

## The Impact of Sense of Place, Form and Environment Design on Increasing the Security of Commercial Complexes

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### Abstract

*The human beings have always acted proactively in the environment and have exchanged information with it. After being located in a place and exchanging information and understanding the symbols by his senses, the human being would be able to communicate with the environment and focus his attention on it. "Sense of place" is the capability of the space or place in creating a unique sense in relation to place as a whole. Regarding the sense of place, form and environment design in commercial region which leads to easy access and high security of the place, the researchers are going to study the impact of environment design indexes on increasing the security of commercial complexes. The methodology of this research is of descriptive-analytic kind and the data have been collected through distributing questionnaires among participants. The findings of the research demonstrate that the crime opportunities which are the result of improper environment design will be reduced through employing suitable design and architecture. Furthermore, the architects have to pay more attention to the security of human being which is one the basic needs of human being and the most important index of environment quality, design an energetic space to promote the life quality and improve it and create the sense of place. Besides, through scaling the elements and ranking them, the researchers found out that compared with the environment design, the element of sense of place is in a higher rank which it causes higher security in the commercial complexes.*

**Keywords:** Sense of place; Form; Environment design; security; Commercial complex.

## Introduction

### Statement of the Problem

Commercial complex and the bazaars are among the most attractive parts of each city. These places are active and busy for a long time in a day. Allocating some special spaces to this activity will be done in a way that people who use these places feel safe while choosing and shopping what they need. Bazaars have been very prevalent in east and west countries. Bazaars, Timcheh, Sera and passage are among the covered and safe shopping centers and daily markets are among the open markets, both of which have been very old in the history of our country. The contrary to this issue is also correct: the shopping centers have never been limited to a specific place and the businessmen would settle where they can find the customers (Danesh pour & Charkhchian, 2007, Pp. 20-23).

The architecture and combination of usage of these regions are the important factor in providing the security of it. Providing the security of the shops and commercial complexes, especially when they are closed, has always been a concern for the police and the owners. The commercial complexes are not crowded when the shops get closed during the night and this fact increases the vulnerability of these parts and also the pedestrians feel more insecure. The presence of people at streets during the nights and weekends would decrease this vulnerability (Child, 2000:57). Security which is one of the most essential factor of sustainability of the society, has always been the most basic need of human being and the issue of crime rate is among the most important issue of the society; meeting this need and solving this problem has become more complicated due to the increase and complexity of urban societies. The “sense of place” and “form and design” have been surveyed regard to the crime and insecurity in the society, in a way that a person would feel a special sense when he enters a place. After being located in a place, exchanging the information and figuring out the symbols, a person will be able to find the relationship between these symbols and elements and then to actively respond to the environment and pay more attention to them. He may ignore some parts of the environment and make no relation with them. The selection process will be done among the potential incentives of the environment and the mind will be able to make an initiative process which result in understanding the position or a particular place. In fact, the importance of having an idea equals to the importance of form in architecture. The ideas are the materials of designing and the forms are the realization of the processes of production, refinement and the incorporation of small and large ideas; to make an integrated structure in architecture, having an idea and a proper form are more important than building the structure itself. Although good materials, i.e. having

proper and creative architectural ideas, are essential, correct and creative implementation of the ideas is the most important part of architecture.

Since the place and physical situation has an undeniable and special impact on crimes and regarding the fact that the commercial complexes are more vulnerable in relation to crime compared with other parts of the city, this research is going to explain the concepts of sense of place theory and environment form and their importance in the improvement of security in commercial spaces, besides it is going to objectively and subjectively promote these factors which leads to the crime prevention in commercial complexes and finally it will suggest some strategies to affect the security of the places.

### The Importance of the Research

The commercial complexes play an important role in taking the people out of their house to proactively do some activities. Moreover, these centers have to cause the “liveliness” of the city and increase the legitimate and legal usage of the places. The architect has to know the needs of contemporary humankind; the needs change according to the changes of the society. He should be able to create forms according to people’s culture and civilization. The sense of place is the people subjective perception of their surrounding environment which put the people in relation to their environment. This sense is a factor that changes a normal place to special place with sensational and behavioral particulars. The patterns should fulfill the human beings’ problems and needs and lead their spiritual sense.

Take colors into notice; the colors have soul and they are alive. The colors are fulgent powers and energies which consciously or unconsciously have positive or negative effects on us. For example, we use warm colors to show happiness and liveliness. Those artists, who create colorful glass, use the colors to create a spiritual and mysterious environment. Since the environment, human being and time are the important factors affecting committing a crime, the architect can prevent from crime through correctly understanding the rules and regulations of criminal in choosing the place and time of committing a crime (Kalantari, 2004:3). The citizens and politicians have ignored the physical environment especially places where the crime is committed and they have paid more attention to the criminals, economic and social situation of society and justice authority, but the relationship between crime commission and place where it happens gets more importance every day, therefore, a huge part of urban lands have been allocated to commercial use. Paying more attention to quantitative and qualitative criteria in planning, designing, constructing and operating processes of commercial centers, and providing proper environment to deliver the goods to the customers are of great importance; others functions like leisure activities have also been provided.

## Objectives of the Study

The main objective of the study is to explain the concept of sense of place and its different dimensions in order to decrease the natural potentials of hot spots of crime in commercial regions and also to mention to the disorders of designing commercial environment which finally lead to recommendation of strategies in environment form and design to improve the security and provide a sense of place; getting to know the principles and basics of these theories through environment design, the theory will be employed as a proper method to improve the places relation to increase security and decrease crime commission and at the end we will witness the life quality development and also health and security improvement.

## Research Questions

1. What are the effective environmental physical factors in providing security of designing commercial complex?
2. How can sense of place and space design and physical condition of commercial complex affect the

crime commission and security?

3. How are the effective physical factors of increasing the security of commercial complexes of Qom ranked?

## Literature Review

The scientific and statistical studies on physical environment and crime commission have been done for the first time in early nineteenth by Gray and Quételet. Simultaneous with Quételet, Gray started to study the geography of crime but in 1833, when he studies five different districts of France, he concluded that the crimes against humanity are committed in hot seasons and in southern parts of the country and the crimes committed against properties are committed more in cold seasons and in northern parts of the country (Shokouhi, Pp. 147, 475). In 1833, Quételet and Gray did the scientific research on geography of crime using the thoughts of social ecology. They explain the crime rate in relation to different social and residence condition (ibid, 45). It can be said that the first crime maps are drawn by these two people. Historically speaking, the crime prevention through designing environment has some periods, the most important of which are mentioned in Table 1.

Table 1- The History of the World Measures and Observations

1960s	Jane Jacobs in his book named "The Death and Life of Great American Cities"	<ol style="list-style-type: none"> <li>1. the need of secure streets in cities</li> <li>2. the separation and recognition of public and private places</li> <li>3. the variety of use and their combination in the city</li> <li>4. effective and preventive use of pedestrians in urban areas to decrease the crime commission</li> </ol>
1970s	Ray Jeffery in his book called "Crime Prevention Through Environmental Design"	<ol style="list-style-type: none"> <li>1. Decreasing the natural potential of hot spots of crime in urban areas</li> <li>2. the citizens should see and be seen (public observation)</li> <li>3. the visibility and lightning of public places</li> <li>4. people's enthusiasm toward reporting the crime and violations</li> </ol>
1980s	George Cleaning & Wilson & Paul Bratingham in their book "Urban Bibliography"	<ol style="list-style-type: none"> <li>1. Decreasing the natural potential of hot spots of crime in urban areas</li> <li>2. Mentioning to the disorders of artificial Environmental design</li> <li>3. Mentioning to and emphasizing on the rules inefficiency</li> <li>4. The role of natural obstacles and situational preventions in decreasing the opportunities of urban crime commission</li> <li>5. Broken windows</li> </ol>
1990s	Sherman, Gartin and Buerger (the theory of hot spots of crime and criminal environment)	<ol style="list-style-type: none"> <li>1. Preventive measures in order to dramatically decrease the crime opportunities</li> <li>2. focusing on environmental criminology (these places provide lots of opportunities to commit a crime)</li> </ol>
2000	Taylor and Hall and Clark (Rational Choice Theory)	<ol style="list-style-type: none"> <li>1. Preventing from crime commission by proper environmental design</li> <li>2. Combining social and cultural variables of rational choice theory</li> <li>3. Changing the design of residential and commercial places and also public places to prevent from crime commission</li> <li>4. Creating defensible places (social)</li> </ol>

Source: Schneider et al, 2008

Table 2- Three Dimensional Arrangement of Place (Person- Psychological Process- Place) Table 2- Three Dimensional Arrangement of Place (Person- Psychological Process- Place)

Personal Dimensional of sense of place	Personal level	The personal level consists of individual relations which the person belongs to a place. For example, the sense of place is more powerful in places where reminds the person of his/her personal memories and this kind of sense of place is supposed to be accompanied by a feeling about him/her.
	Group level	The sense of place formed among the members of a group is studied among various cultures, sexes and religions. For example, the sense has become a public process and the group members belong to the place where they use to it and their culture remains intact.
Psychological process dimension of sense of place	Affect	The interdependence of person-place is undoubtedly an emotional relation to a place. The humanist geographers define the sense of place through using emotional words. Tuan, for instance, has created the word "topophilia" to describe this relation. Relph states that the sense of belonging to a place is a trustable and emotional relation with a place which meets an essential need of human being.
	cognition	The relation between person and place include cognitive elements. Memories, knowledge and concepts that the person engaged would designate to the place and would recognize them as very important. The cognition of belonging to a place includes constructing and relating with the place. The cognitions which facilitate the closeness and intimacy to the place.
	Behavior	The third part of psychological process dimension of belonging to a place is the behavior level in which the sense of feeling is demonstrated through activities. Like personal sense, the behavioral dimension of sense of place is shown through behaviors which imply the intention of staying close to a place; "a positive emotional relation between a person and a special place is an important index which keep the closeness to the place.
Place dimension of sense of place	May be the most important dimension of sense of place is the place itself. What is about the place that attracts us? This dimension has been examined in different geographical scales. A room in a house, a city or the whole world, it is typically divided into two types: physical sense of place and social sense of place. Hidalgo and Hernandez studied the physical and social sense of place in three different spatial levels (house, neighborhood, and city).	

Making a review on the history of sense of place will also be helpful. The findings of the research done by Scannel and Gifford show that the sense of place is the result of three dimensional arrangement of "person-process- place" to the generality of which is mentioned in the following table (Table no 2).

**Methodology**

The purpose of the research is practical and the methodology is descriptive-analytic. The defined participants are the trade people and the customers of the City commercial recreational complex located in Amin Boulevard of Qom. This research employed two methods to collect research data: the first one is documental method which includes library sources, documents, master thesis, papers and related sources and internet network and the second one is field studies which consists the research samples. Morgan formula was used to determine the sample size, therefore 278 questionnaires were distributed among the customers and the trade people of the complex. In order to analyze the data, the Kolmogorov-Smirnov-one-way-test, one sample t-test,

Chi-squared test, and SPSS were used. Cronbach Alfa was employed to determine the reliability of the research.

**Theoretical Principles**

**A Study on the Nature of Bazaar in Iran**

The civilized and organized people have always needed a public place to make voluntary relationships with others. According to the traditions, limitations and the purposes of the lives of the members, all cultural environments create such places and mostly avoid enclosed spaces while constructing it. It should also be remembered that not being enclosed refers to both functionality and also the space. People should be able to easily access it from the city and also exit it safely. This fact leads to the formation of sponge-like places around the public places, flexible and permeable. On the other hand, the openness of the bazaars should be both vertically and horizontally. The vertical openness toward the sky and the horizontal openness toward the main configuration or the residential texture of the city should be observed. Bazaars, the most sensible symbol of living in big or average habitats in Iran, has always

been a public place for the citizens (Pirnia, 2008)

## Crime Prevention

The term of crime prevention has been formed from two words of crime and prevention. Crime has been defined as any act or omission for which the law has determined a form of punishment or preventive, punitive and educational measures. The word crime was previously inferred as criminal prevention which is a series of punishments and preventive measures in a way that different punishments were used before to stand against the crimes and also to scare the criminals. The word prevention now has a new meaning and included all non-criminal measures which impede the crime commission in the criminals' thoughts and in society. The purpose of crime prevention is to decrease the possibility of crime commission in future. Crime prevention is applied to those measures that prevent the possible harmful acts and reactions for the individual or the group or both, like preventing from work accidents, preventing from youth crime or roads accidents. Crime prevention is politically, scientifically and practically depends on the cultural, political and intellectually traditions of the society. Security which is an important factor for residence is only provided by police and the watchmen and the settlers are not in charge of providing security through public observance. The crime rate varies according to the places and spaces. In fact the urban area in Iran and other countries were the designed squares and street which were completely recognized by people, but recently when the accesses want to find their location at the street, then some space would be presented which are lost and it is not possible to observe them or there is little chance to observe them and therefore they will be changed to indefensible spaces.

The crime prevention measures through environment design has been done in Iran, for example, the municipality of Teheran has started to control the space under bridges and underpasses and has in some cases changed it into a lively urban area for citizens by equipping them. If there is a natural control on these spaces, they can be used as a proper urban area but if all the aspects of urban areas are not suited and the lightning and natural control don't exist, then these spaces would be changed into indefensible spaces. This fact demonstrates that the public areas are not equipped in a way that all social groups like women, children or handicapped people be able to equally use them as others. Furthermore, no attention is paid to urban furniture and the problems they can make. While the urban furniture and their design is considered as an important factor in changing a place into an indefensible place, like overpasses...

While designing commercial area, following purposes have to be kept in mind:

- Access control: it provides security obstacles in order to prevent unallowable access to the

building compass and internal parts.

- Control through physical design: it can improve the control opportunity. Increasing the control opportunity will raise the opportunity to catch the criminals and would decrease the crime rate.
- Mechanical control instruments: it would make the crime discovery more probable and decrease the unallowable accesses.
- The measures of owners and trade people: it reduces the vulnerability of the commercial assets and properties.
- Users' protection: it will do security measures for the buyers to decrease their vulnerability against crime.
- Social interactions: the interactions among the trades, users and the settlers of commercial areas would improve the correlation and social control.
- Police services: the relationship between commercial areas and police would be improved in order for effective reaction against the crime. In this case the citizens would cooperate with police to report the crimes.
- Territorial identity: the public and private sections will be separated in order to prevent the unallowable entrance of potential criminals.
- The image of commercial region: the positive image of commercial regions must be promoted to create trust in users and investors and the economy of the region would improve (Crowe, 2000:46).

## Form and the Design of the Commercial Area

The commercial region has an important role in taking the people out of their house into streets and urban areas to do some activities. Furthermore, these centers cause the "liveliness" of the city and increase the legal and legitimate use of the areas. This increase in the use of an area leads to the increase of "controlling eyes on the streets" and when the control increases, the crime rate will decrease. The design and combination of use of these areas are the essential factors in providing security. Providing the security of the shops and commercial regions, especially when they are closed, is one the main concern of the police and the owners. When the shops get closed during the night, the commercial areas won't be crowded anymore and this fact will increase the vulnerability of these areas and will increase the fear of crime in the pedestrians. The vulnerability would decrease if the people are taken out into the street or on the weekends to do some forms of activity. For example, cinemas, restaurants, galleries or other "activity generating place" can be built in these areas. Other prevalent strategies are, doing active frontages which can positively affect the security of the region and the increase of people presence (for example making some cafes for people in front of the shops) (Qurchi Beigi, 2010).

Another important factor which affects the security is to make some accesses from the shopping centers and urban areas to residential and other areas. The purpose of designing commercial areas is the security, easy and safe access to these areas. Moreover, separating some spaces from each other would create more crime opportunities. On the other hand, rather than building all commercial centers in one neighborhood of the city, and the residential constructions in one other neighborhood, it is better to build different constructions with various uses (not opposite of course) beside each other. "Residential development in non-residential areas would decrease the crime rate and destruction in abandoned areas" (Child, 2000, 57).

### Security in Commercial Areas

The most important spiritual need of human being is security which is considered as the most important purpose of life and the heart of soul health of a person (Ferom 1981, Pp. 11, 99). The word security stems from the Latin word "securus" and it means tranquil, safe free from danger. Security is a kind of peace and internal comfort which has been achieved by active elements of the environment and after perceiving it, it will create some form of feeling safe (Omidvar, 2000:81). Feeling safe and secure in a society depends on the citizens' spiritual feeling of the crime rate, existence or inexistence of crime and the hot spots of crime in that society and the more the crime rate is, the less the citizens feel safe (Rajabi Pour, 2005:93).

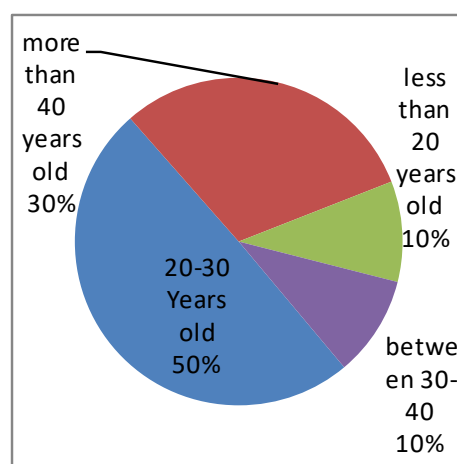
### Sense of Place in Commercial Regions

The term "sense of place" consists of two words of sense and place. The word sense has three main meaning in Oxford Dictionary. The first one refers to five senses, the second one is feeling and kindness which is psychologically called perceiving the image of mind, i.e. it is the judgment a person make after perceiving the meaning of a thing compared with the thing itself, which can be good, attractive or bad. The third meaning implies the capability of judging about an abstract issue like the meaning of sense of direction which refers to the ability of a person to find his way. But the meaning of sense in the term "sense of place" is the feeling and kindness, judgment and overall experience or capability of it to create a special sense or belonging to a place. The science of environmental psychology believes that a human being needs special sensory, emotional and spiritual experience toward the place he lives. This need is fully fulfilled through close interaction and in fact a kind of identification with his place of living. The previous researches show that in addition to physical elements, an environment includes messages, concepts and mysteries that people perceive and decode the mysteries by means of maps,

expectations, motivations and other factors and then start to judge them. All the animated creatures need a specific territory according to their nature. Territory means using the elements which determine the scope of a property. More general forms like public places, semipublic places, private and semiprivate were also proposed (Mahmoud Janaki & Beigi, 2007:355). Brown and Bentley observed the process of designing properly and determining which place belong to which person and the public places, private places and semipublic places were completely divided from each other and the people felt the sense of place toward these places (Brown and Bentley, 1993: Pp. 51-61). This important process will cause the people to feel kind of responsibility toward the commercial spaces and try to improve the quality of the space. Setting special seats, administrating safe functionality with high social coefficient and designing proper places for meetings are among the factors which are necessary to create sense of place in commercial spaces. Regarding the facts said about sense of place, the effective factors in creating sense of place can be divided into two groups of internal factor and external factors. This categorization corresponds with another classification which includes person, environment and others. The external factors of sense of place consist physical environment, the role of society and others, while the internal factors include individual features and the factors of perceptions and cognition (Figure 1)(Forouzandeh, Motalebi, 1953).

The participants of this research aged from 17 to 65 of whom 60% are men and the rest (40%) are women. The education level of these people was in a wide range. 15% of them had preliminary education. 20% of them had a high school diploma. 50% hold bachelor degree and 15% were graduate or PhD students. Two diagrams below relate to the participants who have been investigated in two main indexes of marital status and their age.

Diagram no 1 - Participants



### Resource: Findings of the Research

#### The Form and Design Element

As it can be seen in table, the upper limit and lower limit are in one side of zero, therefore there is a considerable difference between the reference mean and form and design element. In order to say if this difference is significant or not, the researchers have used t-test. Regarding the single sample t-test and also employing the table, it can be seen that in the error level of less than 5%, the significant correlation of t-test (0.000) is less than 5% which shows that there is a significant correlation between reference

mean and the element of form and design (significant correlation= 0.41619). Since the mean of form and design is more than the base value (base value=3), so most of the views were average or higher than average. Therefore, the element of form and design in the commercial complexes of Qom are in average or more than average in a desirable condition. The statistical particulars of this element show that the variable of design of commercial complexes regarding the area and perspective, are in a good ranking and this fact show that the perspective and the location of these complexes is acceptable, while the green space, recreational areas, number of seats and the number of ATMs of these complexes are unacceptable.

Diagram 2 - The Frequency Distribution of Form and Design Element

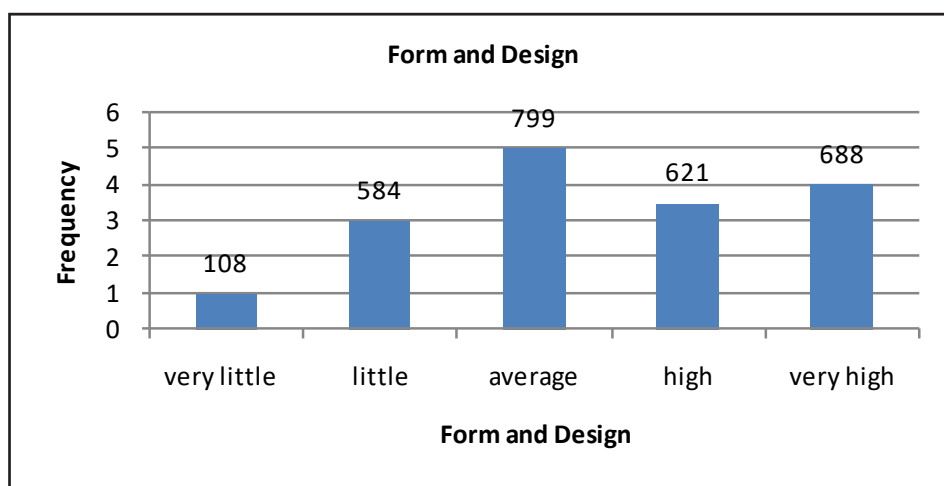


Table 3 - Single Sample t-test of Form and Design Element

Form and Design Element	Base Value=3					
	t	Degree of freedom	Significant correlation	Mean difference	95% confidence	
					Upper limit	Lower limit
	13.834	277	0.000	0.41619	0.3570	0.4754

Source: Research Findings

Table 4 - The Statistical Particulars of Form and Design and Kolmogorov–Smirnov Test

Frequency	Mean	Median	Mode	Standard deviation	Variance	Change range	Min	Max	total	Kolmogorov–Smirnov Test	Significant correlation	
Sample	Lost Data											
278	0	3.4162	4000.3	50.3	0.50161	0.252	2.30	2.30	4.60	70.949	1.293	0.071

Source: Research Findings

**Sense of Place**

Regarding the Chi Square value ( $133.278\alpha$ ), there is a significant correlation between frequencies and the expected frequency has a significant correlation of less than 0.05, in a way that there is a significant correlation between these two ratios. Since the frequency of high and very high class is too much more than little and very little class, so the sense of place in the commercial complexes of Qom is averagely in a desirable rank. Taking the statistical particulars, the people felt that they are the owners and took the responsibility to repair and change

the damaged signs, devise emergency telephone in the streets and to design the rest seats in the interjections.

According to Kolmogorov–Smirnov Test and the results shown in Table 5, it can be seen that the data of the variable of sense of place in error level of less than 5% are not normal. Therefore, the Chi square non-parametric test which equals to single sample Chi square non-parametric test is used to prove the hypotheses. To check if the calculated frequency is significantly correlated with the expected frequency of the variable of sense of place, the researchers used Chi Square test.

Diagram 3 - Frequency distribution of the Concerned Variable

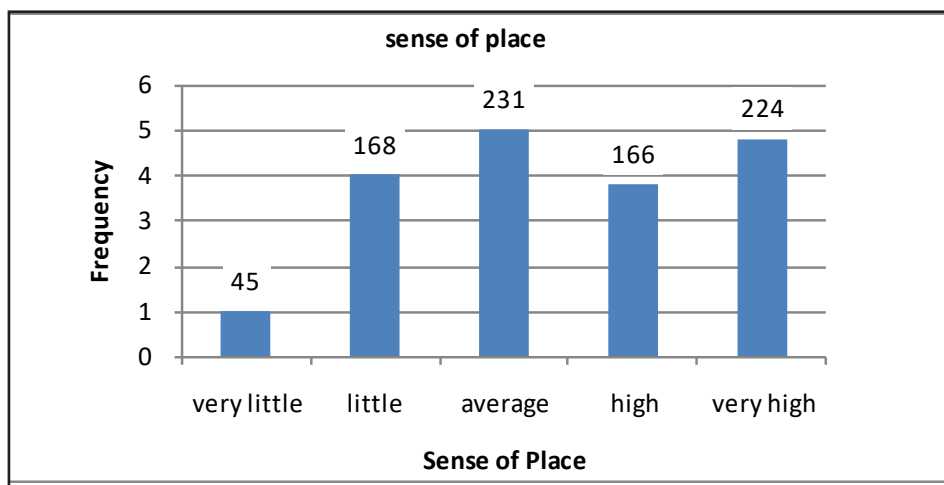


Table 5 - Statistical Particulars of Sense of Place and Kolmogorov–Smirnov Test

Frequency	Mean	Median	Mode	Standard deviation	Variance	Change range	Min	Max	total	Kolmogorov–Smirnov Test	Significant correlation	
Sample	Lost Data											
278	0	3.4269	3.3333	3.33	0.99661	0.993	4.00	1.00	5.00	67.952	1.656	0.008

Source: Research Findings

Table 6 - Chi Square Test

Element of Sense of Place			
	Calculated value	Expected Value	Remaining value
Very little	45	166.8	-121.8
Little	168	166.8	1.2
Average	231	166.8	1.2
High	166	166.8	-0.8
Very high	224	166.8	57.2
Total	834		

Source: Research Findings



Table 7 - Chi Square Test for the Element of Sense of Place

Chi square	Degree of freedom	Significant correlation
133.278a	4	0.000

### Elements Ranking

The elements of sense of place, form and design are considered as the effective factors in crime prevention in commercial places. According to findings of the research and also Friedman test, sense of variable has the highest rank and form and design has the second rank and both are in a desirable condition in a way that the ranks of variables in the error level of less than 5% have a significant ( $p > 0.05$ ).

Table 8 - Ranking of Concerned Elements Used for Crime Prevention in Commercial Complexes

Ranks		
No	Elements	Mean
1	Sense of place	2.80
2	Form and design	2.76

### Conclusion

According to the findings of the research and the statistical data, it can be said that the effective physical environmental elements in increasing the security of recreational and commercial complexes are: creating sense of security in people and architectural designing of the environment are the elements of form and design. Creation of sense of place in people is also a very important element about which we discussed. It is also worth mentioning that the hypothesis of crime prevention through environmental design is based on the claim that the crime rate can be minimized by correct architecture and proper application because committing a crime need a place; therefore, this thought will come to mind that making decision about crime prevention should also be applied in designing an environment. The results of collected statistics state that physical features like sense of place (mean=3.4269) are very effective in crime commission, crime prevention and its reduction. So, crime commission can be prevented by slight physical changes in the buildings and structure of the city, like: lightning, adding more usage to the place, renovating the sidewalks, determining the limitations, increasing informal control, proper planting of trees, setting proper street furniture in the sidewalks, suitable designing of the buildings, and environmental engineering, etc. So, the crime commission opportunities can be reduced by wise and conscious interferences and planning. The present research helped us to rank Qom as the case study (Table no 8) by studying the effective physical elements, among which sense of place (mean=2.80) is in the first

rank and form and design (mean=2.76) is placed in the second rank. Further suggestion has been presented to improve this commercial complex.

### Recommendations

Recommendations below are presented according to the results found:

- Development of sense of possession and determination of partition of places
- Determination of possession of places
- Limitation of entrance of main passages taking proper measures
- Reduction of number of entrances to the city neighborhoods
- Locating more police stations in crime hot spots
- Adding more number of uses to attract more people
- Making the crime hot spots more crowded and doing social activities there
- Using the maximum ability of social organizations and institutions in order to attract more people to prevent from crime commission through environment design (CPTED)
- Planning a timetable for the opening and closing of commercial complexes to be controlled more by the police
- Educating the experts, planners and the police through environmental design and introducing this field to the citizens in order to lead them to interact in crime prevention, especially in educational centers like schools, universities and other centers like residential buildings, offices, parks, shopping malls and parking lots and so on.

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