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Diagnosis of the Factors Leading to the Inefficiency of Environmental Qualities in Urban Squares after Being Converted to Pedestrian Areas: The Case of Imam Hossein Square, Tehran

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ABSTRACT

Improvement of environmental qualities in urban public spaces that have been changed into pedestrian areas enables users to experience urban spaces in a more deliberate and accurate manner, and thereby improving social interactions. The pedestrian area of Imam Hossein Square, which is an important square in Tehran, was a widely criticized project. The present study aims to investigate the environmental qualities of Imam Hossein Square physically, perceptually, and socially using behavior analysis through questionnaires and inferential statistic techniques, including regression analysis and Pearson correlation coefficient. The findings suggest that the most important factors affecting the quality of urban squares are sensory richness, consideration of human scale and pedestrian-orientedness, legibility, and safety and security. Imam Hossein Square, however, has mostly failed to meet most of the quality criteria studied. Other reasons for the relative failure of the project include insufficient planning, lack of attention to micro-spaces and retail stores, inappropriate management of land use after the construction of the pedestrian area, and lack of planning for social events in the square.

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1. INTRODUCTION

Modernism has affected urban development in many ways, including wider streets, dominance of motorists over pedestrians, and disappearance of public spaces in which human interaction could take place (Ghorbani & Jam-Kasra, 2010). Over the last three decades, however, increasing environmental pollution and issues, difficult transportation, and decreased safety and security have provoked strong reactions against the dominance of motor vehicles (Ewing, Schmid, Killingsworth, Zlot, & Raudenbush, 2003; Pikora, Giles-Corti, W Knuiman, Bull, Jamrozik, & Donovan, 2006). Today, many experts agree that the importance of urban plazas lies in the fact that they are the relaxing spots in a city, especially larger cities. Therefore, creating high-quality open spaces and plazas in a city to incorporate various social activities and events should be prioritized by urban planners and designers. In this regard, there are different experiences around the world. Urban plazas are of places which are associated with a high degree of sociability and public attendance. It is widely held by scholars that promoting dynamicity and permeability, sensory richness, liveliness, safety and security, as well as legibility in pedestrian-oriented areas and urban plazas may reinforce the social aspect of public spaces in them and make them to sociopetal spaces. This is of great importance in metropolitan contexts, particularly Tehran, because our pedestrian-oriented urban spaces are both qualitatively and quantitatively inadequate with regard to fulfillment of their users' needs.

Imam Hossein Square is an urban space that was designed in 2012 to address the abovementioned problems. In their paper entitled 'The factors affecting the quality of pedestrian environments in Iranian-Islamic cities', Shamaee (2016) and Eghbal (2016) argued that, after the completion of Imam Hossein pedestrian area, land use management is of great importance, with the main focus on the activation of commercial uses. Many experts believe that this square has not been successful in functioning as an urban relaxing spot and providing desirable qualities (Shamaee & Eghbal, 2016; Shahhosseini, 2016). In another study on the environmental quality of Imam Hossein Square with an emphasis on environmental comfort, Zabetiyan and Kheyroddin (2018) have pointed to the significant correlation between the environmental quality of the square and the climatic comfort as well as public attendance. Accordingly, the present study sought to answer the following questions:
1. Which qualities have a higher priority for citizens and a more significant effect on citizens' satisfaction with urban plazas?
2. Which qualities and components have a mutual significant effect on each other?
3. To what extent could Imam Hossein pedestrian area project realize the desirable qualities?

2. LITERATURE REVIEW

2.1. Urban Plazas and Squares

Creation of large open spaces around the world dates back to more than a century ago and today, there is at least one plaza in many cities. In Iran, there were enclosed plazas in the past which acted as spaces for public gatherings. Naghsh-e Jahan, Toop-khaneh, and Amir Chakhmagh are examples of such plazas. Also, small local plazas and hussainiyas (a religious place of gathering) in cities like the old Tehran, Naein, Kashan, and Zavareh, had once a function like modern urban plazas (Soltanzadeh, 1993; Naghizadeh, 2010). Streets, sidewalks, and pedestrian areas are the most important public places in a city (Jacobs, 1993). Jan Gehl (1987) believes that voluntary social activities rely on the place-related qualities of the urban environment (Carmona, Heath, Oc, & Tiesdell, 2003; Pakzad, 2007). Urban plazas are places which are totally different from their surrounding streets and their specific design style determines the number of their visitors as well as the activities carried out in them. As green spaces in a city, public plazas can affect the degree of social interactions through their physical and natural features (Rasidi, Jamirsah, & Said, 2012). Plazas are major elements in urban design and can be defined as "a space made up of buildings and designed to display these buildings with maximum advantage" (Moughtin, 2003).

In his paper entitled "Design of urban squares", Fereydoon Gharib (1997) recognizes different types of urban square according to their spatial features. These squares, as depicted in Figure 1, include:
1. Closed square
2. Open square
3. Semi-open square
4. Square and a dominant building
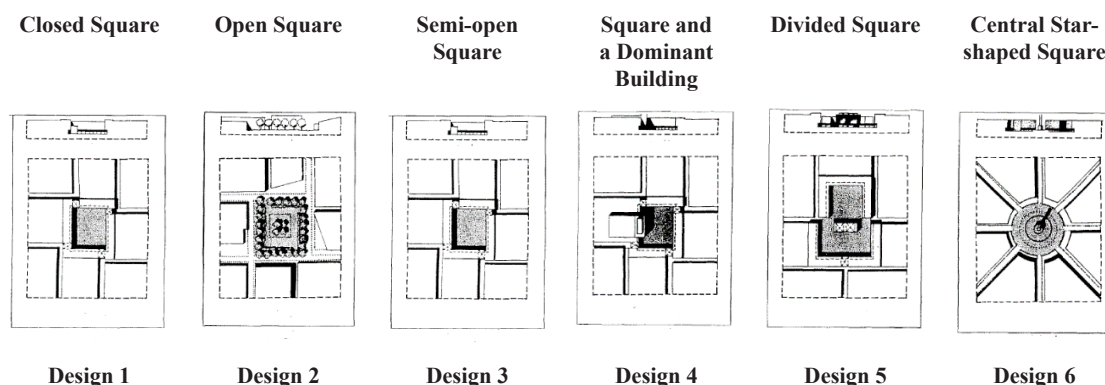5. Divided square
6. Central star-shaped square

Closed Square	Open Square	Semi-open Square	Square and a Dominant Building	Divided Square	Central Star-shaped Square
Design 1	Design 2	Design 3	Design 4	Design 5	Design 6

Fig. 1. Different Types of Square
(Garib, 1997, pp. 33-42)

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2.2. Spaces for People

The literature of urban design confirms the importance of attractive buildings in supporting a sense of security and pleasant experience (Childs, 2004; Marcus & Francis, 1998), public life (Gehl & Gemzøe, 2004), or according to Whyte, "city moments" in which strangers enjoy sharing their experiences (Whyte, 1980). John Lang states that human spaces in urban environments encourage pause, stop, and interaction (Lang, 2009). People's attendance and liveliness are a common concern among urban designers which has been addressed by many experts who, despite using various terminologies, refer to almost similar concepts. With regard to his "Street Life" project, William Whyte comments that street life can take place when people talk for hours and have long goodbyes (Whyte, 1980). Jan Gehl regards cities with these features as inviting cities in which people understand, see, and interact with each other through their feelings (Gehl, 1987). He has introduced the idea of "Cities for people" in his recent studies. Sociofugal spaces are mainly based on high speed and paths as ways while sociopetal spaces emphasize on stopping, gathering, and attendance (Bakhtiar, 2009). According to Kaplan, linear spaces encourage motion while openness and sudden transfer of information create a sense of place as well as memorability (Kaplan, 2000). Lang states that creation of an objective and simple discipline as well as coherence of space are of great importance in increasing legibility (Lang, 2009). According to Sommer, concave spaces are receptive, act as pause space and thereby increasing interaction by creating privacy and sense of possession (Sommer, 1967). Cities are often composed of a complicated nexus of passages, streets, parks, and squares. Providing pedestrians with challenges may hinder them in achieving their goals so that they become disappointed about spending time in these places (Gemzoe, Lars, & Gehl, 2006,

p. 31). Urban environments are most desirable when the presence of pedestrians is possible and the city is built on a human scale (Mehta, 2014; Cullen, 1994). According to Mehta (2014), supporting high-quality urban spaces can contribute to social and psychological health in modern societies. As has been emphasized by many researchers (e.g. Jacobs, 1961; Lynch, 1960, 1972; Tibbalds, 1992), good spaces can support and promote public life as an essential complement to people's private working and living spaces (Mehta, 2008). Collective activities such as street performance, mourning, and demonstration are only feasible when people are present (Gehl, 1987) and active presence of people depends on safety and security of pedestrian areas; therefore, lack of safety and security deprives the city of its authentic urban quality (Mojtahed-sistani ,2008; Pakzad, 2007; Souri, 2009; Carmona et al., 2003). In addition, Stamps associates visual permeability with enclosure and motional permeability with security (Stamps, 2005). Surveillance on public spaces prevents criminal activities (Greenberg & Rohe, 2007). Moreover, land uses which are always active and attended by people may bring about security (Pakzad, 2012; Hillier & Shu 2000b). Pakzad (2012) states that, in addition to the sense of sight which is the most important sense for perception, sound, smell, temperature, balance, direction, material, and texture of the elements defining space are also crucial to the process of perception. Mehta (2008) states that, in a secure and comfortable place, people seek usefulness and efficiency, sense of belonging, and pleasure as extra needs to reinforce their walking experience. In his study entitled 'Evaluating public space', Mehta studies these spaces in terms of their multi-faceted and inclusive character, meaningfulness, safety, comfort, and pleasantness (Mehta, 2014). Table 1 summarizes the qualities of an urban plaza as discussed by scholars in the literature:

Table 1. The Qualities of Sociopetal Plazas According to Urban Development Scholars

Quality	Component	Theorist	Quality	Component	Theorist
Liveliness	Flexibility Diversity Collective Activues	Bentley, 1990; Jan Gehl, 1986; Gezmu & Gehl, 2006; Applyard, 1979; Pakzad, 2005; Habibi, 1999; Eliaszadeh, 2010	Dynamicity/ Penetrability	Accessibility Spatial Connections	Bentley, 1990 Tibbalds, 1992 Armitage, 2010 Yang, 2006 Hillier, 1970 Stangle, 2011 Danesh, 2008 Pakzad, 2007
Safety & Security	Universality Night Uses	Carmona, 2003; Clarke, 1997; Jacobs, 1961; Newman, 1972; Hillier & Shu, 2000b; Greenberg & Rohe, 2007; Coupland, 1997; Bahreini, 2009; Souri, 2009; Sistani, 2008; Pakzad, 2007; Mehta & Vikas, 2014; Mehta, 2017	Sensory Richness	Human Scale Compatbility of Use and Form Consideration of Human Sens	Bentley, 1990 Lynch, 1981 Cullen, 1994 Lang, 2009 Moughtin, 2003 Zamani, 2015 Ghanbaran, 2014 Golkar, 2008 Pakzad, 2007

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Quality	Component	Theorist	Quality	Component	Theorist
Comfort	Pavement Vegetation	Bentley, 1990; Carmona, 2003; Koga, 2014; Pakzad, 2005; Kashanijoo, 2006; Oldenburg, 1981; Childs, 2004; Rasidi & said, 2012	Legibility	Prominent Guiding Elements Possibility of Sequencing	Bentley, 1990 Lynch, 1981 Cullen, 1994 Tibbalds, 1992 Hillier, 1970 Stamps, 2005 Pakzad, 2006

Reviewing the literature on urban plazas, we developed a model that depicts the dimensions, qualities, and indicators which may affect these plazas. The model is presented in Figure 2.
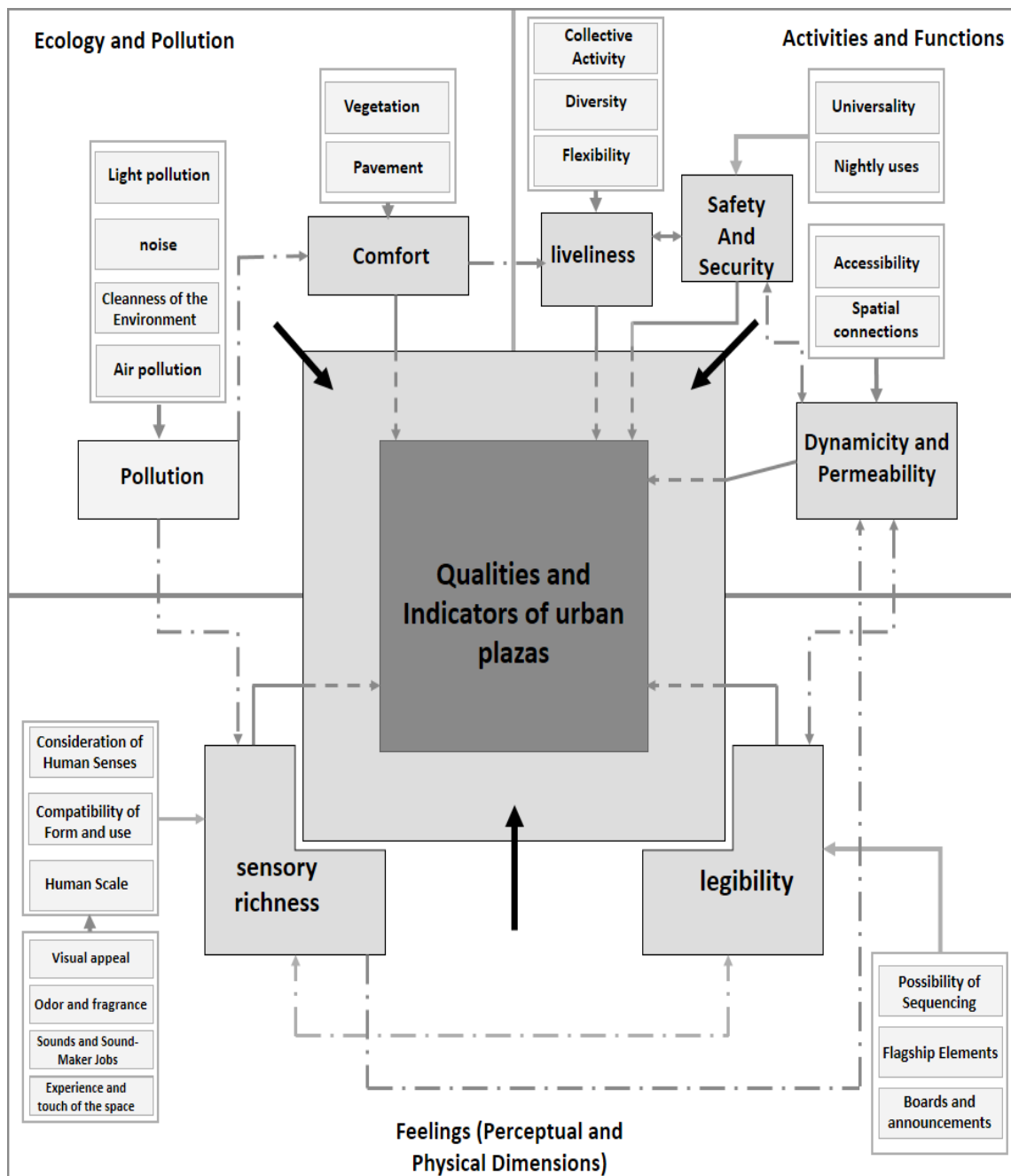

Fig. 2. Conceptual Framework and Dimensions and Qualities Affecting Urban Plazas

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3. METHOD

This study was conducted using a quantitative method. The data for the theoretical part were collected by desk study and examining existing documents, and the field data were collected by behavioral mapping and observation, using qualitative and semi-organized interviews, a questionnaire about the quality of local environment, and photography.

According to the theoretical framework, the qualities of urban plazas were categorized into three dimensions and six main qualities. This formed the basis of a questionnaire with five-point Likert scale (from very little to very much) that helped us to ask about the indicators of the main qualities. The questionnaire consisted of two parts, one consisting of personal information such as age, gender, education, and job and the other addressing residents' satisfaction with pavement and walls, urban furniture, place attachment, presence of women and children, cleanness, vegetation and climate-friendliness, uses, liveliness, accessibility, compatibility of form and function, environmental sounds and smells, legibility, signs, etc. Using Cochran formula, we decided to administer the questionnaire to 320 subjects who would be randomly selected from the local inhabitants and business owners as well as the visitors to the area. The six qualities specified were defined as independent variables and citizens' satisfaction as the dependent variable. Regression analysis and Friedman's test were performed in SPSS software to prioritize the criteria and the qualities.

Two prominent theorists of current behaviors and activities in public spaces, who frequently appear in the literature on urban design, are William Whyte and Jan Gehl. In addition to questionnaires and interviews, they have also decided to use direct observation. "The View from the Road" by Donald Appleyard, Kevin Lynch, and John Myer was the first instance of visual research on an urban scale. William Maxson conducted a detailed study of an individual over a certain period of time in all possible spaces. In an experiment in Washington, Winkel and Sasanoff conducted an in-vitro simulation using two methods, namely, tracking the visitors and simulation after recording the real status of movements. William Whyte conducted a study about people's use of different public spaces in a period from 1971 to 1979 and published this study in form of a book named "The Social Life of Small Urban Spaces". The practical part of Whyte's work shows how different spaces can function. Finally, Jan Gehl has been studying the uses of form since 1996. His focus of research has been on the facilitation of collective life in public spaces (Baghbeh, Poorjafar, & Ranjbar, 2015).

Multivariate linear regression is a common statistical technique. In regression analysis, the variable (Y), that is influenced by other variables, is called response or dependent variable. Variable (X), or those variables, that affect(s) the response variable are (is) called predictive or independent variable(s). One of our statistical tests in this study is stepwise regression which is the most complicated regression analysis technique. In stepwise regression, the independent variables are added one by one to the analysis. A variable will remain in the model only if it has a role in explaining the variance of the dependent variable. After adding every variable to the model, the significance of all the variables will be re-evaluated to indicate whether they have a role in explaining the variance of the dependent variable (Afshani, 1999).

We used Pearson correlation coefficient to investigate the relationship among the determining qualities of urban plazas. Correlation coefficient is a statistical technique for determining the type and degree of the relationship between two quantitative variables (Mansoorfar, 2006).

4. CASE STUDY

Imam Hossein Square has always been a major square in Tehran City. It was formerly called Foziyeh Square. The pedestrian area project was started in 2012 by Tehran Municipality in spite of the disagreements of the City Council as well as the businesspeople and store owners of 17th-Shahrivar Street. As a result of frequent complaints, however, the pedestrian part of the project was limited to the area between Imam Hossein Square and Safa Street (in spite of the initial plan that had determined the path from Shohada Square to Imam Hossein Square as pedestrian area). Imam Hossein Square is usually used as a square for ritual ceremonies. With its commercial uses and its proximity to Shahrestaniha Bazaar as well as major urban districts, this square has a high degree of interconnectivity and can be easily accessed by subway, taxi, or electric buses. The visions offered by Bavand Consultants Co. and Archolog Consultants Co. are as following: this pedestrian area will turn into a major civil pole in Tehran. Predictably, environmental qualities will encourage walking. Events in the urban space will increasingly attract more citizens and Imam Hossein Square and Shohada Square will turn into a place of gathering for those who are interested in ceremonial and religious events. Some of the previous uses such as car washes or car showrooms have neither been able to continue their activities nor replaced by new uses, which has led to a weaker public attendance and decreased liveliness of the urban environment. We prepared an image grid to recognize the flagship and important buildings dominating over the square (Fig. 3). A morphological analysis was also conducted to specify the changes in the physical form of the square over time (Fig. 4).
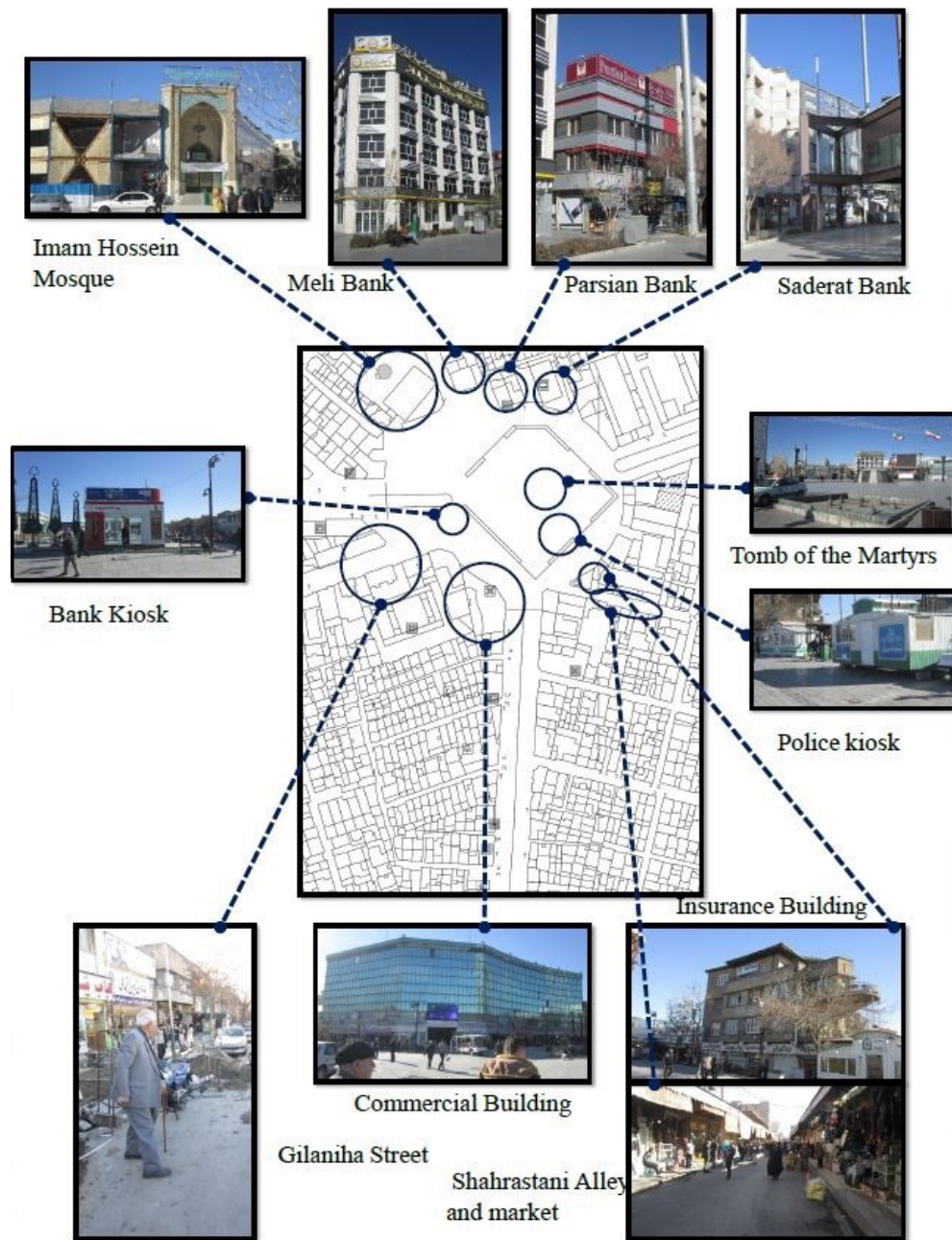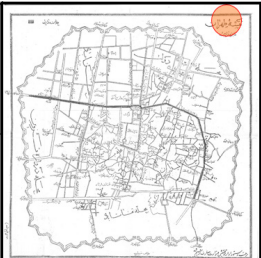
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Imam Hossein
Mosque

Meli Bank

Parsian Bank

Saderat Bank

Bank Kiosk

Tomb of the Martyrs

Police kiosk

Insurance Building

Commercial Building

Gilaniha Street

Shahrastani Alley
and market

Fig. 3. Imam Hossein Square Image Grid

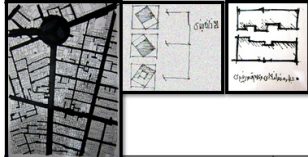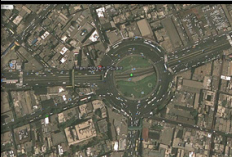| Year or Period		Introduction	The Role of the Square
Qajar Period		● Square outside the city gate ● The land is near the gates of Shemiran and Dolat ● Transit Network Model: Organic	● Probably as a pack station

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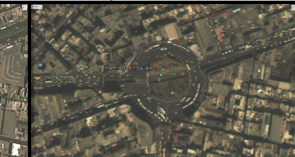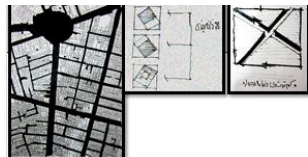
Year or Period	Introduction	The Role of the Square
Pahlavi Period (1961-1981)	● Create urban square ● Arrival of modernism and development of the city ● Intersection of Sharghi-Gharbi and Enghelab streets with Damavand and 17th Shahriver streets ● Transit Network Model: Organic, plaid, Centered	● The square as promenade ● The square as traffic node near the collapsed gates of Tehran
2001-2011	● Minor changes in the shape and body of the square ●Unchanged spatial generality ● Fixed performance ● Unorganized facades of the square and its immediate area ● Transit Network Model: Organic, plaid, Centered	● Traffic node ● Terminal ● Commercial
2011-2016	● Change the shape and body ● Changes in the function and role of the square in the city ● Use modern patterns in facades ● Transit Network Model: plaid, Centered	● Ritual-commercial square ● Walkable square

Fig. 4. A Morphological Analysis of Imam Hossein Square from Qajar Period to the Present

People's behavior patterns in the square were recognized by photography, filming, and tracking them. According to the length of time spent for the use of the space, the activities were divided into necessary, optional, and social groups. The study of the activities of 100 subjects on randomly selected holidays and working days showed that activities on working days are mainly of a necessary nature while activities on holidays are mainly optional and social, with the social aspect being dominant.
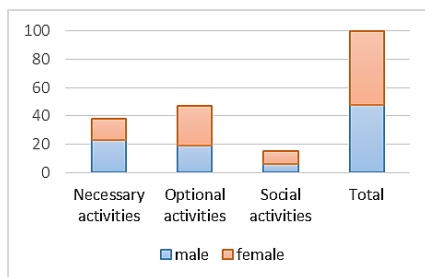
Fig. 5. Study of the Behavior of 100 Subjects on Holidays
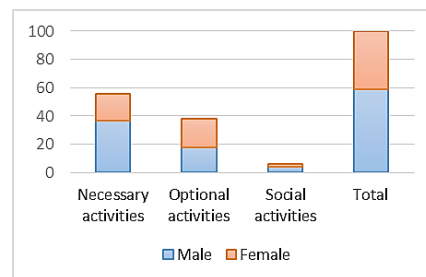
Fig. 6. Study of the Behavior of 100 Subjects on Working Days

Also, we discovered the major spots of pause and gathering by recording videos of people at various intervals as well as observation and interpretation. Tracking people was a way to identify paths more commonly used (Fig. 7). The map shows that the square has not been successful in encouraging people to have a stop, which may be explained by lack of shade or suitable furniture. This emphasizes the need for reinforcing different public spaces around the square.
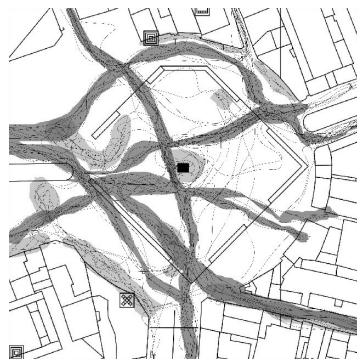
Legend

Major places of activity

Major paths of activity

■**The Tomb of the Martyrs in the Center of the Square**

Fig. 7. Major Places and Paths for Activities

5. FOUNDING

5.1. SPSS Analysis

In order to ensure the correctness of data collection process and measure the reliability of the questionnaire, we calculated Cronbach's alpha, as listed in Table 2. The questionnaire consisted of 39 items and was answered by 320 individuals. The Cronbach's alpha value was obtained 0.836, indicating an acceptable level of reliability.

Table 2. The Number of Informants and Cronbach's

Case Processing Summary		
	N	**%**
Cases Valid	320	100.0
Excludeda	0	.0
Total	320	100.0
Reliability Statistics		
Cronbach's Alpha		N of Items
.771		6

One of the output tables of multivariate regression test is Model Summary which describes the correlation between variables as well as adjusted R-square.

Table 3. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.675	0.456	0.445	0.559

The above table shows that the correlation coefficient (R) among the variables is .675, indicating a strong correlation among the independent and dependent variables of our study. On the other hand, R-square equals .456, which means that in Imam Hossein Square, 45.6 percent of the entire changes in the indicators of urban plazas can be attributed to the variables stated in the equation. The fitness of the model is assessed in the ANOVA table (Table 4).

Table 4. ANOVA Table

Model		df	F	Sig.
	Regression	6	44.12	0.000
1	Residual	313		
	Total	319		

Given the significance of F-test at p<0.002, it can be inferred that the regression model of our study, which consists of six independent variables and one dependent variable, is an adequate model and its independent variables can sufficiently explain citizens' satisfaction with the urban space. The next output table is called Coefficients table (Table 5) which describes the effect of each component on the model.

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Table 5. Coefficients Table

Coefficientsª

Model	Non-standard Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	0.243	0.270		0.901	0.368
Dynamicity	0.081	0.036	0.112	2.255	0.025
Safety and Security	0.100	0.036	0.153	2.799	0.005
Legibility	0.326	0.074	0.273	4.432	0.000
Comfort	0.106	0.102	0.063	1.038	0.300
Sensory Richness	0.311	0.063	0.295	4.973	0.000
Liveliness	0.034	0.086	0.027	0.394	0.694

In the above table, a level of significance less than 0.05 indicates the relationship between independent and dependent variables. Beta value determines the type and degree of the relationship. In the table, the sig. column shows that three variables in the Model column have a significant relationship with the indicator of satisfaction with the urban plaza in Imam Hossein Square. The Beta value determines the type and intensity of these relationships, minus sign referring to negative and plus sign to positive relationships. The Beta values in this table show that security and safety, legibility, and sensory richness have the most considerable effect on citizens' satisfaction while liveliness has the lowest effect among all the components.

Among the 320 subjects, who answered the questionnaire, 192 and 128 subjects were males and females, respectively. Interestingly, the components affecting males' and females' satisfaction differed from each other. This can be seen in Table 6.

Table 6. Coefficients Table by Gender

Coefficientsª

Model	Beta		t		Sig.	
	Males	Females	Males	Females	Males	Females
Constant			-0.993	0.044	0.322	0.965
Dynamicity	0.128	-0.023	1.870	-0.223	0.063	0.824
Safety and Security	0.245	0.145	3.703	-1.406	0.000	0.162
Legibility	0.116	0.418	1.497	3.206	0.136	0.002
Comfort	0.102	0.181	1.543	1.342	0.125	0.182
Sensory Richness	0.329	0.402	4.231	2.798	0.000	0.006
Liveliness	0.072	0.023	0.856	0.211	0.393	0.834

The findings suggest that the dependent variable has a significant relationship with safety and security as well as sensory richness for males while, for females, legibility has a significant relationship with satisfaction with the square. Also, the findings from gender-based stepwise linear regression show that the citizens of different age-groups have different priorities. For example, people younger than 20 view safety and security as the most important factors while those between 20 and 30 years tend to prioritize sensory richness, liveliness, and safety and security. In older people, safety, sensory richness and dynamicity are of highest priority. Table 7 presents this part of the output.

Table 7. Coefficients Table by Age

Coefficientsª

Age-group	Model	Non-standard Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
Below 20	Constant	1.724	0.508		3.393	0.003
	Dynamicity	0.647	0.176	0.666	3.682	0.002

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Age-group	Model	Non-standard Coefficients		Standardized Coefficients	t	Sig.
		Coefficients[a]				
		B	Std. Error	Beta		
Between 20 and 30	Constant	0.634	0.357		1.777	0.078
	Safety and security	0.193	0.095	0.173	2.036	0.044
	Sensory richness	0.294	0.084	0.342	3.510	0.001
	Liveliness	0.296	0.127	0.220	2.322	0.022
Between 30 and 40	Constant	0.013	0.426		0.031	0.975
	Safety and security	0.353	0.073	0.391	4.820	0.000
	Sensory richness	0.681	0.115	0.482	5.939	0.000
Between 40 and 50	Constant	0.765	0.269		2.846	0.007
	Safety and security	0.963	0.115	0.820	8.343	0.000
Between 50 and 60	Constant	1.400	0.523		2.675	0.10
	Sensory richness	0.310	0.147	0.304	2.111	0.040
	Dynamicity	0.279	0.134	0.301	2.090	0.042

These analyses were also conducted by the subjects' education degree. Our results show that, for people with a high-school diploma or a lower educational level, sensory richness, safety and security, and legibility are of highest priority. For those with a BA (or BSc) degree, dynamicity is the most important factor. Finally, for people who have an MA or PhD, dynamicity and comfort are prioritized.

5.2. Analysis of Pearson Correlation Test

Pearson correlation test was used to investigate the relationship among the components affecting people's satisfaction with Imam Hossein Square. The results are presented in Table 8.

Table 8. Results of Pearson Test

Sensory Richness	Comfort	Legibility	Safety and Security	Liveliness	Dynamicity	Components of Urban plazas
					1	Dynamicity
				1	0.034	Liveliness
			1	0.436 **	0.485 **	Safety and Security
		1	0.511 **	0.657 **	0.272 **	Legibility
	1	0.483 **	0.396 **	0.510 **	0.258 **	Comfort
1	0.649 **	0.445 **	0.440 **	0.567 **	0.205 **	Sensory Richness

**P<0.01

The results of this test indicate that almost all components have a significant relationship with each other (p<0.05). The type and degree of this relationship are shown by Beta value. For instance, the Beta value for legibility and liveliness components is .657, which means that the legibility of urban plazas has a direct, strong, and significant relationship with the liveliness of the environment and improvement of each of them will lead to the improvement of the other. The results indicate that sensory richness has a significant, positive correlation of 0.649 with comfort.

6. DISCUSSION AND CONCLUSION

Several studies have been conducted on Imam Hossein Square and 17th Shahrivar pedestrian street. In their paper entitled "The reasons for the failure of pedestrian projects in Iran", E'tesam et al. (2011) examined this project in terms of both procedure and content and concluded that lack of appropriate design and inadequate understanding of the project cycle are the main reasons for its failure. In another study entitled "Diagnosis of pedestrian areas in Tehran", Shah-hosseini et al. (2016) investigated the satisfaction of business owners and inferred that not every street can be turned into a pedestrian area for better interaction

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among citizens. What distinguishes the present study from the previous ones is that it integrated various concepts, sought those priorities affecting people's satisfaction, and looked for mechanisms which could transform this urban area as quickly and as efficiently as possible.

The results of the present study suggested that sensory richness, consideration of human scale, legibility, safety, and security are the most important factors in improving the quality of urban plazas. The most important reasons behind the lack of success in Imam Hossein pedestrian project may include lack of cooperation of all stakeholders and beneficiaries, lack of integrated urban management, and inappropriate land-use management after the completion of the project. The results indicated that lack of attention to the improvement of environmental qualities when developing pedestrian areas may prevent the success of urban plazas. Neglecting the visual quality of landscapes in public urban spaces may also bear a negative effect on psychological comfort and prevent the enhancement of sensory richness. Another reason for the failure of pedestrian spaces is their solid and inflexible design. Only through flexible design urban spaces can be inviting and encourage citizens to attend there. Also, the quality of these spaces has been deteriorated partly as a result of neglecting citizens'

participatory processes as well as the shortage of spaces used for offering services to the users. To improve the above deficiencies, the following suggestions could be helpful:

• To support street vendors and retailers because they give variety to urban plazas and make them livelier, especially in holidays. By managing these vendors, more behavior spots can be created in the square.

• To change some parts of the square space to places such as parklets with furniture for sitting or green spaces.

• To redesign the large, abandoned space of the square and to equip them with temporary canopies and suitable furniture to encourage people to spend more time here.

• To define the space of the square as a site for cultural, religious, or artistic events (e.g. street theater, religious ceremonies, live music, and painting) to promote public attendance and liveliness in social life.

• To manage addicts, illegal dealers, and other people who threaten public security as soon as possible.

• To improve the small bazaars around the square to attract more people.

• To add attractive uses such as cafés and restaurants to the square so that it could attract people from other districts and act as an urban plaza for the entire city.

• To apply appropriate lighting to facilitate the presence of citizens, particularly families and women, at night.

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REFERENCES

– Afshani, A.R.(1999). *Teaching Applied Sciences Spss in Social Sciences amd Behavior*. University of Tehran press.Tehran

– Baghbeh,K., Poorjafar, M.R., & Ranjbar, E. (2015). "Analysis and Evaluation of Sitting Activities in Urban Spaces, Case Study: Tehran Theater Square.Na*me-Ye Memari Va Shahrsazi*, 13,113-131. https://www.magiran.com/paper/1315072/?lang=en

– Bakhtiar Nasrabadi, A. (2009). Urban Spaces around Imam Square. Unpublished Master's thesis, Faculty of Arts, University of Isfahan.

– Carmona, M., Heath, T., Oc, T., & Tiesdell, S. (2003). Public Places - Urban Space: The Dimensions of Urban Design. Library, 322. Retrieved from http://eprints.gla.ac.uk/38353/

– Childs, M.C. (2004). Squares: A Public Place Design Guide for Urbanists. Albuquerque: University of Mexico Press.

– Cullen, G. (1994). "The Neighborhood, the District and the Corridor". Pp. xviii-xx, in Peter Kats, (ed.). The New Urbanism: Toward an Architecture of Community. New York: McGraw-Hill.

– Ewing, R., Schmid, T., Killingsworth, R., Zlot, A., & Raudenbush, S. (2003). Relationship between Urban Sprawl and Physical Activity, Obesity, and Morbidity. *Am J Health Promotion*, 18(1), 47-57. DOI:10.4278/0890-1171-18.1.47

– Garib, F.(1997). Design of Urban Squares. *HONAR-HA-YE-ZIBA*, 2, 33-42.

– Gehl, J. (1987). Life between Building,New York, MCG.

– Gehl, J., & Gemzøe, L. (2004). Public Spaces, Public Life. The Danish Architectural Press.

– Gemzoe, L., & Gehl, J. (2006). The Copenhagen Experience what the Ppedestrian wants, Ekim Tan Delft University of Technology photos.

– Ghorbani, R., & Jam-Kasra, M. (2010). Pedestrian Movement, A New Approach to the revival of Urban Centers,Tarbiat Tabriz Pedestrian Road. *Urban& Regional Studies and research*, 6,55-72.

– Hillier, B., & Shu, S. (2000a). Crime and Urban Layout: The Need for Evidence. In S. Ballintyne, K. Pease, & V. McLaren (Eds.), Secure Foundations: Key Issues in Crime Prevention, Crime Reduction and Community Ssafety, 224–248. London: Institute of Public Policy Research.

– Hillier, B., & Shu, S. (2000b). Do burglars understand defensible space? (Retrieved May 15th, 2015, from). http://web.archive.org/web/20031219105344/www.spacesyntax. com/housing/BillCrimePaper/BillCrimePaper.html

– Jacobs, J. (1961). The Death and Life of Great American Cities. In New York, 71, Alexander, C., Ishikawa, S., Silverstein, M. (19). https://doi.org/10.2307/794509

– Jacobs, J. (1993). The Death and Life of Great American Cities. New York, 71, 458. https://doi.org/10.2307/794509

– Kaplan, S. (2000). Human Nature and Environmentally Responsible Behavior. *Journal of Social Issues*, 56(3), 491–508. https://doi.org/doi:10.1111/0022-4537.00180

– Lang, J. (2009). Creating Architectural Theory: The Role of the Behavioral Sciences in Environmental Design. (A. Eynifar, Trans.).Tehran: University of Tehran Press.

– Lynch, K. (1960). The Image of the City. Cambridge, Mass: MIT Press.

– Lynch, K. (1972). "What time is this place?" USA: MIT Press.

– Mansoorfar, K. (2006). "Statistical Methods". Tehran University Press. Tehran.

– Marcus, C.C., & Francis, C. (1998). People Places: Design Guidelines for Urban Open Space. Canada: John Wiley & Sons.

– Mehta, V. (2008). Walkable Streets: Pedestrian Behavior, Perceptions and Attitudes.

– Mehta, V. (2014). Evaluating Public Space. Journal of Urban Design, 19(1), 53-88. https://doi.org/10.1080/13574809.2013.854698

– Mojtahed-sistani, E. (2008). Quality Indicators of the Desirability of Pedestrians and Urban Streets. International Conference of the Students of Civil Engineering, Semnan, Iran.

– Moughtin, C. (2003). Urban Design: Street and Square. Amsterdam and Boston: Architectural Press.

– Naghizadeh, M. (2010). Analysis and Design of Urban Space: Fundamentals, Definitions, Criteria, and Methods. Tehran: Research Center of Arts and Culture of the Organization of Jahad-e Daneshgahi.

– Pakzad, J. (2007). A Guide to Designing Urban Spaces in Iran. Tehran: Armanshahr.

– Pakzad, J. (2007). History of thought in Urban Development: From Quantity to Quality. Tehran: Omran-e Shahrhaye Jadid Co.

– Pakzad, J. (2012). "Urban Design Guidelines in Iran". Tehran: Vezarat e Maskan & Shahrsazi.

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– Pikora, T., Giles-Corti, B., W Knuiman, M., Bull, F., Jamrozik, K., & Donovan, R. (2006). Neighborhood Environmental Factors Correlated with Walking near Home: Using SPACES. Med. Sci. *Sports Exerc*. 38(4), 708–714. DOI: 10.1249/01.mss.0000210189.64458.f3

– Rasidi, M.H., Jamirsah, N., & Said, I. (2012). Urban Green Space Design Affects Urban Residents' Social Interaction. *Procedia - Social and Behavioral Sciences*, 68, 464-480. doi:10.1016/j.sbspro.2012.12.242

– Greenberg, S.W., & M Rohe, W. (2007).Neighborhood Design and Crime A Test of Two Perspectives. *Journal of the American Planning Association*, 50(1), 48-61. https://doi.org/10.1080/01944368408976581

– Shahhosseini, P. (2016). Pathology of Construction of Pedestrian Areas in Tehran: The Case of 15-Khordad Square and Imam Hossein Square. International Scientific Quarterly of Iranian Association of Geography, 51.

– Shamaee, A., & Eghbal, M. (2016). The Factors Affecting the Quality of Pedestrian Environments in Iranian-Islamic Cities: The Case of Imam Hossein and 17-Shahrivar Pedestrian Streets. *Scientific Quarterly of Islamic-Iranian Progress Model*, 7, 127-151.

– Soltanzadeh, H. (1993). Urban Spaces in Iranian Historic Fabrics. Tehran: Office of Cultural Research and Tehran Municipality.

– Sommer, R. (1967). "Sociofugal Space". The American *Journal of Sociology,* 72 (6), Chicago, The university of Chicago press.

– Souri, E. (2009). A Review of Theoretical Discussions of Security and Crime Prevention Methods.

– Stamps, A.E. (2005). Visual Permeability, Locomotive Permeability, Safety, and Enclosure. *Environment and Behavior*, 37(5), 587–619. https://doi.org/10.1177/0013916505276741

– Tibbalds, F. (2001). Making People-friendly Town. Essex: Longman (First Published in 1992).

– Whyte, W. (1980). The Social Life of Small Urban Spaces. Urban Life. https://doi.org/10.1177/089124168201000411

– Zabetian, E., & Kheyroddin, R. (2018). "Assessing the Sense of Place Levels in Urban Spaces (Case study: Imam Khomeini Square and Imam Hossein Square, Tehran City). *Journal of Urban Planning Knowledge*, 6, 47-63. 10.22124/UPK.2018.10448.1091