



COMPARATIVE STUDY OF THE RELATIONSHIP BETWEEN MULTI- SENSORY PERCEPTION OF THE ENVIRONMENT AND SENSE OF PLACE IN HISTORICAL BAZAARS AND NEW COMMERCIAL CENTERS (CASE STUDY: QAZVIN BAZAAR)

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Abstract

Statement of the Problem: Perception is our sensory experience of the world, which requires the recognition of environmental stimuli and action responses to these stimuli. Architecture is multiple realms of sensory experiences that interact with each other and become interconnected and provide the field of perception of a space. In history, the "traditional Iranian Bazaars" were the center of social interactions with a wide range of utilities and constructions. These indoor bazaars, which are valuable relics of pre-modern times, can be considered as sensational spaces, unlike contemporary passages and shopping centers, which create a sense of belonging to users.

Objectives: Considering the importance of the sensory perception system in the spatial perception and the role which this perception can play in the process of knowledge and behavior, the present study aims to investigate the relationship between the multi-sensory perception of the environment and creating the sense of place in the historical bazaars and modern commercial centers.

Method: Historical-descriptive method was used to collect the data and the analytical-comparative method was used to analyze the data. Also, to investigate the relationship between perception of the environment and the sense of place, regression and correlation relations has been used. Data collection has been achieved through library studies and field surveys. The statistical population consisted of 227 users who were selected by random sampling.

Result: The results of the research indicate that the suitable responsiveness to different dimensions of the sensory system in the historical bazaars has created a multi-sensory environment while maintaining the sensory domain interference. Statistical analysis and qualitative assessments also revealed that there is a positive and significant relationship between multi-sensory of the environment and the sense of place.

Keywords: Environmental perception, Multi-sensory architecture, Sense of place, Iranian bazaar, Qazvin bazaar.

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Introduction

Statement of the Problem

In history, the "Traditional Iranian Bazaars" were the center of social interactions with a wide range of utilities and constructions. In these bazaars, in addition to economic transactions, many social, religious, and even political events took place (Asfahani A., et. al., 2022; Çakar S., et. al., 2022). In the past, the bazaar has become the most important communication axis and urban space in Iranian historic cities (Sadovnikova N., et. al., 2022; Blahun S., et. al., 2022). The bazaar, like other phenomena, initially had a simple form and function, but has gradually changed according to the spatial and temporal needs (Abbasi et al., 2015: 291).

With the greater importance of the element of religion in society and government during the Safavid period as well as the development of commercial relations in this period, the bazaar was considered as the most decisive and most significant element of urban in the history of Iranian urbanism and has always been considered by citizens and rulers; gradually, with the advent of modernism in Iran, the historic centers and valuable buildings of the cities were evacuated, and these centers were destroyed, which led to the decline of traditional Iranian bazaars. The construction of new streets which was commonly found in the center of the old urban texture, has had different effects on bazaar performance. However, some believe that the implementation of these plans would disrupt bazaar performance. These changes have taken various layers over time and have created new commercial spaces that have been numerous in terms of form, architecture, size, function, and performance (Habibi and Mahmudi Pati, 2017: 44).

In the science of perception and understanding of the environment, the importance of the orientational systems of the environment and the human perceptual system is emphasized (Mahmoud IM., et. al., 2022). Environmental perception is the process of "mental and objective" that is achieved by establishing an interactive relationship with the environment. This process has a dynamic nature and can create a sense of place in the environment. It seems that in this bazaar, due to the existence of different applications and special architectural features, multi-sensory environment that formed on creating a sense of belonging in this area is affected; there is no sense in today's passage.

Therefore, considering the importance of the sensory perception system in spatial perception and the role of this perception on the process of knowledge and behavior, based on the findings of the psychology of perception, the comparative study of the sensory perception process in historical bazaars (case study of Qazvin Bazaar) and today's passage (City Star and Ferdowsi) and the effect of this multi-sensory perception on the physical components of the sense of place are discussed.

Research question and hypothesis

According to the above mentioned, the main question of the research can be stated as follows: What is the relationship between the multi-sensory perception of the environment and the sense of place in the historical bazaars and today's passage? To answer this question, the following hypothesis is raised:

By creating a multi-sensory space, Iranian bazaars stimulate different systems of human senses and affect the process of cognition, behavior, and sense of place.

Background of the research

A review of the research background shows that there are a few studies about the sensory aspect dimensions of the environment in the historical bazaars and the role that these dimensions can play in knowing these spaces. In the following, the most important sources and findings are presented and analyzed:

– Abbasi (2015), in his research, has developed the principles and standards of spatial perception in the architecture of traditional Iranian bazaars. The results and findings of this research are related to the functional system characteristics of the Iranian bazaar, the conceptual model of the physical system of the Iranian bazaar, the perceptual system in the Iranian bazaar, the conceptual model of the perceptual system of the Iranian bazaar, the semantic system of the Iranian bazaar and the conceptual model of the semantic system. Finally, a comprehensive conceptual model of spatial perception of traditional Iranian bazaars has been investigated.

– Lotfi and Zamani, (2014), in their research, investigated the role of sensory aspect components in the quality of localized axes in Aligholi Aqa Esfahan axis. The results of this study showed a significant relationship between

paper

the sensory aspect components and the local quality criteria. Accordingly, from the point of view of the effect of the sensory aspect components on the axial qualities, the importance of the sense of time is more than other indicators, and then the scenes of tactility, smell, vision, audio and visual are placed.

The present study investigated the quality of the sensory dimensions of space in the historical bazaar of Qazvin and two examples of contemporary passages in this city and its impact on the sense of place from the perspective of users. Hence, the concept of perception of the environment and its process are briefly discussed, and then the sense of place and its physical components are addressed. Finally, the perceptual model of the environment for evaluation in the historical bazaar of Qazvin is presented in order to achieve a comparative study of sensory perception in Iranian bazaar and contemporary passages.

1. The theoretical framework of research

1-1. The concept of environmental perception and its process

Human perception of the world and how it interacts is one of the important issues in the field of creating architectural works. Considering that the level of human perception of the world forms the level of the interaction between him and the world, in order to enhance the quality of the creation of works of architecture and urbanization, knowledge of the levels and stages of human perception is a necessary issue (Taghdir, 2017: 49).

The mechanism of perception is a process that involves the stimulation of sensory members and the collection of information, and recognition is the internal mechanism of the process and the mode of influence of the past experiences. Psychological factors such as motivations, values, and personality (introspection with the outward-looking) of individuals in interpreting it

1-1-1- Multi-sensory perception and architecture

Architecture is multiple realms of sensory experiences that interact with each other and become interconnected and provide the field of perception of space; that is, architecture is not merely an image of five classic senses. The

are sensory information (Shahcheraghi, 2009, 4). Perception is an action in which we select, organize, and give meaning to particular information; therefore, we evaluate (knowing) and behave in a specific way based on the information we get from the environment (sensation) and analyze it (perception), through complex mental processes (Pakzad and Big, 2012: 54).

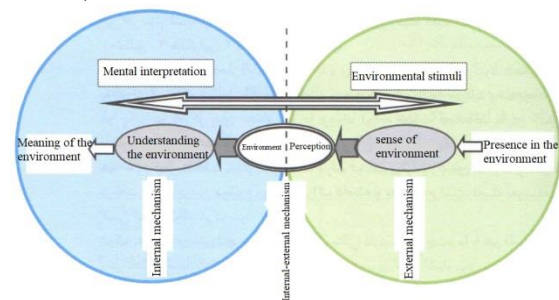


Chart1. The internal-external mechanism of perception (source: Shah cheraghi, Bandar abbas, Number: 2015:177

Of course, the perceptual person is not inactive in the perceptual position. The formation and application of cognitive schema from birth to diverse environmental stimuli provides the first perceptual experiences for humans (ibid, 138). In general, the interpretation of what our sensory receptors have received from the surrounding environment, is carried out in the brain. This action is called perception and leads to the recognition. In fact, perception is the interface between sense and understanding of the environment. The sense is an external mechanism and the recognition is the internal mechanism. Perception is the stage between these two external and internal mechanisms. For this reason, a part of the perception that is outside the mind and in the environment, is similar between people, but another part of the perception based on the individual's brain and mind processes is completely personal and unique (Chart 1) (Shah Cheraghi and Port Abad, 2015: 177).

tactile experience in architecture is multi-sensory, divided into the qualities of space, matter, and scale in the eyes, ears, nose, skin, tongue, skeleton and muscle of the body. This multi-sensory architecture in historic gardens, especially in Iranian gardens, has become seven principles that are used in the design of healing gardens in the hospitals, and the environment

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can help shorten the recovery of patients (Shah Cheraghi and Bandar Abad, 2015: 174).

Among the phenomenological architects, attention to "multi-sensory reception" was first introduced and described in a classical and coherent manner by Pallasmaa and Steven Hall's reflections on the senses of hearing and tactile as a "phenomenal domain" should be affected by him (Holl, 1994). On the other hand, although Norberg Schultz also spoke about the importance of moving in the context of the environment in his book "Architectural Reflections" (1963), he has never developed it fundamentally like Pallasmaa (Shirazi, 2010: 128).

Pallasmaa considers every tactile experience in architecture as multi-sensory, and accordingly, an interaction-based view of sensory perceptions arises from the conventional visual perception of the art of building. In his opinion, the tactile sense was emphasized especially in historical architecture, but with the advent of the modern era, a deep gap emerged within the realm of sensory perceptions. This view can be traced back to the French philosopher Gaston Baxter's approach to the "multiplication of sensory perceptions" (Suhangir and Nasir Salami, 2017: 496).

2-1. Sense of Place

A sense of place is a multifaceted concept that has different definitions at different levels and often finds it to be positive and strong. The term "sense of place" refers to people's affinities and their affinity with their places or what some call it the structure of the sensation and one of the important meanings in improving the quality of human environments and an important factor in shaping the communication bases of users in the environment, which translates into space-to-place, creates a sense of belonging to the place and the achievement of identity for individuals, and influences the quality of space and design that eventually turning these places into dynamic and lively centers and bringing them vitality (Low & Altman, 1992; Williams et al., 1995; Relf, 1987; Tuan, 1980; Manzo, 2003). Inner emotions of man and his behaviors are also subject to the conditions of the physical environment, in addition to adherence to the psychological, cultural, social and economic conditions (Kampayeh and Habib, 2017: 19).

2-1-1. Sense of place in different approaches

Phenomenology approach: From the perspective of phenomenologists, sense of place

means connecting to the place and understanding the symbols and everyday activities. This sense can be created in places of life of the individual and expanded with time (Relf, 1976). Individual and collective values influence the way of the sense of place, and sense of place affects the values, attitudes, and in particular, the individual and social behavior of individuals in the place and people usually take part in social activities according to their sense of place (Canter, 1971). From the point of view of phenomenology, a sense of place means the personality of the place, which has a meaning close to the spirit of the place. In phenomenology, the experience is the main basis of perception. This experience means mental purification and the attainment of the essence of things (Fahlat, 2006: 58). In this regard, it may also be noted that the spirit of the place is in the place itself, but the sense of place is formed in the mind of the user.

Environmental psychology approach:

From the point of view of environmental psychology, humans require a sensory, emotional and spiritual experience of a living environment. These needs are achievable through intimate engagement and identification with the place where they live. This intimate engagement and identification are called spirit, or sense of place. From a psychological point of view, the sense of place is a catalytic location that transforms an environment into one place. The deep experience process of the place is not as an object, but as a living organism, which is realized after successive interactions. Therefore, the relationship between people and places requires certain stability. The environment acquires these qualities by combining natural and human order (Falihat, 2006: 60). The most important mean of the sense of place in the environmental psychology is the experience of the symbolic relationship of the person, group and place that can be understood and strengthened while being cultural from other social, political, historical and cultural sources.

2-2-1 Constituent factors of sense of place

The place and its various dimensions have been interested in designers and researchers for decades. These studies in different dimensions of the everyday aspects of the meaning of the human environment and the phenomenology of space (Seamon, 2012: 120), the meaning of place (Gustafson, 2001), cultural, individual and group dimensions of place (Low & Altman, 1988:

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1992,), social sense in the physical context (Stedman, 72: 2003) of human knowledge in the place (Javan Frozandeh and Matlab, 50, 2011; Relph, 1976) and also place based on the human attitude (Canter, 1983, 1980), have been categorized. Regarding the motivational-perceptual dimensions of human, one of the location models relative to the human need, is a counter of the place. The threefold components of the body, activity, and meaning based on the

human attitude of the counter model have similarities with Punter and Gieryn's threefold models (Punter 2000; Gieryn, 1991). Therefore, in categorizing the place in relation to the model of the components of the counter of the place in the motivational-perceptual attitude, the effective components of the place are presented in Chart. 2.

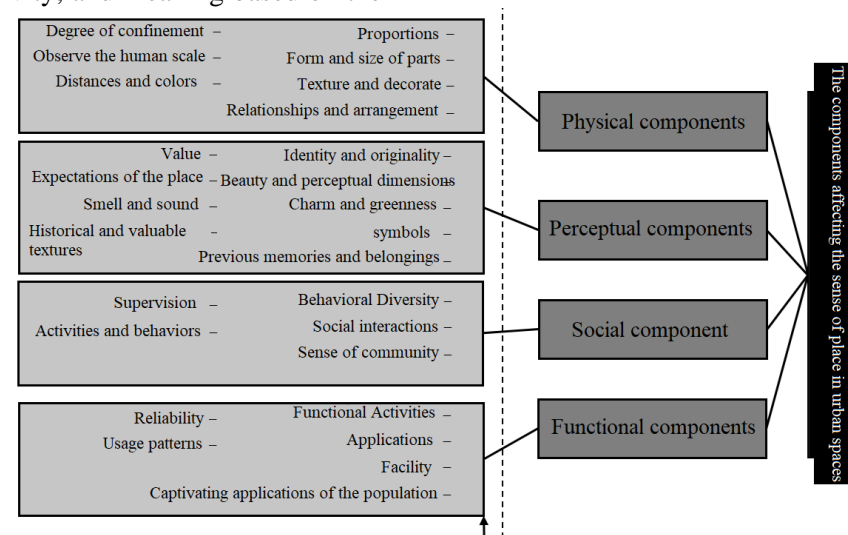


Chart 2. Measurement metrics of sense of place (Mir Gholami and Eisham, 2016: 73)

2-3-1 The physical components of the sense of place in the Iranian bazaars

As mentioned above, the counter of the place is the result of three physical, activities and concepts factors. In this article, only the physical factors of the sense of place will be investigated. Schultz considered the morphology of a place influenced by six elements of dialectics inside and outside, realm, centrality, character, perception, and directional identification. In fact, these factors are the qualities in which the physical elements and forms of the traditional bazaars are involved in creating them. The field survey of Qazvin's bazaar confirmed that physical elements such as dome, arches, and their details and repercussions in creating spatial qualities such as centralization, identification, and directional are effective. Also, physical forms (open, close, semi-open) affect qualities such as territory, enclosure, and dialectics inside and outside. Field studies showed that in addition to the spatial qualities that Shultz considered effective in creating a meaningful place, there are other factors that Qazvin bazaar

users have considered them effective in creating a sense of effective place. For example, being pleasant, natural light and optimal ventilation, each of which was due to a particular type of physical element or form.

For example, being pleasant is directly related to the broader proportions of openings. As a result, the indices and spatial qualities that lead to a sense of place, are not limited to the factors mentioned by Schultz and include factors such as proportions, aesthetic and climatic-environmental factors. For this purpose, the spatial quality indices are classified into four groups: configuration, proportions, aesthetics and climatic-environmental factors. By carefully study of case examples in term of geometric shapes, body elements and their detail were used. The study of the multi-sensory and importance of these spatial qualities in each of these bazaars can be achieved a significant relationship between the multi-sensory and the physical indicators of that bazaar.

3-1 The conceptual model of sensory perception in the Iranian bazaar

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The quality of perception of the environment is achieved through the components that, by identifying the functions and effects of each of the components, can be found in solutions for assessing the quality of architecture and urbanization and providing suitable patterns for designing modern business centers in contemporary times. After studying the principles of sensory perception and perceptual sensory systems in Iranian bazaars and new commercial centers (passage), this research has evaluated these principles in traditional Iranian bazaars in order to recognize the sensory components in these bazaars from users' point of view.

The conceptual model of the perceptual system of the Iranian bazaar is obtained based on the creation of sensory richness in the environment, with emphasis on all senses, creating the quality of inviting and grounding reflection and thought in a person, paying attention to the sensuous, figurative and symbolic aesthetics, creating a mental image and emphasis on memory, emphasis on the meaning, paying attention to the discipline of sensing and understanding and concepts of the human system, such as the sense of place in the environment (Chart. 3).

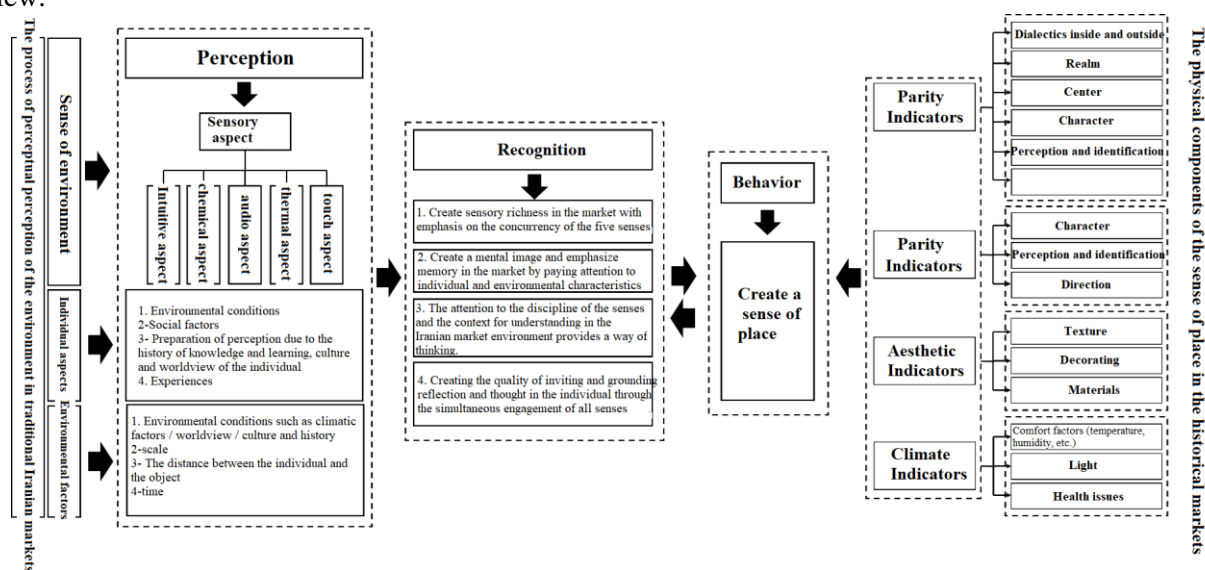


Chart 3. Understanding the components of multi-sensory perception and its relationship with the formation of a sense of place in Iranian bazaars (Source: Authors, 2018)

2. Method

Since this research investigates and describes the fundamental and all aspects of the work on the perception process by looking at the contents of the bazaar in Iran, in this research, the historical-descriptive method was used to collect the data and the analytical-comparative method was used to analyze the data. Also, to investigate the relationship between multi-sensory of the environment and the sense of place has been used the correlation method.

2-1. Introducing the statistical society

The statistical society in this research is the users of the Qazvin bazaar who have been randomly selected to measure the sensory dimension of space. In both phases of the field, interviews were used during the walk. Regarding the fact

that a large number of statistical society may have low education degrees or have insufficient information about the subject, the researcher traveled along the route along with the necessary guidance; in this way, they were asked to introduce the sensory aspect components at the station and give them points based on the 5-point Likert spectrum. To determine the sample size, the Cochran formula has been used and, due to the fact that the sample population is not stable, the sample size was about 237 people and due to the lack of proper responses or their refuse during the research, 250 people were selected as the sample size, which eventually evaluated 227 people (Table 1).

A researcher-made questionnaire was used to measure the sense of place in the Qazvin bazaar and the passages. Determining the reliability and validity of the questions in this study was done

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by Cronbach's alpha method. Cronbach's alpha value of 0.884 showed satisfactory reliability for the questions.

The present research has been used to determine the validity of the questionnaire, content validity, formal and instrumental validity. When designing questions to confirm content validity, Table of target-content was used. The formal credibility of the questionnaire questions was obtained with the confirmation of experienced professors in the field of architecture familiar with the subject of the research. The determination of instrumental validity was done by factor analysis method. For analysis of the questions, two methods of calculating the clean coefficient and loop method were used.

2-2 Introducing the research steps

The evaluation of sensory symbols of space in this research is qualitative and quantitative and in three stages, recognition is made. In the first stage, the recognition of the body, activities, and applications in the studied areas is discussed. In the second step, sensory recognition of space in the time dimension is investigated using spider diagrams in order to evaluate the multi-sensory of space. These graphs are plotted by the statistical society with respect to the scoring of sensory aspects. This stage is a near-complete set of effective environmental stimuli over a period of time (one month). Choosing a course of one month is due to the variety of social and activity events; at the last stage, the sense of place in the Qazvin bazaar and the studied passages (City Star and Ferdowsi) has been evaluated.

Table 1. Distribution of the statistical society based on gender and education (Source: Authors, 2018)

Master's degree and higher	Bachelor's degree	Associate's degree	Diploma's degree and lower	Statistical Society Grade		
				Number	Percentage in population	Gender
14	40	19	39	Number	Male	Gender
40	46.5	86.5	46.5	Percentage in population		
21	46	3	45	Number	Famale	
60	53.5	13.5	53.5	Percentage in population		
35	86	22	84	Number	Total	
15.5	38	9.5	37	Percentage in population		

2.3. The Scope of the Study

The study area in this research includes the historic bazaar of Qazvin and two of the city's shopping centers (Setareh-ye Shahr and Ferdowsi). Qazvin's historic bazaar is located in the district 1 of Qazvin municipality and in the historical context of the city, which has a total area of fourteen hectares.

In order to implement the research and to conduct it in a more precisely way, due to the limitations of the fieldwork and the community under study and the perceptions to be made in the time and place dimension, the study area was a part of the

historic bazaar of Qazvin, including the street of fodder-sellers, street of currier, street of sieve makers, Gardeh Bazaar, Chaharsuq Bazaar, street of drapers, street of coppersmiths, and ultimately the eastern entrance of the Masjed Al-nabi mosque and the mosque itself. According to the presented maps, access to and the possibility of studying the sensory dimensions of the space was limited to 1200 square meters.

The studied passages were also examples of new commercial centers in Qazvin, which have been exploited in recent years, and are often active in the sale of clothing. Figure 1 shows the location of these places related to each other.

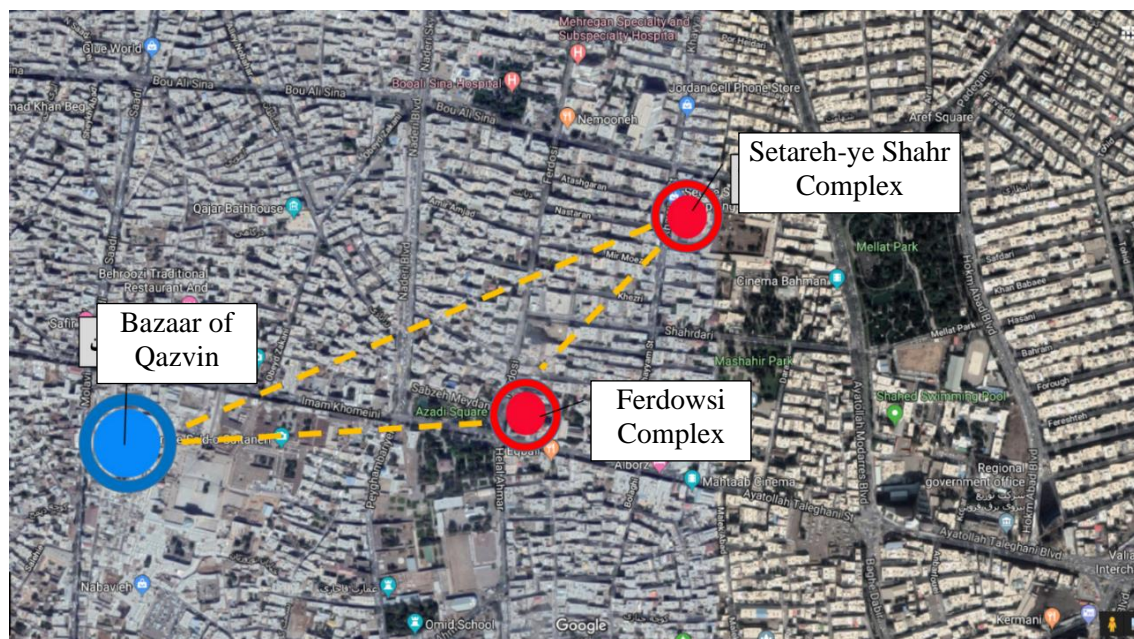


Figure 1. Location of the studied samples related to each other (Source: the authors, 2018)

3. Findings and discussion

3.1. Recognizing the sensory dimensions of space in time dimension in the studied samples

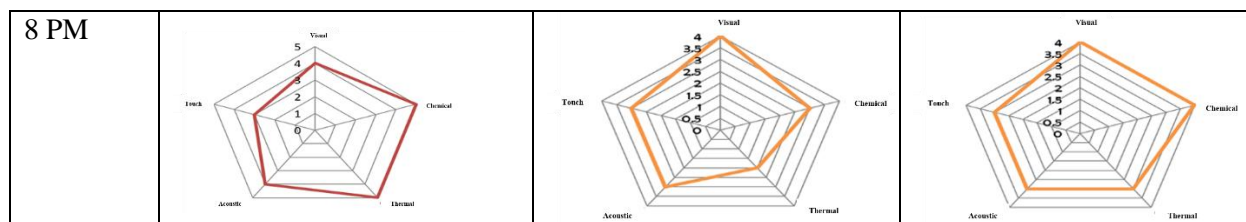
Achieving recognition is the first step in this methodology and research. At this stage, we will study the body, activities and applications in the studied areas. In the next step of the study, sensory sensing of environmental stimuli in the studied area and in the period specified by the

users is addressed. Unlike people who can understand a space in a given time frame, architects and designers have the task of designing space for all hours of the day, week, month, and so forth. Perhaps here is the difference between the design of traditional Iranian bazaars and the contemporary business centers. The purpose of the design is that the plan is sufficiently comprehensive to create a space that is perceived and experienced repeatedly by

the audience. In order to examine the dimension of time, it is necessary to consider the sensory stimuli in the fourth dimension, namely, "time". Therefore, the sensitivity of the samples studied during the period from 8 to 18 (according to the hours worked for samples and season) are Table 2. Sensory record charts during the day in case samples (Source: Processes of the article, 2018).

evaluated. This note is arranged in intervals of every 2 hours and is displayed using spider diagrams. The symmetry of the diagrams represents the sensitivity of space. Table 2 shows sensory note taking in the study area.

Sensory perception hours	Bazaar of Qazvin	Setareh-ye Shahr	Ferdowsi
8 AM			
10 AM			
12 PM			
2 PM			
4 PM			
6 PM			



Sensory note taking in the dimension of time showed how sensory changes occur over time in the studied area and how much it can affect human perception of the environment. In the following, they were analyzed:

3.1.1. Bazaar of Qazvin

The variety of existing applications in the bazaar ranging with the extent of overlapping activity, has led to different sensations in different hours of the day. Street of fodder-sellers and Chaharsuq Bazaar, due to their variety of applications, and the traffic of different people including buyers, businesses, caravans, have more sensory and multicultural environments. The range of activity of this order, according to its type of usage, starts earlier than the rest of the business and continues until the end of the night. Other parts of the range have a lower density of sensory sense. The end of the route ends in the bazaar and the entrance to the western mosque and mosque. This route is attractive to the rest of the senses that the consumer reaches the destination of the streets of the Bazaar to a calm destination (Masjed al-Nabi). The occurrence of each of the behaviors in spatial, temporal, and activity locations has its own unique sensory characteristics that give a special appeal to space and diversity.

An analysis of the time of activities and the sensitivity of space indicates that with increasing activity, we see a few sensations of space. For example, between 10-13 and 17-19, we see an increase in the number of sensory stimuli and their variation, and as a result, a few more sensations. Small odor changes in space affect sensory characteristics. For example, at noon and

at night, starting to work out restaurants and cook food, chemical stimuli are affected.

The sunset time is at 17:30 (during the sensory perception that was done in the fall) which is important. At this time, with diminishing brightness, the visual sensory dimension of space that has the highest score throughout the day is also reduced. Also, the increase in the sensory space of the space due to the cooling of the atmosphere and the smell of eating from the restaurant and fast food is another point in these hours.

As expected, visual stimuli have been valued the most. The value of this dimension decreases only at sunset, when ambient light is reduced. Other stimuli, which have a lot of fluctuations in the graph, are audio stimuli; this is due to diversity in the source of the publication and the scope of perception. The continuous presence of people and the buzz of the bazaar as the sound of gray and the background and the voice of the business, the wagon drivers who rise and fall during different hours of the day, cause the sensory sound diversity in the daytime. For example, while listening to the sound of the prayers and prayers in the mosques of Imam Sadiq and Shahid Saleh, the sound of the voice is heavily influenced.

Another view that is dull throughout the day is a chemical landscape. In the early hours of the bazaar, the smell of fresh vegetables, as well as the chicken and fish bazaar, greatly affects the chemical landscape. After the landscape diminishes to midnight again, restaurants start within the scope of this stimulus again. This stimulus is again dying back in the afternoon until sunset, which again affects.

With the unfavorable environment, the importance of thermal stimuli is valued. At this time with sunset and lowering the temperature from 17:30 to 20:00, from a sense of sensation, more value is given to this dimension. Moving inside the bazaar from inside the indoor shelves and passing through the outdoor courtyards also affects the thermal stimuli. Another stimulus of the environment, which plays a diminishing and almost stable role in the environment, is the touch trigger. This stimulus has the slightest tension throughout the day and is constant. The touch stimulus is largely influenced by individual aspects of perception of space and can vary between the young and the elderly and between men and women. This is influenced by the person in space perception, and, of course, the lack of arousing curiosity in space is due to its frequent experience, because the desire to touch takes place in order to understand a new experience and to know more about objects, while recording sensory data in the length of a person's time is less than the touch of the environment, and only the relation with the environment on the floor of his or his visual aspect effects on which bodies and walls or finite elements such as grass and water passes.

3.1.2. Passages

What is taken from the sensory registration of the passages is that the environment of these passages has less and stable sensory variation than in Bazaar of Qazvin, which can be less effective in recognizing and behavioral characteristics of users. In the case of visual stimuli, as expected, these stimuli have the highest value. The presence of various items inside the designed and light-hung showcases also attracts audiences to internal architecture and the use of different materials. It seems that it only

diminishes the value of this stimulus just at sunset, when ambient light is reduced. Other stimuli, which have a slightly higher fluctuation in the graph, are chemical stimulants, which are usually correlated with population size, different odors emitted during the time period and activity of some service applications. Voice actuators are also modest during the day. This is due to diversity in the source of the publication and the scope of perception. The constant presence of people and humming in the passages as gray and background sounds that rise and fall during different hours of the day will cause sensory variation in the daytime.

The recording of thermal stimuli shows a relatively constant position and low diversity throughout the day. This is due to the ventilation and thermal systems inside the passage, as well as the constant temperature throughout the day. Another stimulus of the environment, which plays a diminishing and almost stable role in the environment, is the touch trigger. This stimulus has the slightest tension throughout the day and is constant.

3.2. Comparative evaluation of the relationship between sensory perception and sense of place in samples

The aim of this research phase is to find out the concrete results of the relationship between the sensitivity of the process of space perception and the meaning of the environment, and in particular, the sense of place. This stage will also be adapted to the historical bazaar of Qazvin and Setareh-ye Shahr and Ferdowsi passages. The evaluation of the questionnaires was done using regression analysis and correlation between variables was significantly correlated with this method.

Table 3. Qualitative assessment of physical components of the sense of place in the studied samples (Source: the authors, 2018)

		The physical components of the sense of place														
		Configuration					Proportions				Aesthetics			Climatic		
Criteria	Dialectics inside and outside	Territory	centrality	character	Perception and identification	Navigation	Height	Width	Geometrical shape	Texture	Decorating	Materials	Comfort factors (temperature, light	Health issues		
Bazaar of Qazvin	street of fodder-sellers	+	-	+	+	+	+	+	+	+	+	-	+	+	-	
	street of currier	+	+	-	-	+	+	+	+	-	+	-	+	+	-	
	street of sieve makers	+	+	-	+	+	+	+	+	-	+	-	+	+	-	
	Gardeh Bazaar	+		+	+	+	-	-	-	-	-	-	-	+	-	
	Chaharsuq Bazaar	+	+	+	+	+	+	+	+	+	+	+	+	+	-	
	street of drapers	+	+	-	+	+	+	+		+	+	+	+		+	
	street of coppersmiths	+	+	-	+	+	+	+	+	+	+	+	+	+	+	
	the eastern entrance of the Masjed Al-nabi mosque	+	+	+	+	+	+	+	+	+	+	+	-	+	+	
Setareh-ye Shahr	-	+	-	-	-	-	-	+	+	+	-	+	+	-	+	
Ferdowsi	-	+	+	-	-	-	-	+	+	-	-	+	+	-	+	

At this stage, the relationship between multisensory locations and sense of place is investigated. Therefore, in Table 5, the correlation coefficient, regression, and significance level have been determined.

Table 4 shows the mean and standard deviation of participants' scores in the sensitivity of the environment and the components of the sense of place (configuration, aesthetics, climatic factors, proportions). Based on the results presented in Table 4 in Qazvin, among the components, sense

of place, climatic factors (3.92) and aesthetics (3.99) had the highest and the lowest mean scores, respectively. The multivariate environment variable also has an average of 3.60 in this sample. The average and standard deviation of the scores of the passage sample also showed that the components of sense of place, climatic factors (62.6) and configuration (2.60) had the highest and lowest mean scores, respectively. The multivariable variable of the environment also had an average of 2.49 in these samples.

Table 4. Mean and standard deviation of components of sensitivity of the environment and sense of place in samples (Source: Processes of the article, 2018).

Variable	Bazaar of Qazvin		Passages		Number
	Mean	SD	Mean	SD	
Multisensoryness of the space	3.60	0.972	2.49	0.76	227
configuration	3.60	0.89	2.60	0.67	
Aesthetics	3.59	0.91	3.41	0.89	
Climatic factors	3.92	0.89	3.62	0.98	
Proportions	3.66	0.94	2.67	0.96	

The main hypothesis of this section is a comparative study of the relationship between perceptual perception of the environment and semantic concepts in case examples such as sense of place. In this regard, the last stage revealed that the historical bazaar, due to its functional and operational features, has more sensory space (symmetrical sensory registration diagrams) than modern passages. As shown in Table 5, there is a significant positive correlation between

sensitivity of the environment and the sense of place in the Bazaar of Qazvin ($r: 0.717$; $p < 0.0001$); therefore, the hypothesis of this research is approved regarding the relationship between the sensitivity of the environment and the sense of place. Investigating this relationship in the passage shows less of a sense of place. In addition, by enhancing the sensitivity of the environment, the motivation of the sense of place towards the environment is improved.

Table 5. Simple correlation coefficients between sensitivity of the environment and sense of place in the samples (source: Processes of the article, 2018)

Variable	samples	The dependent variable	Correlation Coefficient (r)	Significance level (p)	Sample number (n)
Multisensoryness of the environment	Bazaar of Qazvin	Sense of place	0.717	0.000	220
	Passages		0.476		

In order to study the contribution of multisensory environment component to the sense of place of each case, multiple regression analysis was used simultaneously, but the use of regression model requires its assumptions to be used. For this purpose, the Durbin-Watson test was used to examine the independence of errors and the coordinating test with two coefficients of tolerance and inflation factor variance. In the prediction of a sense of place through a multi-sensory environment, the Durbin-Watson (1.67) tests were smaller than 4 in terms of the

assumption of the independence of errors for regression analysis.

Also, the coherency indices also showed that there are no co-linear prediction variables. The tolerance index values (0.0- 48.33) were less than 1 and the inflation index variance (1.3-18.16) was less than 10, indicating that there was a mismatch between the variables. Because Stevens (2002) quotes (Mears, Gamst, 2006), values of VIF greater than 10 represent a multiple linearity between pre-variables; other characteristics of regression analysis are shown in Tables 6 and 7.

Table 6. The results of regression analysis of the sensitivity of the environment and the sense of place in the Bazaar of Qazvin (Source: Processes of the article, 2018).

Predictive variable	Origin of change	Sum of squares	Degrees of freedom	F	R	R ²
Multisensoryness	Residual regression	116.458 110.359 224.817	1 225 226	237.436	0.717	0.513

Table 7. The results of regression analysis of the sensitivity of the environment and sense of place in the passages (Source: Processes of the article, 2018).

Predictive variable	Origin of change	Sum of squares	Degrees of freedom	F	R	R ²
Multisensoryness	Residual regression	26.058 88.953 115.42	1 225 226	65.990	0.476	0.227

As shown in Tables 6 and 7, the value of F is significant. This means that the predictive variables, and the multisensory environment, in general, were able to predict and explain the significant percentage of variance in sense of place as a criterion variable in the Bazaar of Qazvin, as the results presented in this table show, sensible environment of 717 / 0 explained the variance of the sense of place scores; this value was 476/0 in the passages examined.

Conclusion

By looking at parts of the city that still have the color of the old era, it is shown that each of these sections was a multifunctional place at the time. Indoor bazaars that are valuable relics from the pre-modern era can be compared to modern shopping malls and shopping centers. Indoor bazaars are a mix of all sensory stimuli. The division of the dominant guild in these bazaars has led to fewer interference with the sensory domain. The covered corridors of these bazaars in relation with a non-enclosed environment such as squares in different seasons caused that the difference in temperature in this space to be tangible. The combination of light with the rhythms of the body is a sign of movement, even in the still bodies of these places. The rhythmic sound of the hammer, the muzzles, the charm, the smell of tasty food and spice and the coloring of the bazaar with colorful fabrics create an admirable symphony of different senses that are not comparable to the stylish contemporary passages. The use of air conditioners, music and the intense light of showcases are the only sensory stimuli of these environments that have made them too expensive to use these places into memorable places, such that none of the existing stimuli can represent the activities in space. Identity has left the sensory landscape of the city, and this is one of the hazards that have come to our urban realms following the uncreated architecture of modernism and minimalism.

The Qazvin's field study in two stages introduced important points about sensory perception, sensory stimuli in it, and how they are perceived and created a sense of place in them. In the theoretical framework of the research, based on the previous studies and research of the theoretical model, components of perception were obtained in the Iranian bazaars. Also, by analyzing the opinions of

the researchers, the physical components of the sense of place were extracted in samples to measure its relationship with the sensory perception of the environment. The continuous review of Bazaar of Qazvin over a period of one month showed that there is a two-way relationship between activity and sensory changes, and each activity has its own unique sense of space that begins to color its environment when it starts its activity.

The evaluation of sensory stimuli during the time interval indicated that acoustic and chemical stimuli were two stimuli affecting the sensory perception of the bazaar. These two stimuli had the most changes throughout the day, and the changes in sensory space changed with the changes in these triggers. In contrast to visual and tactile stimuli, there are relatively stable stimuli in space. The reason for the fact that these triggers are steady, can be attributed to the physical nature of these stimuli. On the other hand, sensory registration of passages showed that the environment of these passages has less and stable sensory variation in Bazaar of Qazvin, which can be very effective in recognizing and behavioral characteristics of users. In the case of visual stimuli, as expected, these stimuli have the highest value. The presence of various items inside the designed and light-hung showcases also attracts audiences to internal architecture and the use of different materials.

Qazvin's bazaar has been able to create a suitable space by using cultural, social and religious backgrounds as a rich environment. The constructive components of the Iranian space of bazaar point to an immaterial meaning through the creation of subjective and perceptual images of the signs, and thus affect the perceptual quality of the architectural space and sense of place. The most important factors in creating a sense of place of Bazaar are the values in the physical structure and space meanings. Due to the quality of design, attention to the proper connection of the bazaar with the city, the combination of applications, the combination of open spaces and the creation of quality in the design of spaces, physical factors improve the meanings of activities, and by addressing the various needs of man, create a series of perceptions, satisfaction and Finally, they feel like a place.

Quantitative findings of the research also emphasized the effect of multisensory environment on the sense of place in Bazaar of Qazvin, which

showed a good correlation between them. Also, the results showed that there is a positive relationship between the sensitivity of the environment and the sense of place, as this rate was further evaluated in Bazaar of Qazvin than the studied passages.

Postscripts

1. Spider diagrams were calculated according to the average and the views of the statistical community on the sensory sentiment at the stations studied during a one-month interval were scored according to the Likert scale of 5 points and were plotted in Excel software.

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