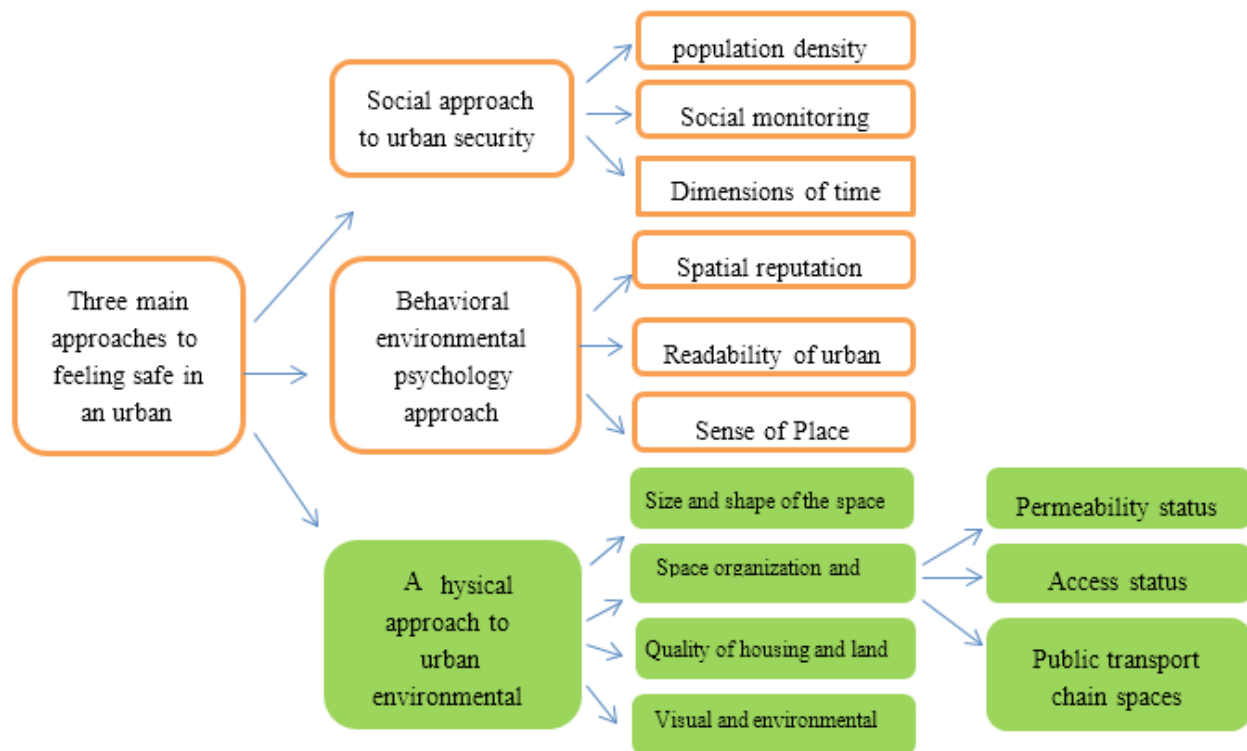


Fig. 1. Approaches to feeling safe in the urban environment from subjective and objective dimensions. Source: Baghaei, 2012, 27-38.

relation with other words. If the building is considered an object composed of a space communication system, this communication system will be in the form of a plan. Knowing these designs and patterns means knowing the social relationships that take place inside the spaces. Knowing social relationships in spaces means knowing the activities of consumers inside spaces. These activities and relationships in space are of primary importance to the general form of space (Memarian, 2002, 77). In short, spatial arrangement is a set of computer techniques for modeling buildings and cities so that the model created from this system includes related geometric elements and analyzes this system to understand how its constituent elements relate. These elements are linear when the subject of research is about movement, and when the subject of research is social interactions, they are convex spaces, and when the subject of research is complex patterns of behavior, they are visible boundaries (Baghaei, 2012, 99 - 100). Components that are important in analyzing the relationships between spatial and social qualities in the system include the depth of space, physical and visual access, concavity and convexity of space, and interconnection (Peyvaste-gar, Heydari & Eslami, 2017, 16) (Fig. 2).

• Perspectives on urban security from the perspective of space syntax theory

So far, theorists have proposed various approaches and theories regarding security in urban spaces. One of the first theorists of urban security proposed by Wood, who

believes that social control of the residential environment is based on the presence and supervision of the residents themselves (Salehi, 2008, 136). Angel also emphasizes the issue of supervision by emphasizing the importance of the physical environment for crime prevention (Baghaei, 2012, 48). Lewis Mumford considers the creation of a sense of security through a sense of place and human scale in urban space possible (Mumford, 2004, 623). Newman examined the details of the design of the environment to create a defensible space; he realized that it is important to create a situation of supervision and care for citizens, inform them about the separation of public and private and semi-private and private spaces, encourage them to attend public spaces and maintain freedom of movement to public places and preserve personal property (Baghaei, 2012, 50). Coleman, Wilson, and Kling, Hillier, Jane Jacobs consider monitoring and control of the urban environment to be effective on its security (Dickens, 1998, 217). Taylor and Hall, in addition to the issue of care and supervision, consider the presence of more citizens in the urban space, access control, and elimination of the provocative factor in the urban environment to increase security (Baghaei, 2012, 56-51) (Table 1).

Examining the views expressed in the field of urban security through the lens of space syntax theory shows that the existence of security in the space depth index and its concavity index would be possible through the physical design of the environment and the existence of different

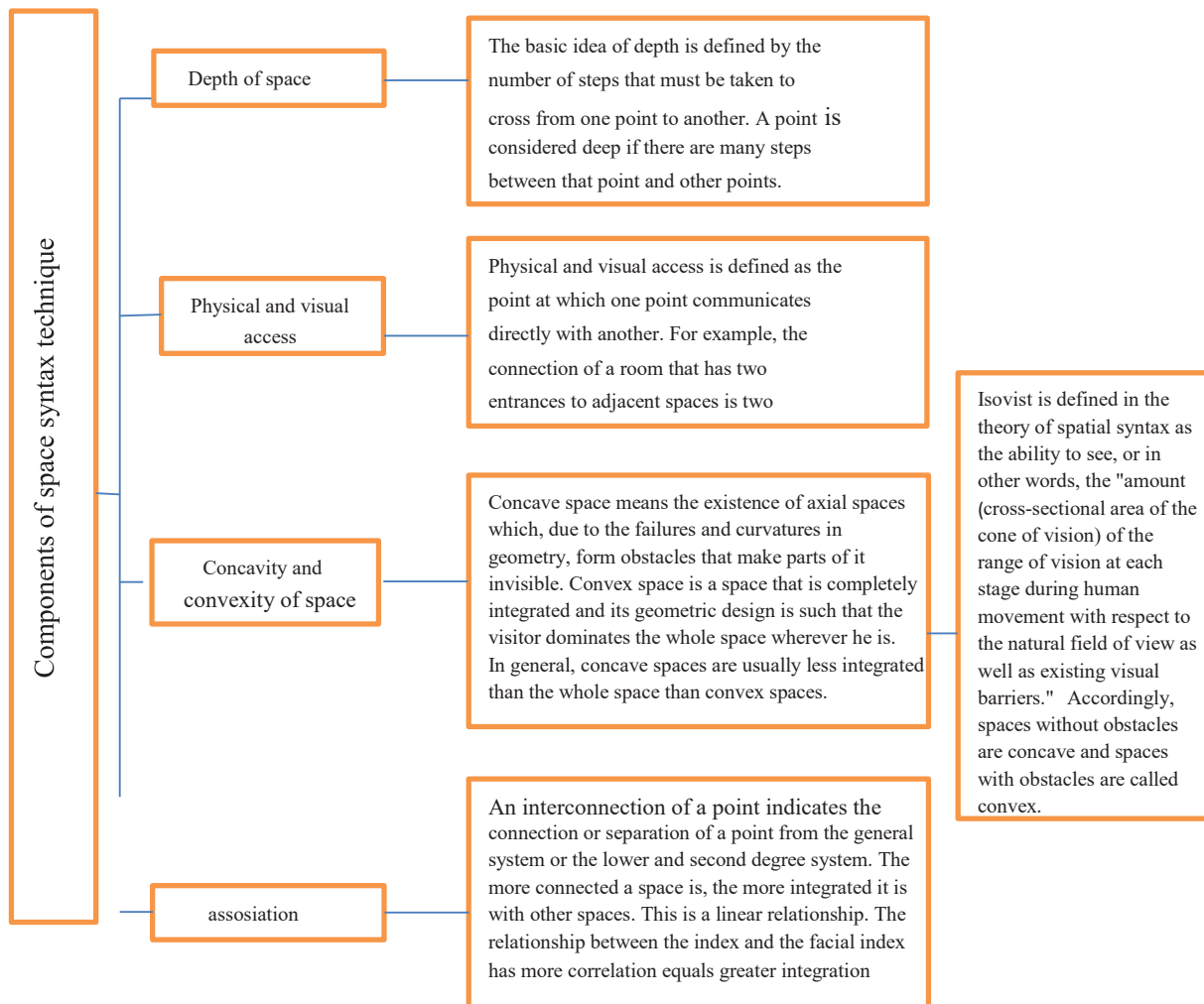


Fig. 2. Diagram of the components of space syntax technique. Source: Madahi & Memarian, 2016, 51-52; Peyvaste-gar et al., 2017, 16-17.

uses. In the physical and visual access index, all attention to the nature of space from the perspective of movement is considered in it, and the shape of the spaces and their connection to each other based on different forms of movement in it refers to the interconnected index.

Findings

• Research setting

Garden - Ramsar coastal boulevard, two kilometers from the Caspian Sea and adjacent to the historical buildings of the old, new hotel and marble palace, Moallem Boulevard (Casino) is located, which has an east-west stretch. It is limited to Shahid Razaghi Boulevard from the north, Shahid Rajaei Street from the south, and Enghelab from the west. This garden is one of the new urban spaces in the first Pahlavi period, which is located between two great natural features of the mountain and the sea. If we look at this place from the point of view of hotels, the garden is located in the east-west area in an irregular closed shape. In the first Pahlavi era (1942-1962),

citrus gardens were formed in an area surrounded by a ring road, and landscaping the site was carried out but was left incomplete (Rangchian & Heidari, 2008, 96 - 95). In the second period (1962-1972). The vegetation status changed in the northern region of citrus gardens as a result of transformation in the use of architectural land to garden. In the third Pahlavi era (1972-1982), the citrus garden did not change significantly and two weak side roads with entrances from the south were built in the gardens and also in the fourth era (1982-2002) but no special changes took place (ibid., 97).

Based on the available documents and evidence, the garden has had a specific plan from the very beginning, and in terms of geometric pattern, broken shapes, and their combination with a circle, it has made the garden more similar to western gardens. What is strange is the seemingly unfinished plan of the garden, which is evidenced by its landscaping, which extends only in the western direction and does not have a perfect symmetry on the opposite side (ibid., 98). The vegetation

Table 1. Urban security perspectives through the lens of space syntax theory Source: Peyvaste-gar et al., 2017, 18-19; Baghaei, 2012, 46-50; Soltani, Beyk Mohammadi & Heidari, 2016, 116.

Space syntax technique	Challenges of space security in urban spaces	Theorists' solutions
Depth of space	Permeability (Taylor and Hall)	<ul style="list-style-type: none"> - Lack of permeability on a large scale leads to environmental security (Taylor and Hall) - There is a need for increasing variety and mixing uses in urban space and the priority of pedestrian movement in an urban environment (Lewis Mumford) - Physical design in awareness of the separation of public privacy from private and semi-public and semi-private (Oscar Newman)
Physical and visual access	Control and access (Taylor and Hall-Jane Jacobs)	<ul style="list-style-type: none"> - Establishing the relationship between spatial position and motion - Preventing the entry of suspicious or annoying people who are at risk of crime, using physical barriers such as walls and fences with plant shrubs and locks and paint, etc. Monitoring the design of the street floor and sidewalks and building entrances as far as possible. - Focusing on how to access the house, open areas, and the degree of crime permeability in them. - Emphasizing the quality of control and access as well as increasing environmental readability to assess environmental security.
Concavity and convexity of space	Self-Supervision (Elizabeth Wood - Esklamoo Angel - Wilsom & Kling - Alice Coleman - Jane Jacobs)	<ul style="list-style-type: none"> - Increasing the variety of activities and practices that attract people. - Activities adjacent to the street should provide continuous traffic, to strengthen the issue of monitoring. - Monitoring as a crime deterrent cannot be established in separate neighborhoods with dead-end alleys and non-shared paths. But in clustered and dense neighborhoods, this is possible. - Improving the design of physical design of the environment in creating a situation of monitoring and care of citizens.
Interconnected	Detachment rate (Esklamoo Angel)	<ul style="list-style-type: none"> - Encouraging citizens to use as much as possible of the created urban spaces to reduce the vulnerability of the environment to crime. - Establishing a connection among the spaces allows pedestrians to see those spaces and enter them and be encouraged to move in them. - Increasing the feeling of safety can be developed by the constant presence of people and the constant use of space. - Creating better communication and connection according to the motion system through the designs

distribution levels of this site are denser and higher from east to west, and its topography increases from north to south of the site (Fig. 3).

• Sampling technique and analysis method of interview data, questionnaire, and field visit

In this method, first, the site was divided based on the rating on the sense of security during the day and night. This is shown by the shades of colors falling on a spectrum where darker colors represent more security while lighter colors show less security. The division was based on the survey technique and interview with the visitors of the sites and those who experienced attending there (Fig. 4).

Then, a questionnaire with four components: permeability (depth of space), control and access (physical and visual access), monitoring (convexity and concavity of space), and connection of spaces

(interconnected) was developed from the literature, and yes-no questions were written on the commonality of concepts and theories of security in urban space along with theories of space syntax technique. The samples of the study included 90 men and women (equal number in number) who were selected from three groups working on day and night shifts: visitors, natives, and tourists, who had experience in all five areas of the site.

Monitoring and supervising the site by the authorities of the site and people (concavity and convexity of space) in all 5 zones gained the lowest rating and only in zone 1, it was rated the highest due to the proximity of the zone to casinos and historical hotels. In the first zone, connecting the spaces to each other, the permanent presence of users (interconnection), and the privacy and specified range of spaces (depth of space) were among the highest-rated components.

The best rates associated with the feeling of security were

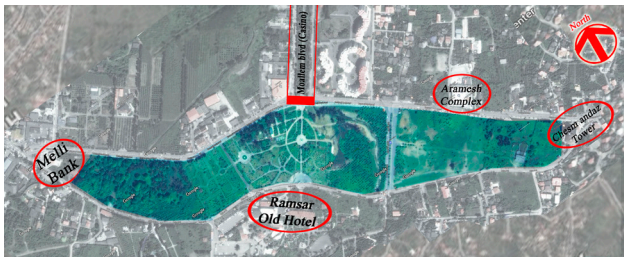


Fig. 3. Map and general area of Ramsar 33 Hectare garden. Source: Authors.

reported by tourists in zone 1 (Fig. 5). In the second zone, followed by the component of the site authorities and people supervision (concave and convexity of space), connecting spaces to each other and the permanent presence of users (interconnected) were lowest-rated because of the lack of variety of spaces in this section and no difference in height and tall vegetation not seen (Fig. 6)

In the third zone, the component of accessibility and readability (physical and visual access) and the privacy and specified range of spaces (depth of space) gained the lowest rating by the group of tourists.

Despite the presence of a river in the middle of this section, this area has an unpleasant odor. The order is caused by the presence of warm mineral particles and the negligence of the authorities. For this reason, tourists rarely attend the center of this section and spend more time on its sides (Fig. 7).

In the fourth zone, due to a large number of plots, there are more artificial spaces in this section and the amount of two components of privacy and a specific range of spaces (depth of space) and the connection of spaces to each other and the permanent presence of users (linked), has the most amount. However, due to the different heights of vegetation in different parts, the accessibility and readability component (physical and visual access) has the lowest value after the monitoring component (Fig. 8). In most zones at night, due to low light and improper separation of spaces with vegetation, the component of accessibility and readability is reduced to a minimum, and this situation is one of the most important problems for tourists compared to the indigenous group and visitors. In the fifth zone, the lowest level of security at night is observed by both indigenous and tourist groups. This is due to the absolute darkness and the presence of dense vegetation at high altitudes. During the day, tourists feel more secure in this area compared to the locals (Fig. 9).

• Analysis of site divisions based on questionnaire and Depth map software

After gathering the data from the field on the site divisions, the pertinent analysis was adjusted according

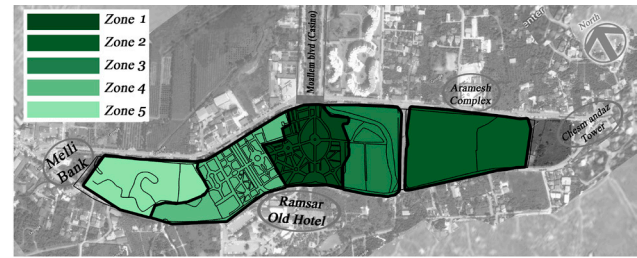


Fig. 4. Security rating map of Ramsar 33 Hectare garden based on the survey and interview method. Source: Authors.

to the current situation, and for the analysis of each zone, the analysis criterion and the result of the questionnaire were considered, and software analysis was used as a complementary tool to provide a two-dimensional presentation of the site and spatial arrangement. The three indicators studied in the software with the titles of interconnection, connectivity (access), and depth, and for the index of concavity and convexity of space, the amount of Isovist based on the angle and with the average value, the highest and lowest of them were extracted for each site (Table 2).

• A comparative analysis between indicators in the software and questionnaires gathered from the field

The comparison of the access index in the second and fourth zones has many differences because, in the second zone, access is possible for visitors in different areas of the periphery of the zone and the legibility of the space is higher for them due to the lack of different spaces. In the fourth zone, due to the difference between the ground level and vegetation, this index has a lower rate for visitors, in these two cases, the analysis obtained from the software is inconsistent with the current status

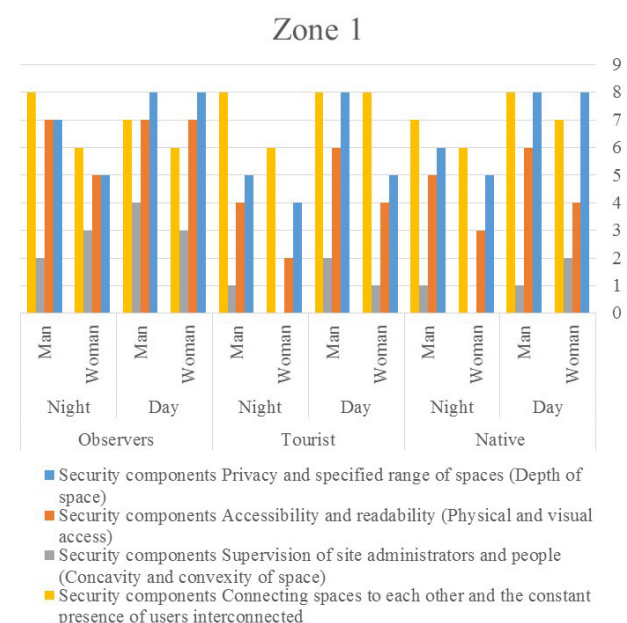


Fig. 5. Findings from the questionnaire on the sense of security gathered from the sample groups in zone 1. Source: Authors.

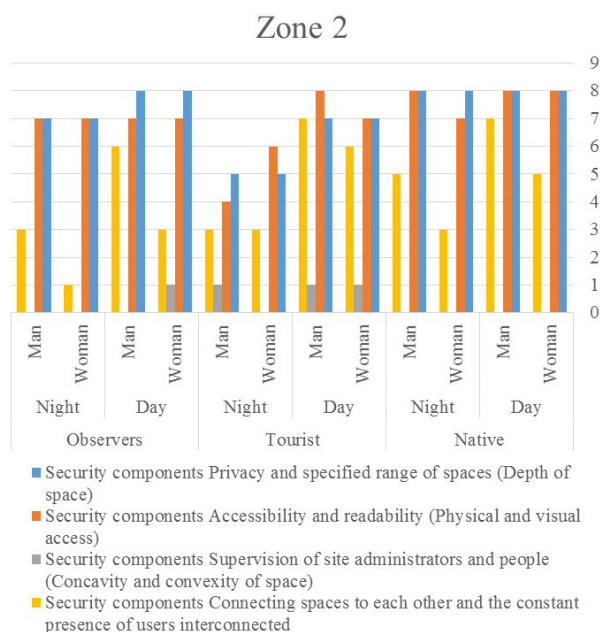


Fig. 6. Findings from the questionnaire on the sense of security gathered from the sample groups in zone 2. Source: Authors.

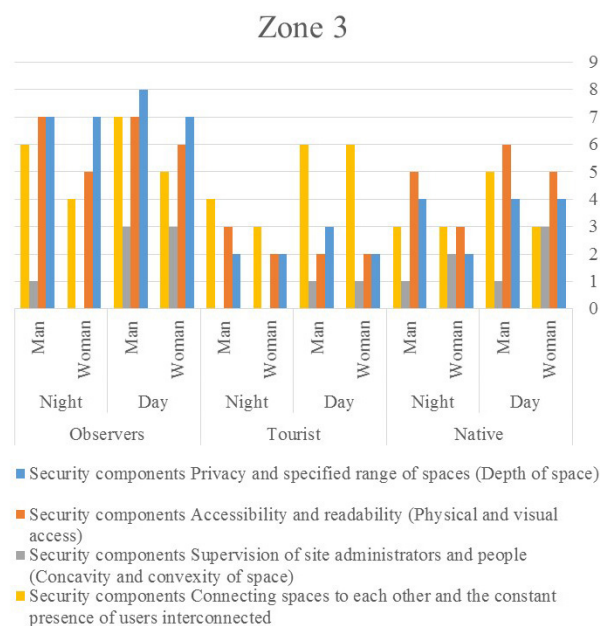


Fig. 7. Findings from the questionnaire on the sense of security gathered from the sample groups in zone 3. Source: Authors.

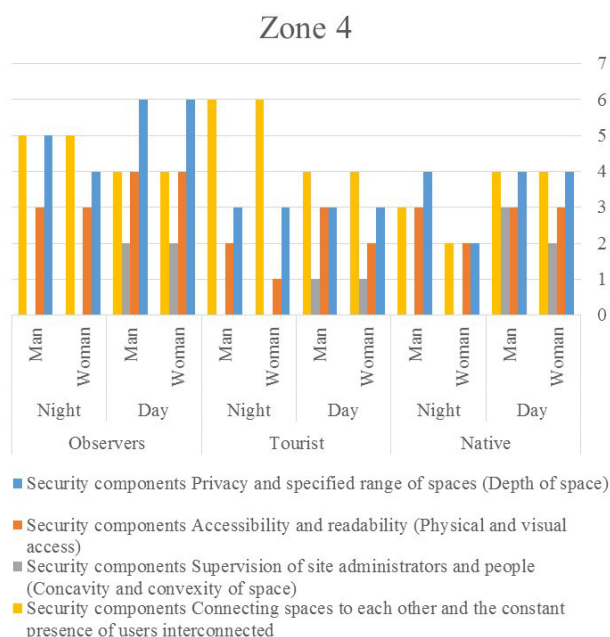


Fig. 8. Findings from the questionnaire on the sense of security gathered from the sample groups in zone 4. Source: Authors.

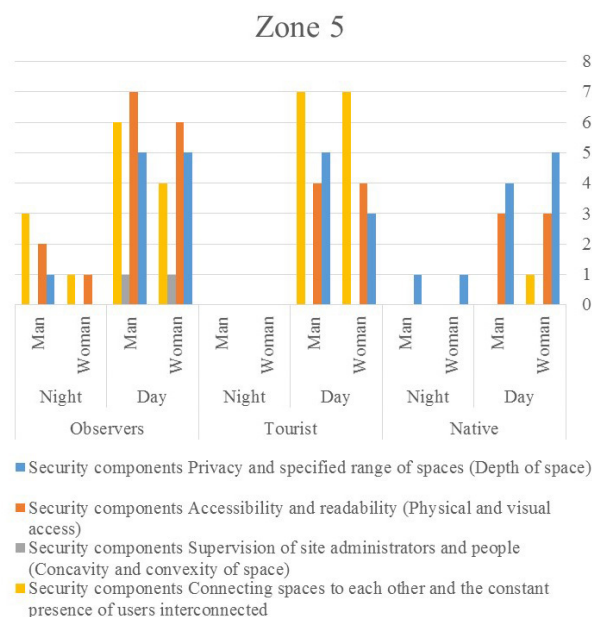
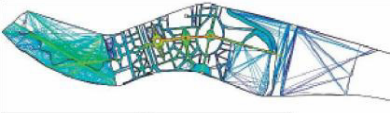
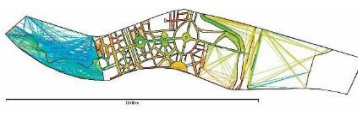
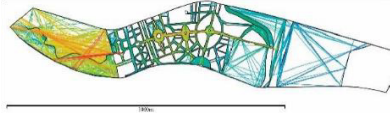
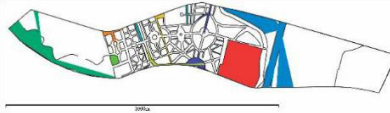


Fig. 9. Findings from the questionnaire on the sense of security gathered from the sample groups in zone 5. Source: Authors.

information obtained from the questionnaire. But in other sections of the site, the software access index and the questionnaire were close to each other (Fig. 10). There are differences in software data and questionnaires in the connection index of zones one, two, and five. In the first zone, the amount of this index in the questionnaire is more than the software, because despite the existence of different spaces and more interconnection, due to the presence of monitors and the proximity of the site to always active users, the result of this index is higher in the

questionnaire. In the second zone, due to being a single space and its large area, a high level of interconnection has been recorded in the software, and because it is farther from the busy center of the site, traffic is less felt. In the fifth zone, due to the small number of spaces, the interconnection was higher in the software, which due to the presence of high altitude vegetation and the difference in land area in the topography of this zone, the presence of visitors is less (Fig. 11). Regarding the space depth index in the second zone, the

Table 2. Findings obtained from the extraction of 4 indicators of space syntax based on the divisions obtained from the sense of security of the visitors to Ramsar 33-hectare garden. Source: Authors, using Depth map software.

Space syntax indicators		Site divisions					Analytical map extracted from the software
		Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	
Access	Average	1009	254	5879	103	7143	
	The least	4	16	7	3	8	
	The most	354	31	124	287	130	
Depth	Average	238	131	211	232	173	
	The least	181	116	167	158	139	
	The most	282	156	258	284	241	
Interconnect ed	Average	520	102	521	529	751	
	The least	234	5	237	254	366	
	The most	911	175	837	894	1310	
View angle	Average	1071	310	1556	252	134	
	The least	510	310	116	11156	9128	
	The most	24134	310	344	35249	17675	

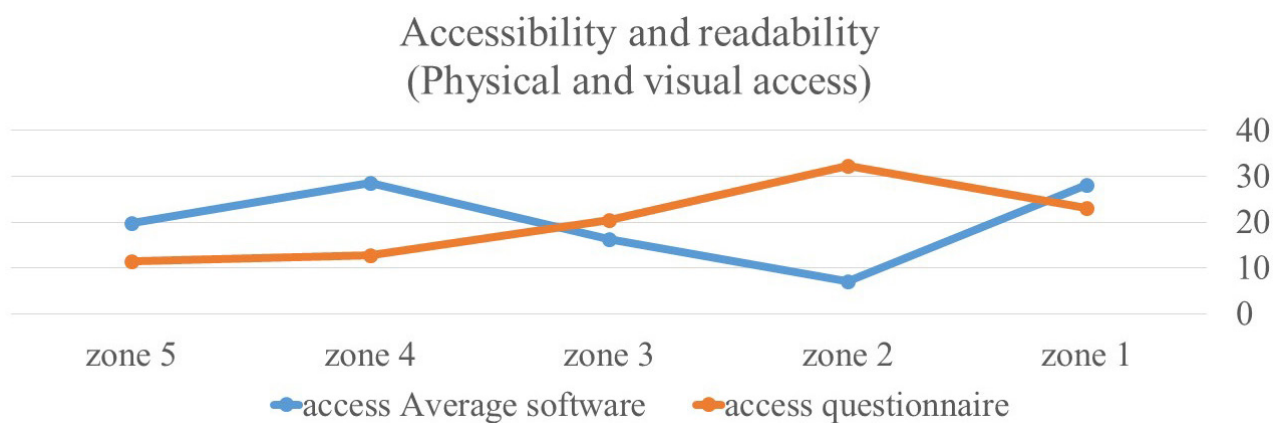


Fig. 10. A comparison of access index in the questionnaire method and Depth map software. Source: Authors.

software has recorded it due to being a single space with the lowest depth compared to other sections of the site; And this is while the visitors consider this index to have more privacy and depth than other parts, which due to its proximity to other urban spaces and the entry and exit of visitors to this space, has understood its depth and privacy as follows. But in other zones, these indicators are close to each other both in the software and in the questionnaire (Fig. 12).

Concerning the monitoring index (concavity and convexity of space), only in the fourth and fifth zones of the software numbers are close to reality and questionnaires, and in other zones, these percentages are completely different because other components are involved in this field. For example, in the first zone, this index has the highest value in the questionnaire, because due to its proximity to other active urban uses, it is located in a busier area with more supervision than other divisions and this is not calculated in the software. In the second zone, this index has the lowest score on the rating

scale, firstly because this area is vast and secondly it is far from the central core of the site. In the third zone, due to less depth and more access to land uses around the zone, this index is higher than the value set by the software (Figs. 13 & 14).

•Solutions to increase the security of each of the site divisions

CPTED approach, which is presented for crime prevention using environmental design, can be considered as a purposeful approach to efficient and intelligent design of optimal environmental components and artificial environments in reducing crime. Using this approach can have a significant effect on increasing social capital, improving the quality of life and enhancing citizenship satisfaction, and thus improving the social welfare of society (Gronland, 2000, 323). After reviewing the strengths and weaknesses of each part of the site, here are the proposed solutions based on the CPTED approach to compensate for the weaknesses of the security of the site spaces:

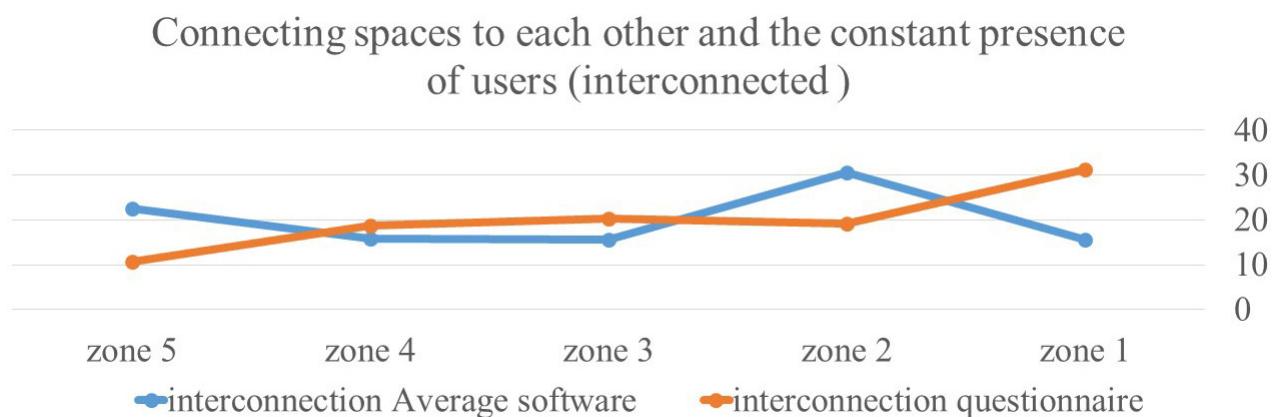


Fig. 11. A comparison between space connection index in the questionnaire method and Depth map software. Source: Authors.

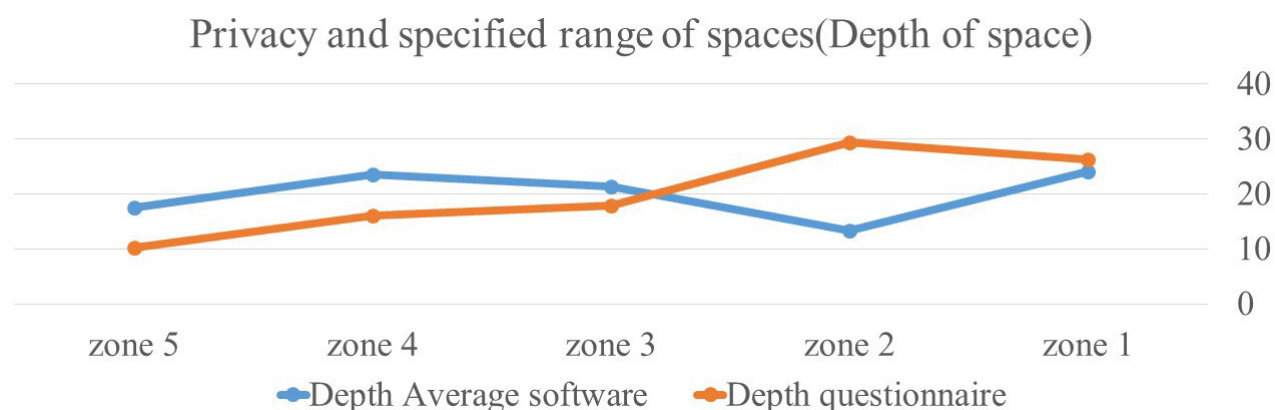


Fig. 12. A comparison between space depth index in the questionnaire method and Depth map software. Source: Authors.

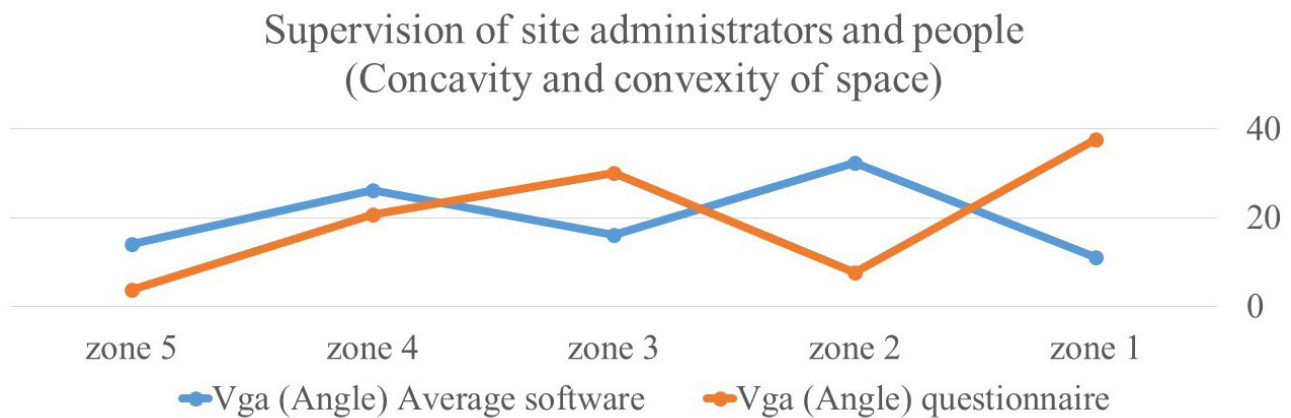


Fig. 13. A comparison between supervision index in the questionnaire method and Depth map software. Source: Authors.

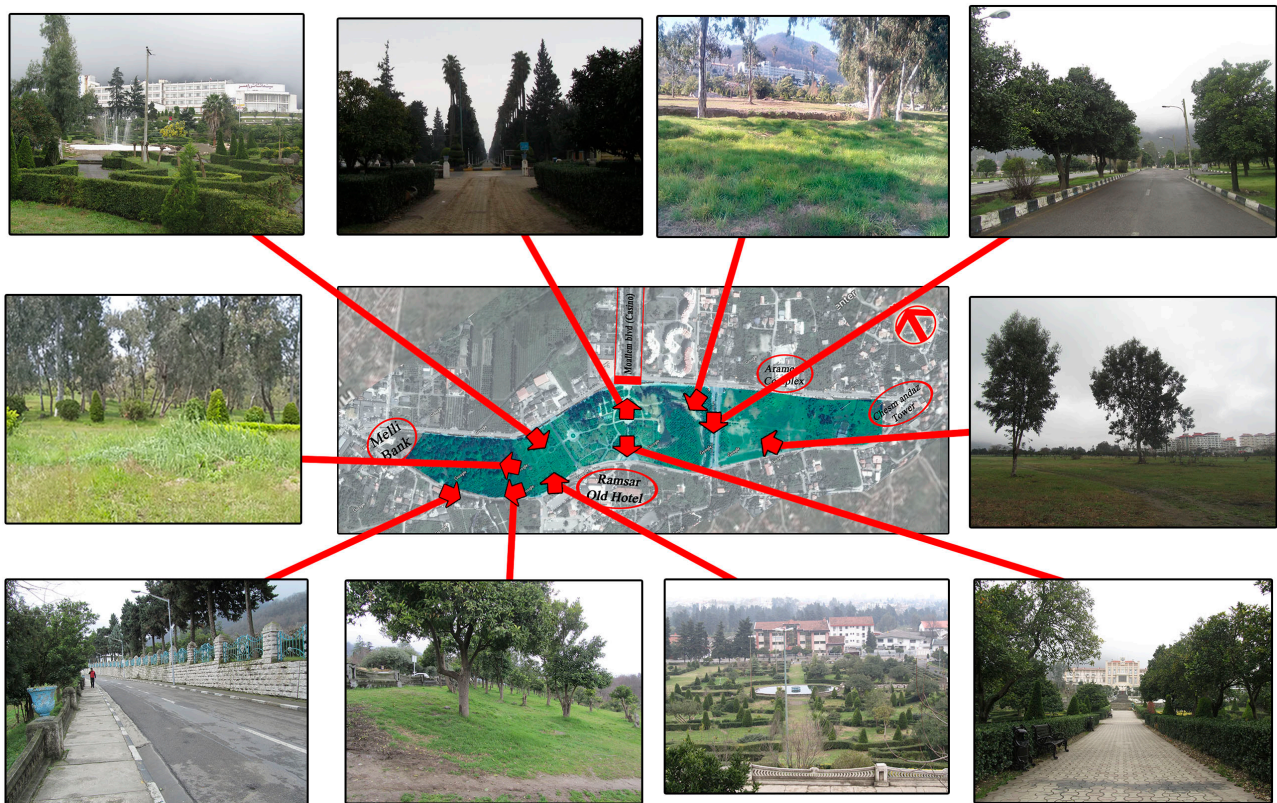


Fig. 14. Images of the visitors' view of the site in different zones of the site. Source: Authors.

Conclusion

Security is one of the important parameters in evaluating tourist spaces that various factors affect their quality. These factors can be measured in a variety of ways. In this article, a questionnaire (extracted from theories of urban space security index) and space syntax technique (using Depth map software indicators) were used for the 33-hectare garden space of Ramsar city. Through the questionnaire, the effective reasons and components in the spatial security division of the site were presented, and the users answered yes-no questions. The lack of disagreement between the results of software

and the findings of questionnaires on safe sites as well as its divisions is associated with urban space signs on the site (e.g. sculptures, trees, and plants) and different heights on the level of the site. Depth map software provides useful analysis in the circumstances of spatial arrangement and two-dimensional space but does not involve other components in its calculations. Therefore, the results of the data of this research can be reviewed and used as solutions only in cases that are consistent with the current situation, and in other cases, due to the discrepancy between the findings of the software with the questionnaire, the software cannot be relied on. These discrepancies were

between the questionnaire and software data in the first zone in the connection and monitoring indices, in the second zone in all indicators, in the third zone in the monitoring index, in the fourth zone in the access index, and in the fifth zone in the space connection index. Overall, the results of the interconnectedness and depth of software

space indices were the closest to the status quo. Monitoring was rated quite lower compared to other indicators in all zones, both in software and in the questionnaire, especially at night by women and tourists. Reducing the depth of space and increasing access, monitoring, and connection of spaces can be useful in increasing the security of the 33-hectare garden of Ramsar city.

Table 3. Solutions to increase the security of each of the five parts of the 33hectare Ramsar Garden. Source: Authors taken from: Pourjafar, Mahmoudinejad, Rafian & Ansari, 2008

Security indicators	CPTED approach solutions	Number of zones	Description of the solution according to each zone
Depth of space	Strengthening natural territories: 1. Continuous use of space by users, through environmental design solutions 2. Use of signs, visual signs, and symbols; through the art of visual communication 3. An increase in natural surveillance and the sense of ownership, through social 4. Employment of deterrence strategies by social planning agencies 5. Use of landscaping, parapets, and fencing in urban design	Third	- Increasing natural monitoring in the middle spaces of the zone, because, on the north and south side, which is connected to the street and there is traffic, users feel safe. and other items.
Physical and visual access	Access control: 1. Use of blocking obstacles such as walls, fences, and banisters, etc 2. Informing people about the location of entrances and exits. 3. Use of appropriate 3. urban infrastructures such as coverings, floors, walls, and landscaping	Fifth	- All items.
		Third	Creating suitable blocking barriers to prevent vehicles from entering the zone. -Installing appropriate inputs and outputs on the east side of the site Installing a suitable passage for a small river between the site and landscaping suitable for rainy days.
		Fourth	Installing and repairing appropriate inlet and outlet. other items.
Concavity and convexity of space	Natural monitoring: 1. Observing urban furniture standards; Such as street lights and city signs 2. Paying attention to the replacement of urban land uses, through urban planning 3. Paying attention to how to access public places, such as parks and public parking 4. Placing telephone and newspaper kiosks or mobile stalls in crime areas 5. Increasing the possibility of human presence with service facilities, to increase public oversight 6. Expanding the view with vegetation and low landscaping through urban landscape design. 7. Increasing the visibility of the orientation of buildings and the parking places in the city design	Fifth	- all items.
		First	- Using urban furniture, lighting lights in different parts of the zone in the same way - Establishing telephone and newspaper kiosks for sale and service places in the middle sections. - Shortening vegetation along the passageways. - Other items.
		Second	- This zone has only short and suitable vegetation. For this reason, it needs other facilities in the mode of natural monitoring and maintenance. - There should be more lighting and monitoring at night in the eastern parts of the zone because the land next to it is barren. - Other items.

Rest of Tabale 3.

Security indicators	CPTED approach solutions	Number of zones	Description of the solution according to each zone
interconnected	Repairing and maintenance 1. Maintaining urban equipment such as boards and communication signs and ... 2. Protecting municipal equipment from damages for instance protecting traffic lights 3. Landscaping, based on criteria that increase public visibility and supervision	Third	- Furniture should be evenly distributed - Lighting in the northern parts of the site is essential due to the longer vegetation. - The heights of shrub plots should decrease. - and other items.
		Fourth	- The heights of shrub plots should decrease. - Establishment of telephone and newspaper kiosks and service places in the middle sections. Repairing and maintaining several components years old. - and other items.
		Fifth	- Due to the topography and tall vegetation, the presence of appropriate urban furniture and lighting throughout the site is very important. - and other items.
	Supporting social activities: 1. Modifying spatial planning through, efficient use of urban spaces 2. Creating density in social activities in crime-prone areas 3. Creating special economic activities in adjacent places of the police 4. Carrying out service activities in areas where public surveillance is low.	Second	- This zone has only short and suitable vegetation. For this reason, it needs other facilities in support of social activities.

Endnotes

1. CPTED theory, which stands for crime prevention through environmental design, means "crime prevention through environmental

design", which can be used to properly design the residence, work, and life of community members from committing crimes in public and private man-made environments. They were prevented in the city.

Refreence list

- Gronland, B. (2000). *Towards the Humans City for the 21st Century*. Paper presented at the Radberg Seminar, Stockholm.
- Adish, M. A. & Ramezanifar, H. (2017). Investigating Tourism Potentials in Ramsar Coastal Areas. *Mazandaran Law Enforcement Quarterly*, 8(2), 147-166.
- Baghaei, S. (2012). *Thesis: The effect of space shape on the sense of security with emphasis on space syntax theory. Case study: Azimiyeh and Mehrshahr neighborhoods located in Karaj*. (Unpublished Master Thesis), Islamic Azad University, Central Tehran Branch, Iran.
- Belali Oskoui, A., Sedaghati, A. & Dermatome, Sh. (2020). An Applied Approach to Women's Sense of security in Urban Parks Case study: Bojnord city. *Architectural and Environmental Research*, 2(1), 65-81.
- Dickens, P. (1998). *Urban sociology: society, locality and human naturee*. (H. Behravan, Trans.). Mashhad: Astan-e Quds-e Razavi.
- Grout, L. & Wang, D. (2005). *Research Methods in Architecture*. (A. Einifar, Trans.). Tehran: University of Tehran.
- Hamedani Golshan, H. (2014). Rethinking the theory of space syntax, a breakthrough in architecture and urban design. Case Study: Boroujerdi House, Kashan. *Honar-ha-ye Ziba Memari-va-Shahrsazi*, 20(2), 85-92.
- Izadi, M. S. & Haghi, M. R. (2015). Improving the sense of security in public spaces by using urban design: A case study: Imam Square of Hamadan. *Honar-ha-ye Ziba Memari-va-Shahrsazi*, 20(2), 5-12.
- Lynch, Q. (2015). *City image* (M. Mozini, Trans.). Tehran: University of Tehran.
- Madahi, S. M. & Memarian, Gh. H. (2016). Spatial configuration analysis of native houses with spatial syntax approach, case study: Boshrouyeh city. *Housing and Rural Environment*, 35(156), 49-66.
- Memarian, Gh. H. (2002). *Syntax of Architectural Space*. *Soffe*,

12(35), 75-83.

- Moin, M. (2001). [Ditionary of Moin]. Tehran: Amir-Kabir.
- Montazer Al-Hijja, M., Sharifnejad, M. & Rajabi, M. (2018). Assessing the physical factors affecting the sense of security in urban spaces from the perspective of the elderly, Case study: Khan Square; Yazd. *Iranian Architecture and Urban Planning*, 9(15), 91-105.
- Mumford, L. (2004). *Culture of Cities* (A. Aghvami Moghaddam, Trans.). Tehran: Urban Planning and Architecture Studies Center.
- Peyvaste-gar Y., Heydari, A. K. & Eslami, M. (2017). Bazshenasi-ye Osul-e Panj-gane-ye Ostad Pir-nia Dar Memari-e Khane-ha-ye Sonnat-ye Iran Ba Estenad Be Manabe'-e E'teghadi-ye Eslami [Recognition of the five principles of Master Pirnia in the architecture of traditional Iranian houses and its analysis with reference to Islamic doctrinal sources]. *Iranian Islamic city studies*, 7(27), 51-66.
- Pourjafar, M. R., Mahmoudinejad, H., Rafian, M. & Ansari, M. (2008). Promoting Environmental Security and Reducing Urban Crime with CPTED Approach. *Industrial Engineering and*

Production Management, 19(16), 73-82.

- Rangchian, A. & Heidari, V. (2008). Raamsar Garden-Boulevard as an Example of Gardens of Iran in the Transition Period. *Golestan-e Honar*, (12), 93-99.
- Sadeghi, L., Bani Amerian, J. & Zoghi, A. (2011). The Role of Urban Planning in Promoting Urban Security. *Kurdistan Law Enforcement*, 2(8), 83-102.
- Salehi, I. (2008). *Environmental Features of Safe Urban Spaces*. Urban Planning and Architecture Research Center. Tehran: Urban Planning and Architecture Research Center.
- Soltani, L., Beyk Mohammadi, H. & Heidari, S. (2016). Spatial analysis of the feeling of security in different urban areas, a case study: *the city of Quds*. *Strategic Research in Security and Social Order*, 5(3), 87-104.
- Yaran, A., Arjomandi, H. & Mesgarian, M. (2019). Investigating the Contribution of Physical Components of Women's Sense of Safety to Open Spaces of Urban Tourism, Case study: 30 Tir street. *Manzar*, 11(47), 24-37.

COPYRIGHTS

Copyright for this article is retained by the authors with publication rights granted to Tourism of Culture journal. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>).



HOW TO CITE THIS ARTICLE

Fotokian, S. M. & Vaezi, M.R. (2022). An Analysis of Tourism Spaces in Ramsar City from the Perspective of Security Using Space Syntax Technique (Case Study: 33-Hectare Garden in Ramsar City) . *Tourism of Culture*, 2(7), 13-26.

DOI:10.22034/toc.2022.319548.1060

URL: http://www.toc-sj.com/article_143391.html?lang=en

