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SPATIAL ASPECTS AFFECTING THE VITALITY OF AN IRANIAN TRADITIONAL BAZAAR: THE CASE OF QAZVIN BAZAAR

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INTRODUCTION

Urban public spaces are significant parts of a city. These spaces provide a platform where people can go inside, make contact with the social world outside and experience the opportunity to be with, see and hear others which instills stimulation. They are spaces that give people a chance to see something new, feel different, learn and be inspired (Kishore Rupa, 2015). "It is the public realm which provides the terrain for social interaction and a significant part of a city's transaction base (i.e., the market square, the street vendor, the shop frontage and the sidewalk café)" (Montgomery, 1998). The public realm has physical (space) and social dimensions. The physical public realm is the setting that supports or facilitates public life and social interaction. The activities and events in those spaces can be considered as the sociocultural public realm (Carmona et al., 2006). Spaces that support activities (standing, sitting, talking, eating, reading), provide opportunities for short-term, low-intensity contact that create easy interactions with other people in a relaxed and relatively undemanding manner (Askarizad and Safari, 2020). The vitality of the public realm is an important quality because it can reduce crime, make commercial interests more viable, increase passive enjoyment of the streetscape (such as people-watching), encourage social interaction and provide opportunities for cultural exchange. So, vitality in urban space is regarded as an important measure of its health (Costamagna et al., 2018). In Montgomery's definition (1998, 97), the concept of vitality refers to the number of people in and around the street (pedestrian flows) across different times of the day and night, the uptake of facilities, the number of cultural events and celebrations over the year, the presence of an active street life, and generally the extent to which a place feels alive or lively.

In this paper, a traditional bazaar is studied, as a historical public space. These important public spaces are introduced as the heart of Iranian and Islamic cities, and many architects and urban planners consider that the

life of other urban spaces and architectural collections depend on the bazaar spaces (Habibi, 1998; as cited in Sadeghi et al., 2019). The social role of bazaar was much more prominent in the past. Keshavarzian (2007) discusses the bazaar of Tehran in the context of politics and governance to the extent that he emphasizes the importance and socially decisive role of bazaar even in critical evolutions, including the 1979 Revolution. Traditional bazaars are now specific public semi-open spaces usually full of people who shop and interact during the day. Bazaars are still considered as important lively public spaces in cities with historical backgrounds.

A "lively public space" can be defined as a public space in which a noticeable number of people are there in most of the times and their dominant activities are social. In a traditional bazaar - a specific public space with a particular physical structure, with mostly commercial activities and limited working time per day- the concept of vitality can be considered as the number of people at all working hours. In this study, a social approach to the concept of vitality is discussed therefore, other types of vitality including economic or environmental are not the subjects of this article.

There are several factors that affect the vitality of bazaars, some of which are physical-spatial. Understanding these factors can help create and improve their vitality. This paper attempts to respond to the following two questions:

1. Which physical and non-physical factors affect the vitality of a traditional Iranian bazaar the most?
2. What is the relationship between the vitality of a traditional Iranian bazaar and spatial qualities, explored in a specific example, the bazaar of Qazvin?

RESEARCH BACKGROUND AND THEORETICAL FRAMEWORK

Urban Public Space Vitality

Several studies have been conducted on the subject of vitality in urban public spaces. Jacobs, in *Death and Life of Great American Cities* (1961), outlined four key conditions for urban vitality: "1- the district must serve more than one primary function, preferably more than two. 2- Most blocks must be short; that is, streets and opportunities to turn corners must be frequent. 3- The district must mingle buildings that vary in age and condition, including a good proportion of old ones. 4- There must be a sufficiently dense concentration of people, for whatever purposes they may be there." In fact, she believes diversity will bring vitality. Her comments were almost the first serious and introductory critique of the concept of vitality. Lynch, in *Good City Form* (1984), discusses "vitality" on a large scale. In his view, this concept along with five other factors, namely "sense", "fit", "access", "control", "efficiency and justice", constitute the six dimensions of the good city form. He considers vitality to be almost equivalent to "viability" from a biological perspective and believes maintenance, safety and compatibility are the main criteria for the vitality of a city. Many thinkers consider the vitality of urban public space as the main sign of space success, including Carmona (2018). Therefore, vitality deals with the degree to which an urban public space is socially successful. Some scholars like Rapoport (1994), have a cultural perspective, and some have approached the concept with an economic perspective, including

Landry (2000). However, most theorists, including Jacobs, have seen vitality from a social point of view.

The concepts of vitality and quality are intertwined, so that scholars consider vitality as a part of the public space quality. At the same time, vitality itself is influenced by spatial qualities and other parameters. Many academics in the field of urban design have studied the quality of public space and each has provided specific criteria. *Responsive Environments* is one of the first books in the field of spatial qualities. In this book, Bentley et al. (1985) believe that a responsive environment should have seven qualities: permeability, variety, legibility, robustness, visual appropriateness, richness and personalization. Gehl (1987) sees a successful urban public space in general, in three concepts of protection, comfort and enjoyment, that each of them has sub-qualities such as protection against harm, possibilities for walking, standing and staying, sitting, talking and hearing, enjoyment of aesthetic quality and positive sensory experience. Paumier (2004) introduces the characteristics of a vibrant central public space as accessibility, diversity of uses, concentration of uses and organized structure. Carmona (2018) believes that successful public spaces are: evolving (whether formal or informal in nature), diverse (avoiding one-size-fits-all), free (with secure rights and responsibilities), delineated (clearly public in their use), engaging (designing in active uses), meaningful (incorporating notable amenities and features), social (encouraging social engagement), balanced (between traffic and pedestrians), comfortable (feeling safe and relaxing) and robust (adaptable and distinct in the face of change). Mandeli (2019) discusses that the appropriateness of public open space can be measured by livability, compatibility, enclosure, connectivity, legibility, convenience and safety. Praliya and Garg (2019) in their research stated that accessibility, maintenance, attractiveness and appeal, comfort, inclusiveness, activity and uses, purposefulness, safety and security are the main qualities of a good public space. As can be seen in **Table 1**, each researcher has looked at the vitality and livability of urban public space from his/her own perspective. Some qualities and characteristics are more repetitive and common, such as accessibility, comfort, mixed-use, diversity, safety, and security.

Iranian Traditional Bazaar

Traditional bazaars are found in many historical countries; for instance, in Turkey, they are called *Çarşı* (charshi), which is terminologically the combination of the Farsi word Chehar (which means four) and the Arabic word *Sugh* (which meansalley, street) (Atlaş, 2016). In Iran, the word bazaar refers to waazaar, which is an ancient Farsi word and means the place of assembly and getting together (Dehkhoda, 1931) and in further definitions, means the marketplace or assemblage of shops where miscellaneous goods and services are displayed for buying and selling (Pirnia, 1990). The bazaar was formed as an urban economic foundation in the Sasanian period in productive commercial cities. The initial core of most of the bazaars was formed near the gates where the traffic rate had its highest value. This core was first formed behind the city gates and then expanded into the cities and residences (Habibi and MahmoudiPati, 2017). The famous bazaars were generally formed in cities that their economy was based on merchant systems. Large numbers of these bazaars were formed in cities which were the capitals of Iran in different periods (MasoudiNejad, 2004). Bazaars were also the most popular sites for the development of social, political, cultural

Author	Research title	Criteria- Variables
Jacobs (1961)	The Generators of Vitality	Four conditions: mix use, small blocks, aged buildings and a sufficient concentration of buildings
Lynch (1984)	Vitality of the City	Maintenance, safety and compatibility
Ravenscroft (2000)	Indicators of the Vitality and Viability of Town Centers	First: pedestrian flows and property yields; second: demand for shop units, changes in the number and quality of major retailers, the relative use of space for different activities, security, vacancy rates for shop units and accessibility and car parking.
Landry (2000)	Indicators for Urban Vitality	Levels of activity, levels of use, levels of interaction, levels of representation
Paumier (2004)	Vibrant City Centers	Accessibility, diversity of uses, the concentration of uses and organizing structure
Adams and Tiesdell (2007)	The Vital City	Level 1- state of simply being alive and able to survive, level 2- the capacity not just to survive but to grow and develop and level 3- certain physical or intellectual energy or vigor
Khastou and Saeadi (2010)	Urban Spaces Vitality	Attractiveness, satisfaction, safety and security
Jalaladdini and Oktay (2012)	Urban Public Spaces Vitality	Presence of people, diverse activities, attractive place
Karami et al. (2015)	Accessibility and Vitality on Urban Space	Social activities, hosting many people, physical, application and activity diversity, and comfortable spaces
Clemente (2015)	Liveliness and Livability of Urban Space	Security, environmental comfort, psycho-physical well-being due to the greenery presence, psychological comfort due to cognitive factors, accessibility and universal design, quality and maintenance condition of the materials, semiological elements, place identity, attractive public realm and opportunities
Keleg et al. (2015)	Livable Public Spaces	Connectivity & permeability, surrounding streets hierarchy, surrounding land uses and edge effect, attractiveness, safety & surveillance, maintenance, management
Anderson et al. (2016)	Lively Social Space	Connecting with other people, engaging in physical activity, taking notice or being aware of one's external environment
Eghdami et al. (2017)	Urban Space Vitality	Safety and security of the square, square attraction, citizen satisfaction, social interaction
Işıklar (2017)	Vitality of the Cities	Social interaction, safety and sense of belonging, inclusion of different uses, transformability, aesthetics and accessibility.
Khalili and NayyeriFallah (2018)	Urban Public Space Vitality Parameters	Social perspective: people presence, mixed use function, density of activities and supportive physical elements
Xu et al. (2018)	Urban Street Vitality	Street form, street business type, and street accessibility.
Lu et al. (2019)	Urban Vitality	Appropriate construction intensity, sufficient functional mix, and high accessibility
Mouratidis and Poortinga (2020)	Urban Vitality	Liveliness, interesting things happening, opportunities for entertainment

Table 1. Theories and researches related to urban public space vitality (Prepared by the author)

and civic activities of people, like the Forum or Agora in ancient cities (Edgü et al., 2012; as cited in MohammadiKalan and Oliveira, 2015).

The notable Iranian author Ahmad Ashraf (1988), describes the bazaar complex as a "closely knit community". He believes that the merchants could observe and be aware of each other's public activities due to the enclosed physical space. Therefore, they could develop a social network that links them to each other (Yadollahi, 2017). The architect, Falamaki (2007) describes the bazaar as an organized chain of spaces that create a covered social area and public services, manufacture, and commerce. He also presents this description based on the general patterns observed in the spatial and functional characteristics of the bazaars in the commercial cities

of Iran. The bazaar is supposed to support the allocation and organization of spaces in accordance with trade activities and complementary urban functions. It simultaneously covers various domains of human needs, not only as a trade hub but also as a civic center (Maeiyat et al., 2012). To the extent that Keshavarzian (2007) discusses the bazaar of Tehran in the context of politics and governance, he emphasizes the important role of bazaar even in critical evolutions, including the Islamic Revolution of 1979. He believes that the social and political role of bazaar is weakened in the last 20 years. Nevertheless, it can be acknowledged that its commercial role has been almost preserved over time, so the traditional bazaar is still one of the lively, active urban public spaces in old cities. As a case, FoadMarashi and Serdoura (2022) have studied the bazaar of Urmia in the last 25 years and believe that despite the physical and spatial changes in the layout bazaar, its vitality is still apparent.

Spatial Aspects Affecting the Vitality of Bazaar

The vitality of a bazaar can be defined as a considerable presence of people on an everyday basis. In order to form the research's conceptual model, the most repeated factors in **Table 1** were gathered and summarized as a chart (**Figure 1**). As **Figure 1** shows, the effective factors on the vitality of bazaar can be divided into internal and external dimensions. The external dimension is related to economic (household income, working hours etc.), political (such as government regulations), sociocultural (rituals, beliefs, communications, etc.) and even climatic factors. External factors are very important; they generally affect the number and type of cortex present in the bazaar. For example in relation to economic factors, people who come to the bazaar are mostly of the lower or middle class. In terms of cultural factors, prowling outside for a long time is reprehensible for women in Iranian culture, therefore, the number of men and women may not be equal. In terms of social dimension, the notable situation that influenced the vitality was the social distancing applied for Covid19. Climatic factors such as sunlight or precipitations are effective on vitality of the unroofed parts of bazaars. External factors have other important effects as well that can be used for comparing bazaars in different cities, but they are so vast and out of the scope of this research. So, the internal factors are merely addressed in this paper. The internal dimension is divided into physical and non-physical indicators; the physical part can be defined and measured by two types of indexes (i.e. natural and built element); and the non-physical by activities and sensory factors. These factors can create main spatial qualities that eventually lead to vitality. The 10 main spatial qualities derived from the literature review are as follows:

- **Accessibility:** The ability of a space for being able to be reached or entered.
- **Legibility:** The quality of a space for being clear enough to be recognized.
- **Security:** The ability of the space for protecting people against social threats.
- **Walking comfort:** The ability of a space that facilitates the movement of people.
- **Permeability** (physical)**:** The ability of a space that permits movements in different directions.

- **Safety:** The ability of the space for protecting people from physical harms.
- **Variety of activities:** The ability of a space that provides the possibility of diverse active uses.
- **Flexibility:** The ability of a space for creating the possibility of occurring different events.
- **Enclosure:** The quality of a surrounded space for creating a sense of place and identity
- **Sensory desirability:** The ability of a space for impressing people by desirable visual, auditory and olfactory stimuli.

Regarding the literature review, since "variety of activities" was mentioned by most of the authors, the research hypothesis can be written as follow: "variety of activities" is the most effective spatial quality in vitality of Qazvin traditional bazaar.

MATERIALS AND METHODS

Research Area

Qazvin is one of the top five cities of Iran in terms of historical attractions. It dates back to the Safavid and the Qajar era, which consisted of economic, cultural, and social places such as mosques and Caravansaras. Qazvin was the capital of Iran for 57 years during the Safavid era. The Qazvin bazaar was the linking point between the west and north side of Iran, due to the development of the Qajar era. This bazaar complex has an area of 14 hectares (Qazvin Municipality). The location of Qazvin bazaar in the city,

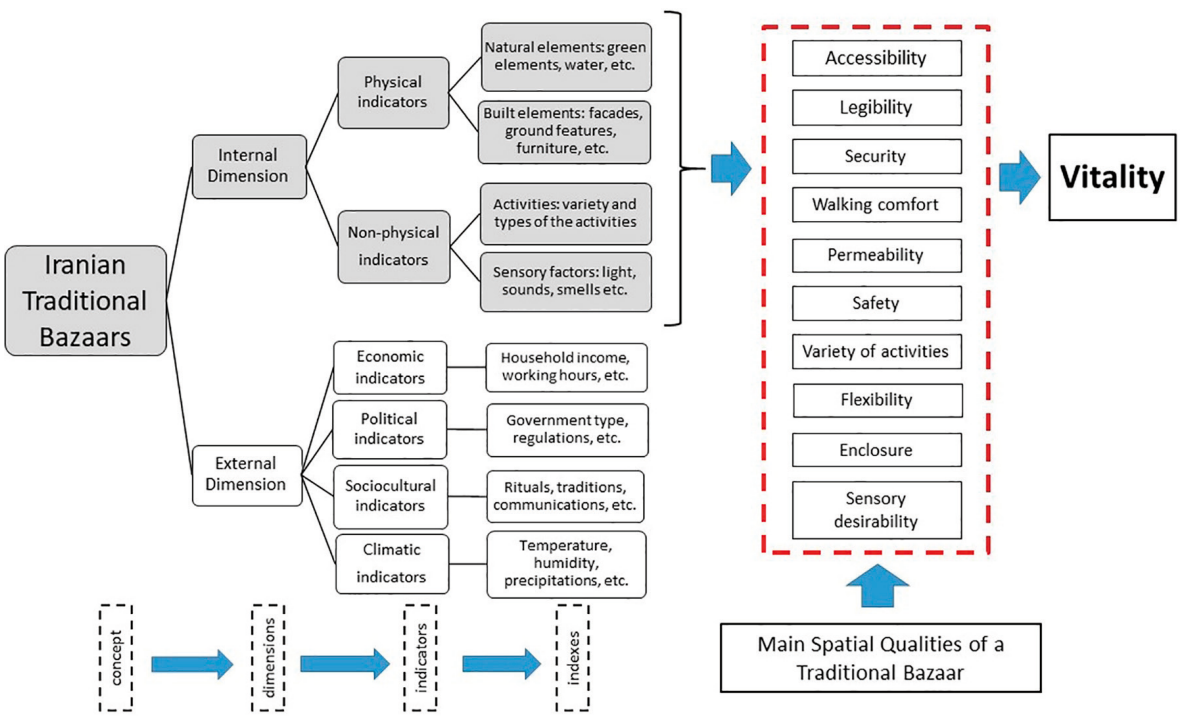


Figure 1. Conceptual model of the research (Prepared by the author)

Figure 2. Qazvin city and location of traditional bazaar complex (Prepared by the author)

its surrounding fabrics and its relationship to the city old entrances are shown in **Figure 2**.

Qazvin bazaar Historical Complex and its related buildings are located in the center of the city, adjacent to *Imam Khomeini* Street; one of the most valuable collections of Islamic architecture in Iran. Due to the importance of Qazvin city in different historical periods, Qazvin bazaar was also regarded as a significant place. The remaining parts represent the architecture of *Safavid* period onwards, especially the *Qajar* period (Mollazadeh and Mohamadi, 2000). It was registered in the list of the national monuments in December 1976. This complex, alongside the cultural and religious centers like mosques and schools and service centers (cisterns and baths), has generated an integrated and homogenous totality which if not being unique but is a very rare situation. The bazaar of Qazvin has preserved this feature up to now. In addition to its comprehensive regional functionality, it now acts as the most sensitive urban point in terms of social, economic and cultural issues (Moinifar and Shojaei, 2016).

In **Figures 3 and 4**, the aerial view of Qazvin bazaar is shown in the years 1994 and 2000 and **Figures 5 and 6** show the current aerial views of bazaar and its surroundings.

Figure 3. Qazvin traditional bazaar complex in 1994 (Shahr-o-barnameh, 2007)

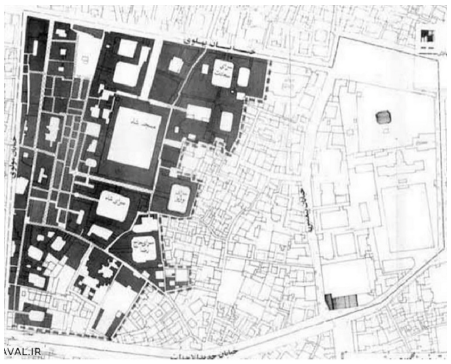


Figure 4. Qazvin traditional bazaar complex in 2000 (Shahr-o-barnameh, 2007)

Figure 5. Qazvin traditional bazaar complex (Google maps, 2020)

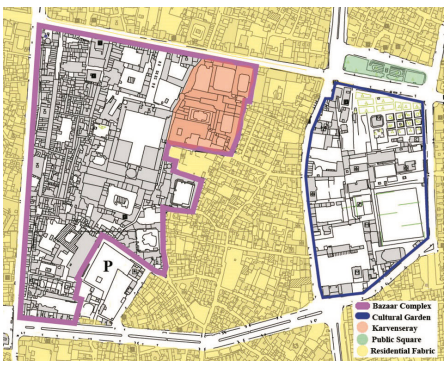


Figure 6. Qazvin traditional bazaar complex and its surroundings in current times (Prepared by the author)

There are some gathering spaces in Iranian bazaars called Saraa or Timcheh that are allocated to a certain activity such as coppers Saraa. Main routes are called Rasteh. Qazvin bazaar has two main parallel Rasteh that is shown in the **Figure 7**. Some parts of these routes are also allocated to a specific function such as jewelry zone. Different parts of Qazvin bazaar include: Main Rasteh, coppers Saraa, Qiesarieh (carpet shops zone), Razavi Saraa (now is allocated to foodstuffs store), smithy zone, cotton Saraa (now is allocated to household appliances), jewelry zone, tools and fittings shops zone, Sarbaz Timcheh (now includes haberdashery shops), carpenters zone, bird shops zones, covered Timcheh, tanning zone and Allaf Rasteh (fruit and vegetable zone).

Other parts of the bazaar (many parts of the main *Rasteh*) have mixed used functions. Due to the vastness of bazaar, the study was conducted only on the main routes. To measure the presence of people, the main routes were divided into 7 zones; the first zone is at the beginning of the main entrance on the north. Zones 2 and 3 are a continuation of the previous and the last one, zone 4 is located next to the entrances in the south (**Figure 8**). In **Figures 9 to 14** some photographs of different parts of the bazaar are shown; 3 of them are taken in main *Rasteh*.

Research Method

As mentioned in the previous section, the research theoretical framework is developed by studying the literature review using a qualitative method. Accordingly, as it was shown in **Figure 1**, the internal factors of a traditional bazaar can make 10 main spatial qualities that ultimately lead to vitality. One of the research limitations was the broadness of the study area, so the selected criteria (spatial qualities) had to be reduced. The other limitation was the Covid19 pandemic and its health considerations which made the field studies difficult. Although due to these conditions, as a

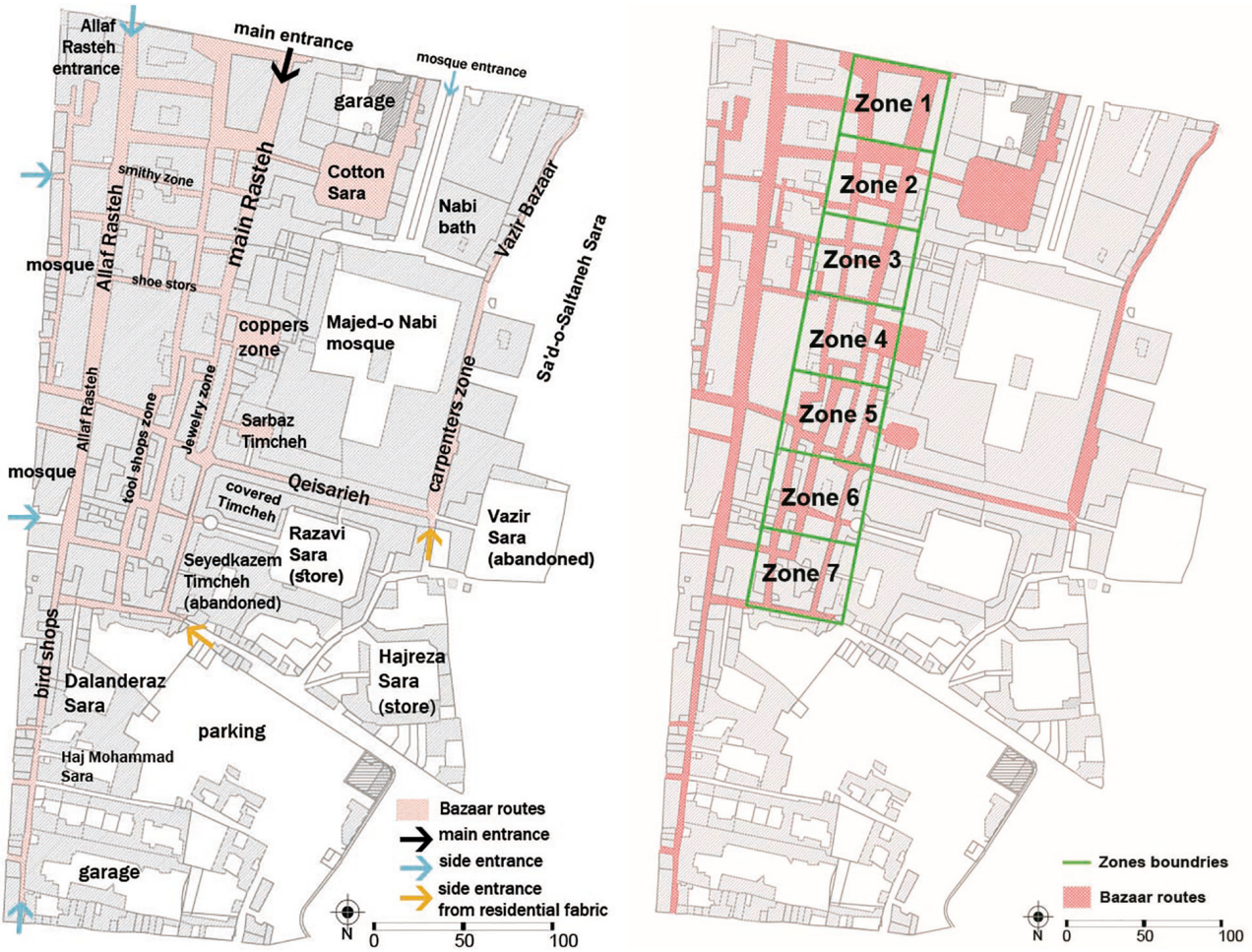


Figure 7. Different parts of the bazaar of Qazvin (Prepared by the author)

Figure 8. Seven zones of the main *Rasteh* (Prepared by the author)

possibility, the number of people in the bazaar had decreased and taking photographs and counting people became easier.

The most relevant spatial qualities were determined in a quick survey by Delphi method. In that survey, 15 urban design academic experts (**1**) rated the main spatial qualities from 1 to 4 in terms of the relevancy in a "Checklist of criteria" method. Valuing in this method is based on 4 scores that are as follows; score 1: does not yet meet acceptable standard, score 2: meets acceptable standard, score 3: approaching standard of excellence and score 4: standard of excellence (Assessment in Mathematics, 2008). Based on the four grades, the experts determined and then the average of experts' scores was calculated. Qualities with an average score of more than 3 (i.e. at least approaching standard of excellence) were selected. As a result, 6 spatial qualities were derived from the 10 as the research criteria, that include: accessibility, permeability, security, variety, walking comfort, and sensory desirability (highlighted in **Table 2**).

To measure these 6 criteria, generally in an urban public space, some parameters can be mentioned, as other researchers used them. For example, Alfonzo (2005) believes that the criterion of accessibility is mainly measured by the number of entrances, the distance to destinations, number of the physical barriers and some other macro factors. A similar arrangement can be considered for other criteria (see **Figure 15**).

Figure 9. Coppers *Saraa* (zone 4 in main *Rasteh*) (Mehr News Agency, 2018)

Figure 10. Carpet zone (zone 5 in main *Rasteh*) (Mehr News Agency, 2018)

Figure 11. A part in main *Rasteh* (zone 2) (Mehr News Agency, 2018)

Figure 12. Bird shop zone (out of main *Rasteh*) (Mehr News Agency, 2018)

Figure 13. Smithy zone (out of main *Rasteh*) (Mehr News Agency, 2018)

Figure 14. Fruit and vegetable zone (*Allaf Rasteh*, out of main *Rasteh*) (By the author, 2018)

In determining the parameters, two important aspects were considered: firstly, the micro scale (internal dimension) does not include major factors such as culture and economy, and secondly, the bazaar space has unique characteristics that distinguish it from other urban public spaces. Therefore, the measuring parameters of the six criteria in a bazaar (as a specific public space) would be limited. Each of the criteria can be measured in one or two scales. So, accessibility can merely be measured by the distance to the

Table 2. Determining the main criteria by Delphi method (selected qualities are highlighted)

Experts / 10 qualities derived from the Table 1		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Score averages of the 10 spatial qualities from the 15 experts' point of view
1	Accessibility	4	3	4	3	3	4	2	4	4	3	4	3	4	3	4	**3.46**
2	Legibility	4	2	1	3	1	3	2	3	2	3	4	2	1	2	2	**2.33**
3	Security	3	4	2	3	4	4	3	4	4	4	4	3	4	3	4	**3.53**
4	Walking comfort	3	4	3	4	4	4	4	4	4	4	4	3	4	3	4	**3.73**
5	Permeability	4	4	4	2	3	4	3	4	3	2	4	3	4	2	4	**3.33**
6	Safety	4	4	3	2	1	2	2	2	3	3	3	2	3	2	2	**2.53**
7	Variety of activities	3	3	4	3	3	3	4	4	4	4	4	4	3	3	4	**3.53**
8	Flexibility	1	2	3	2	2	1	2	2	1	3	2	1	2	2	1	**1.8**
9	Enclosure	1	2	3	2	1	1	2	2	1	3	2	1	2	2	1	**1.73**
10	Sensory desirability	4	3	4	1	4	3	3	4	4	4	3	4	4	3	4	**3.46**

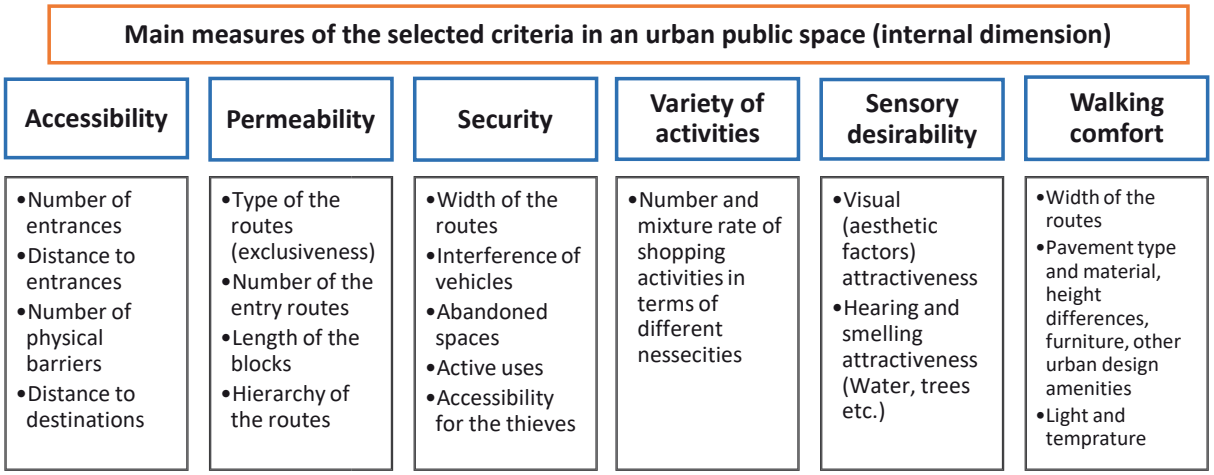


Figure 15. The main measures defining the 6 spatial qualities for urban public spaces (not exclusive for a traditional bazaar)

main entrances because other measures do not exist or are not changeable in the bazaar space. Permeability can be investigated by number of the entries because there is no movement exclusiveness in bazaar space and the length of the blocks also implies the number of entries. Security can only be measured by the width of routes and distance to the core of bazaar (center is not favorable for the thieves) because there is no vehicle interference or abandoned spaces in bazaar and shops are open in working hours as well. Sensory desirability mainly deals with the human senses, but due to the absence of water and green elements it is limited to the sensory appeal of the shops and activities. To measure walking comfort criterion, as there are no urban design amenities, width of the routes, light, temperature and safety would be considered.

Dependent and independent variables and their measures are shown in **Figure 16**. As mentioned before, to measure vitality as a dependent factor (based on its definition), a significant presence of people in 6 working days of bazaar is considered.

Analyzing was mainly done in two parts:

In part 1, a field study method was applied in a kind of space syntax method for investigating the relationship between spatial qualities and the vitality of bazaar, both qualitatively and quantitatively. The space syntax method as a design tool and functionality, which allows the correlation of spatial elements and social variables, is paramount for understanding public spaces, mainly the correlation between configuration and pedestrian movement flows and stationary activities (Hillier, et al., 1993). In other words, space syntax has been applied to predict the correlation between spatial features and people's activities. Accordingly, in this study, this method has been used to analyze the relationship between spatial qualities and the presence of people in spaces.

For this purpose, the bazaar main *Rasteh* was divided into seven zones; each zone was 50 meters in length and every route in a zone was named alphabetically and based on the zone number, such as 1A, 1B, 2A, etc. (all of the 17 routes and their names are shown in top of the **Figure 17**).

One way to record people's presence in an urban public space is to mark on a map. Photographing is the most common way to record situations in public life studies. By looking at the photographs, you can get new

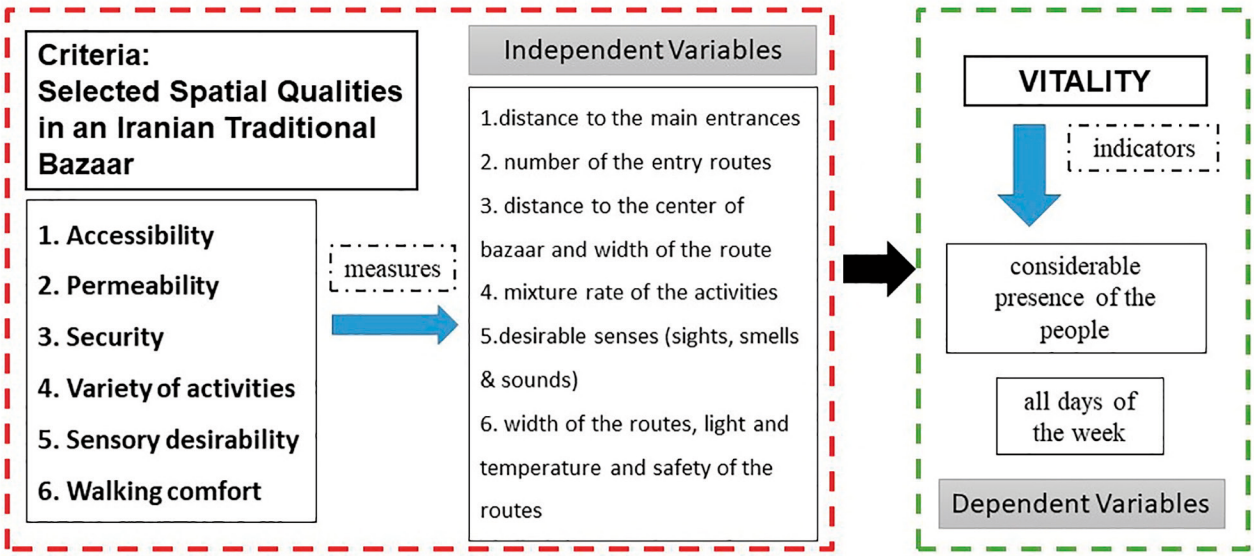


Figure 16. Variables of the research and measures of the 6 criteria (spatial qualities) in a traditional bazaar

relationships and more details in complex situations. Photos can be used to document living conditions in public spaces (Gehl and Svarre, 2013). Thus, in each of the main routes of every zone, presence of the people was recorded by photography and the spatial qualities were also investigated. Several photos were taken in all main routes of the seven zones at short intervals and it was repeated in a week (Iranian traditional bazaars are open from Saturdays to Thursdays and only during day times). The number of people was recorded in this way as well; some of the photographs are shown **Figure 17**. Then, the numbers of all the six days in every sub-route were averaged as an indicator for vitality. The recording process of this study was done on April 2020, during Covid19 outbreak (as shown in the photographs, most of the people are wearing masks).

Simultaneously, the criteria of the research (i.e., six selected spatial qualities, including accessibility, permeability, security, variety, walking comfort, and sensory desirability), were investigated separately in the sub-routes of the 7 zones. Each quality was evaluated by one or two measures in "Checklist of Criteria" method (**Table 6**). Finally, the relationship between the spatial qualities of the bazaar and its vitality was analyzed qualitatively and also through Pearson correlation coefficient test regarding the obtained figures.

In part 2, people were asked about the effect of the physical and non-physical factors on vitality of bazaar; a simple random sampling was used and the sample size was 120 people. Since there were limitations to do this survey (regarding the pandemic and the health considerations) it was conducted via the internet network.

RESULTS AND DISCUSSION

Part 1: Field Study

As explained in the previous section, the number of people was recorded from the photographs taken in the sub-routes of the 7 zones at short intervals) at 12 o'clock P.M) and repeated for six working days of bazaar (Iranian traditional bazaars are open from Saturdays to Thursdays, from

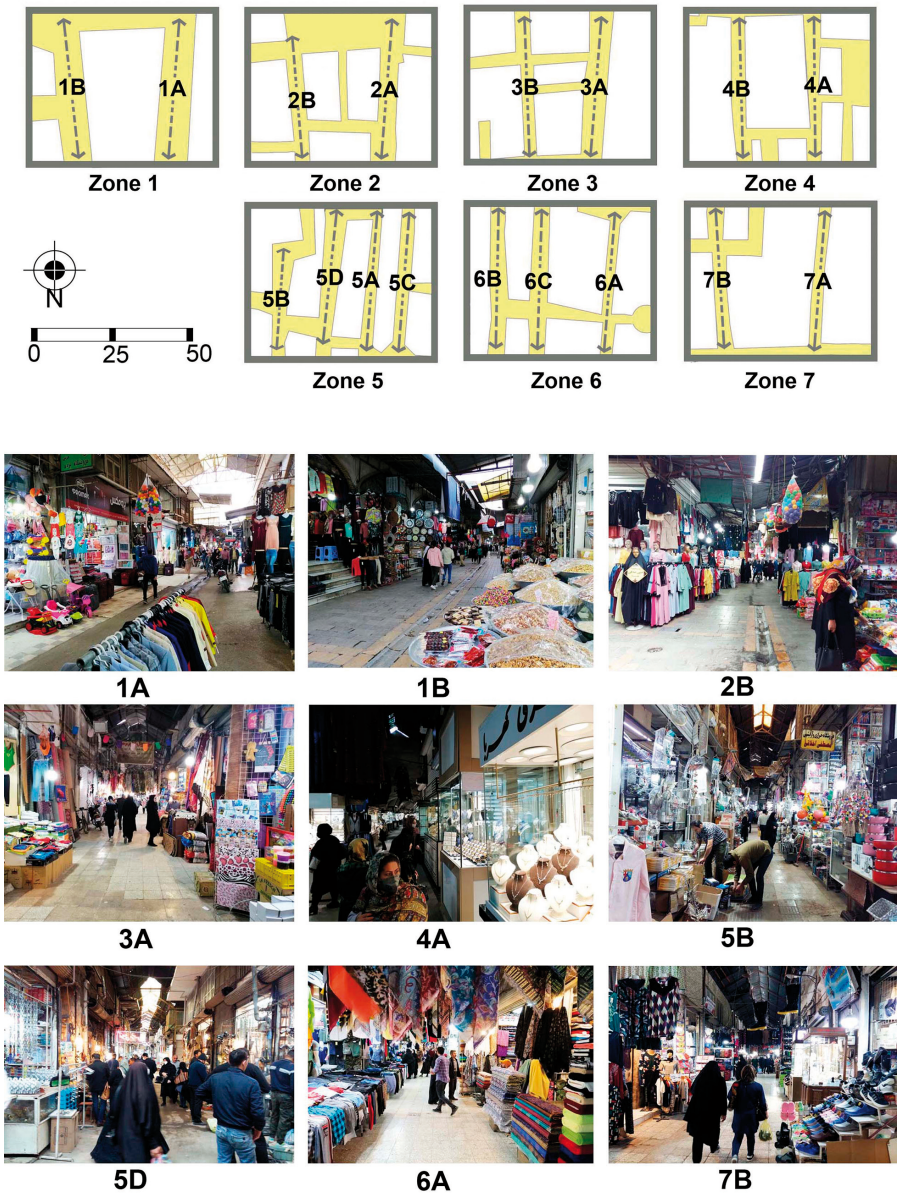


Figure 17. Sub-routes of each zone in the main *Rasteh* at the top, and some pictures of them at the bottom (By the author, 2018)

morning to early night hours). Then, the averages of the six days were calculated (**Table 3**). As noted before, the recording process was during Covid19 pandemic and considering the social distancing, the number of people was naturally less than the normal times, so it was easier to count the people in this situation.

Based on the averages of each zone (**Table 3**), a color spectrum was prepared. The boldest color was assigned to the liveliest part of the bazaar and vice versa. Thus, vitality syntax plan of the bazaar was prepared (**Figure 18**); in the plan, an overall descending trend is almost visible.

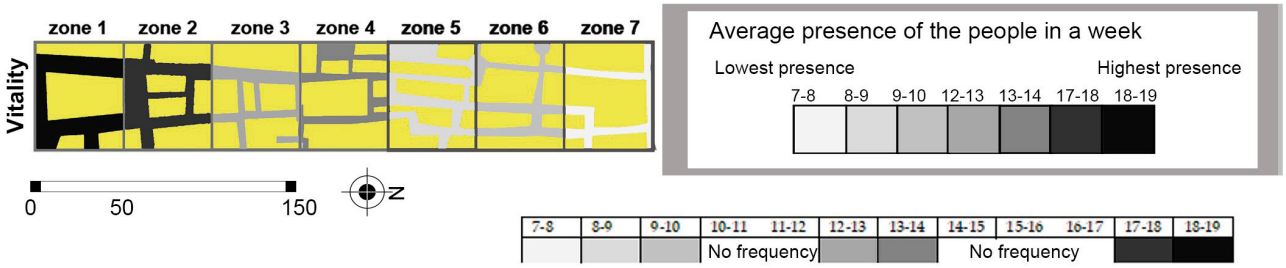
Measuring spatial qualities: The six selected spatial qualities were investigated separately in the zones. First, a visual analysis is developed (**Figure 19**); every six spatial qualities are shown by a color spectrum in the seven zones, e.g. the accessibility quality as a criterion is considered by the "distance to the main entrance of the bazaar" because almost more than

		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Average number of people	Average in the zone	Assigned colors
Zone 1	**1A**	28	21	20	23	19	35	**24.33**	**18.7**	
	1B	14	11	12	13	11	18	**13.16**		
Zone 2	**2A**	25	17	17	24	15	30	**21.33**	**17.1**	
	2B	12	11	10	17	11	17	**13**		
Zone 3	**3A**	9	5	16	23	12	26	**15.16**	**12.5**	
	3B	10	9	8	11	10	11	**9.83**		
Zone 4	**4A**	12	8	9	25	9	20	**13.83**	**13.3**	
	4B	14	12	13	16	11	11	**12.83**		
Zone 5	**5A**	18	10	6	15	9	17	**12.5**	**8.7**	
	5B	11	7	3	5	8	10	**7.33**		
	5C	9	3	5	8	7	12	**7.33**		
	5D	7	7	5	10	7	11	**7.83**		
Zone 6	**6A**	9	7	8	13	9	14	**10**	**9.1**	
	6B	12	8	5	10	7	11	**8.83**		
	6C	8	7	2	13	11	11	**8.66**		
Zone 7	**7A**	7	6	7	8	8	10	**7.66**	**7.8**	
	7B	11	10	5	7	7	8	**8**		

Table 3. Vitality of sub-routes (Number of people in six days at 12 o'clock P.M.)

80 percent of the people enter the bazaar from that entrance (as the zones are divided into 50 meters length, the highest score is assigned to "less than 50 meters"); accordingly, zone 1 is the highest accessible and zone 7 is the lowest accessible one. The color intensities vary depending on the nature of each quality and their measures. For example, the permeability quality is measured by the number of entry routes, so every sub-route that is more penetrated, is more permeable. In terms of security, distance to the entrances is important whereas troublemkers or thieves don't prowl in the center of the bazaar, in order to be able to run out in needed times. On the other hand, narrow routes and peoples' crowding provide good conditions for the thieves to act. The variety of activities obtained by observing the shop types in the field study was then drawn on the plan; the categorization ranged from completely mixed use shops to more than 50% mixed use, less than 50% mixed use and specialized use shops. Desirability quality is measured by sensory elements (i.e. sights, smells & sounds). In some sub-routes, there were confectionary stores with good smelling around or birds sounds or some colorful sights that raised the sensory desirability. To score this quality, zones that satisfied all the 3 human senses in a good way, would obtain the score 4, in case of satisfying two senses would gain score 3, the zones with an attractive sight, smell or sound, score 2 and without any specific attraction would obtain the minimum score.

Figure 18. Vitality syntax plan of sub-routes



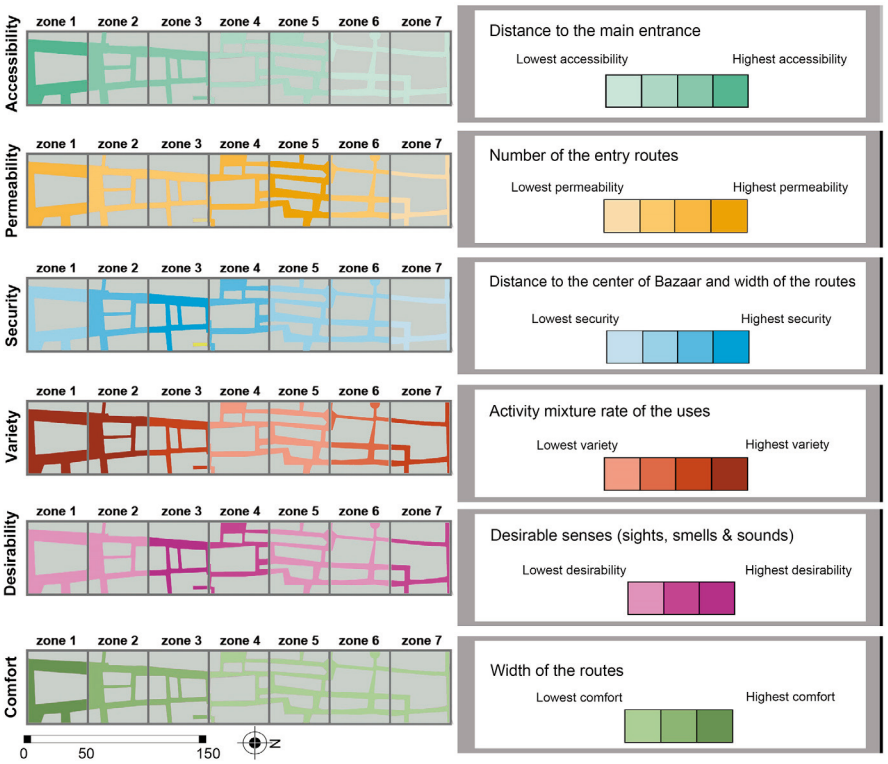


Figure 19. Spatial qualities syntax plan in sub-routes

The last quality is the walking comfort that can be measured by the width of the routes, light, temperature, pavement texture, inclination, safety, and other relevant features (mentioned in research method part). Observations showed that almost all the mentioned features don't make much difference along the bazaar routes (same pavement and being roofed in most parts) except the route width. Quantifying the criteria with the arbitrary variables are shown in **Table 4**.

In the next step, the criteria were assessed by the measures mentioned in **Table 5**. Rating is based on the "Checklist of criteria" method upon 4 points as follows: score.1- low, score.2- medium, score.3- much and score.4- very much. So all the 17 routes are scored in terms of six spatial qualities (**Table 5**). The averages of the qualities scores for every route were listed in the last column as total score average so it would be possible to rank the routes in terms of their overall spatial qualities.

Accordingly, **Table 6** was prepared for all the 17 sub-routes. As it is clear in the last diagram of **Table 6**, vitality decreases by going forward in the zones. By looking at the slopes of the diagrams, it is found that "accessibility" and "walking comfort" and the "total of spatial qualities" diagrams are downward (the same as vitality) and this shows the relationship. For other qualities, the slope of the chart is not downward so it can be guessed that they have little relationship with vitality. Due to the multiplicity of the sub-routes, in the next step, quantitative calculations will be used to obtain the degree of relevance and significance of the variables accurately.

The Pearson Correlation Coefficient Test was used for evaluating the precise relationships between the variables and also proving the hypothesis. This method shows the degree to which there is a linear relationship between quantitative variables. The correlation coefficients

Criteria: spatial qualities		Measures	Score 1	Score 2	Score 3	Score 4
1	**Accessibility**	Distance to the main entrance	more than 250 meters	150 to 250 meters	50 to 150 meters	less than 50 meters
2	**Permeability**	Number of entry routes	2 entry routes	3 to 4 entry routes	5 to 6 entry routes	more than 6 entry routes
3	**Security**	Distance to the center of bazaar	150 meter distance to the center	100 meter distance to the center	50 meter distance to the center	at the center
		Width of the routes	Less than 4 meters	4 to 7 meters	7 to 10 meters	more than 10 meters
4	**Variety of activities**	Mixture rate of activities	specialized use shops	less than 50% mixed use shops	more than 50% mixed use shops	completely mixed use shops
5	**Sensory desirability**	Desirable sensory (sights, smells & sounds)	no desirable sensory element	1 desirable sensory elements	2 desirable sensory elements	richness of sensory elements
6	**Walking comfort**	Width of the routes	less than 4 meters	4 to 7 meters	7 to 10 meters	more than 10 meters
		Pavement, light and temperature, safety etc.	no noticeable difference in the zones			

Table 4. Spatial qualities and their variables

usually has a value in the range of -1 to 1. A positive number indicates a direct and a negative number indicates an inverse relationship; a coefficient of zero indicates no communication.

Table 7 shows the results of the test. As it is shown, there is a significant relationship between vitality and the variables with a significant level of less than 0.05 i.e. accessibility and walking comfort that are both aspects of built physical elements.

The most significant correlation belongs to accessibility with the significance level of 0.002 and Pearson correlation of 0.701; then is walking comfort with the significance level of 0.004 and Pearson Correlation of 0.661. For the other spatial qualities, no significant relationship was found.

Part 2: Survey

In this section, the survey was done. The sample consisted of 120 participants (66 males, and 54 females), 20 to 60 years old (**Figure 20**). As mentioned before, due to the health considerations of the Covid-19 pandemic, this survey was conducted via internet over a period of two months. Reliability of the survey was measured by The Cronbach's alpha test. The result included the alpha of 0.973 that is more than 0.7 and considered as reliable.

First, People were asked about the reason for going to bazaar of Qazvin: Results show that most of the people go for buying some specific stuffs and then routine shopping, prowling and so on (**Figure 21**). Most of them said that they recently try not to go out except for necessities because of the pandemic. Then, they were asked: "How much these elements attract you to go to the bazaar of Qazvin?" As it is shown in **Table 8** and **Figure 22**, most of the people believed that the physical elements (natural and built) respectively have medium and high effect on attracting them to the bazaar but activities, as non-physical elements, have a very high effect. This shows the importance of activities from the people's point of view. In terms of sensory factors, opinions vary to some extent and most of them believed

Spatial qualities									Total score average
Criteria		**Accessibility**	**Permeability**	**Security**		**Variety of activities**	**Sensory desirability**	**Walking comfort**	
Measures / **Zones**		distance to main entrance	number of entry routes	distance to the center of bazaar	width of the route	mixture rate of activities	desirable sensory (sights, smells & sounds)	width of the route	
Zone 1	**1A**	4	3	1 / 4 / Avg.: 2.5		3	2	4	**3.08**
	1B	4	3	1 / 4 / Avg.: 2.5		2	1	4	**2.33**
Zone 2	**2A**	3	3	2 / 2 / Avg.: 2		3	1	2	**2.66**
	2B	3	3	2 / 2 / Avg.:2		2	1	2	**2.33**
Zone 3	**3A**	3	3	3 / 3 / Avg.: 3		3	1	3	**1.5**
	3B	3	3	3 / 1 / Avg.: 2		2	2	1	**1.5**
Zone 4	**4A**	2	3	4 / 2 / Avg.: 3		1	3	2	**1.58**
	4B	2	2	4 / 2 / Avg.: 3		3	2	2	**2.16**
Zone 5	**5A**	2	2	3 / 1 / Avg.: 2		1	1	1	**1.83**
	5B	2	2	3 / 1 / Avg.: 2		2	1	1	**2.75**
	5C	2	2	3 / 1 / Avg.: 2		1	1	1	**2.16**
	5D	2	3	3 / 2 / Avg.: 2.5		2	1	2	**2.16**
Zone 6	**6A**	1	3	2 / 1 / Avg.: 1.5		2	1	1	**2.33**
	6B	1	2	2 / 2 / Avg.: 2		3	1	2	**1.66**
	6C	1	3	2 / 2 / Avg.: 4		2	1	2	**2.08**
Zone 7	**7A**	1	1	1 / 1 / Avg.: 1		3	2	1	**1.83**
	7B	1	3	1 / 1 / Avg.: 1		3	2	1	**1.5**

Table 5. Scores of the spatial qualities in sub- routes

that the effect of these factors are high but an average number of people voted to the medium.

CONCLUSION

Traditional bazaars are among the most significant historical public spaces that are almost lively at all times of the year. The main purpose of this article was to analyze the spatial aspects affecting the vitality of an Iranian traditional bazaar, explored in a specific example (bazaar of Qazvin). As Montgomery's definition (1998), the concept of vitality in an urban public

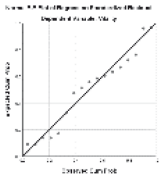
Table 6. Comparative diagrams of spatial qualities and vitality in sub- routes

space refers to the number of people in different times of the day and night, the uptake of facilities, the number of cultural events and celebrations over the year, the presence of an active street life, and generally the extent to which a place feels alive or lively. Due to the specific public space of this research- its linear structure and the fact that its activities are mainly commercial and its working hours are limited (mainly day times)- the vitality of bazaar is deemed as the amount of vibrancy (presence of the

Correlations

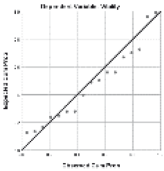
		Vitality	Accessibility
Vitality	Pearson Correlation	1	.701**
	Sig. (2-tailed)		.002
	N	17	17
Accessibility	Pearson Correlation	.701**	1
	Sig. (2-tailed)	.002	
	N	17	17

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



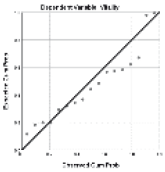
Correlations

		Vitality	Permeability
Vitality	Pearson Correlation	1	.391
	Sig. (2-tailed)		.121
	N	17	17
Permeability	Pearson Correlation	.391	1
	Sig. (2-tailed)	.121	
	N	17	17



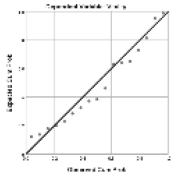
Correlations

		Vitality	Security
Vitality	Pearson Correlation	1	.233
	Sig. (2-tailed)		.368
	N	17	17
Security	Pearson Correlation	.233	1
	Sig. (2-tailed)	.368	
	N	17	17



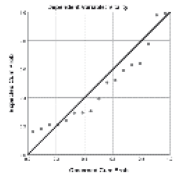
Correlations

		Vitality	Variety
Vitality	Pearson Correlation	1	.290
	Sig. (2-tailed)		.259
	N	17	17
Variety of activities	Pearson Correlation	.290	1
	Sig. (2-tailed)	.259	
	N	17	17



Correlations

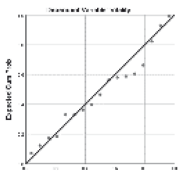
		Vitality	Sensory desirability
Vitality	Pearson Correlation	1	.151
	Sig. (2-tailed)		.563
	N	17	17
Sensory desirability	Pearson Correlation	.151	1
	Sig. (2-tailed)	.563	
	N	17	17



Correlations

		Vitality	Walking comfort
Vitality	Pearson Correlation	1	.661**
	Sig. (2-tailed)		.004
	N	17	17
Walking comfort	Pearson Correlation	.661**	1
	Sig. (2-tailed)	.004	
	N	17	17

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



Correlations

		Vitality	Total score
Vitality	Pearson Correlation	1	.741**
	Sig. (2-tailed)		.001
	N	17	17
Total score	Pearson Correlation	.741**	1
	Sig. (2-tailed)	.001	
	N	17	17

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

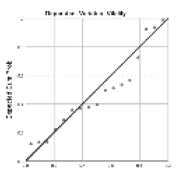


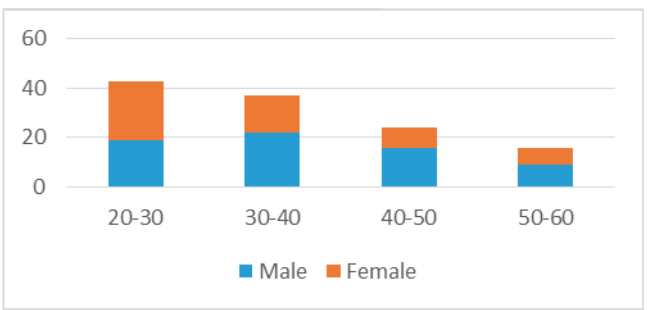
Table 7. Analyzing the relationship between vitality and the spatial qualities via Pearson Correlation Coefficient Test.

Indicators	Indexes	People's opinions				
		very low effect	low effect	medium effect	high effect	very high effect
Physical	Natural elements: green elements, water etc.	5	14	47	28	26
	Built elements: facades, ground features, furniture, etc.	6	10	19	51	34
Non-physical	Activities: variety and types of the activities	3	8	24	32	53
	Sensory factors: light, sounds, smells etc.	4	7	36	48	25

Table 8. Factors affecting vitality of bazaar from the people's point of view.

people) in daytime on six days of the week (except Fridays) when it is active.

In terms of investigating the spatial aspects which affect the vitality of a traditional bazaar (as a specific urban public space), two internal and external dimensions can be considered. The external dimension includes economic (household income, working hours etc.), political (such as government regulations), sociocultural (rituals, beliefs, communications etc.) and even climatic factors. External factors are very important; they can generally affect the number and type of cortex present in the bazaar; for example, in relation to economic factors, people who come to the bazaar are mostly of the lower or middle class. Cultural factors are very important as well; for instance, prowling outside for a long time is reprehensible for women in Iranian culture. So, the number of men and women may not be equal in an urban public space. And the climatic factors such as sunlight or precipitations are effective on the vitality of unroofed parts of bazaars. External factors have other important effects as well that can be used to compare bazaars in different cities. The internal dimension is divided into physical and non-physical indicators; the physical part can be defined and



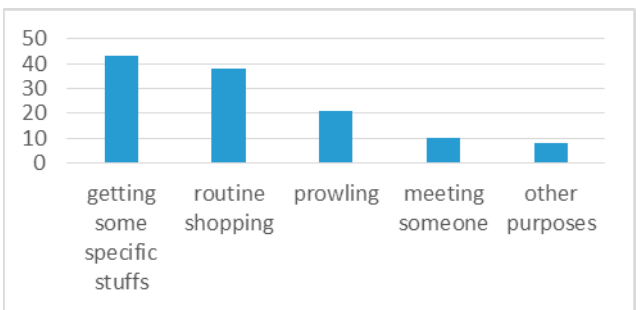


Figure 20. Participants' age groups

Figure 21. Participants' reason for going to bazaar

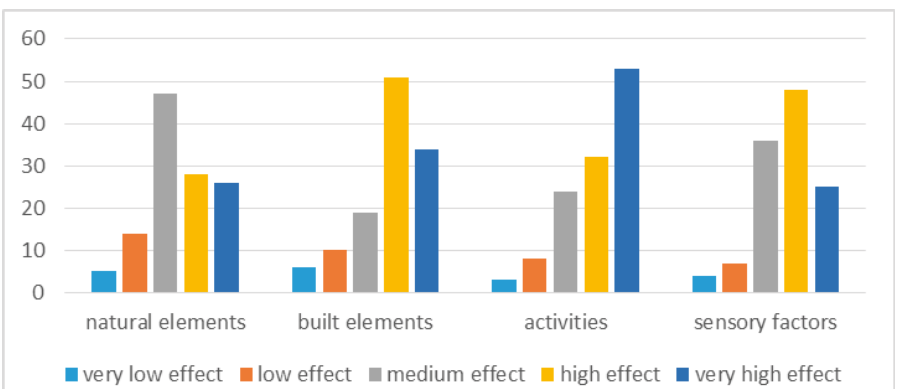


Figure 22. Factors affecting vitality of bazaar from the people's point of view

measured by two types of indexes (i.e. natural and built element) and the non-physical by activities and sensory factors.

To answer the first question of the research, i.e. physical and non-physical factors with the most impact on vitality of a traditional bazaar, the survey results are cited evidence. Based on the questionnaires, variety and types of the activities as the subset of non-physical indicators, are the most important factors in vitality of bazaar. The next most expressed factors were sensory ones: light, sounds, smells, and built elements (i.e. facades, ground features, furniture etc). From this, it can be concluded that in general, non-physical factors of the space have a greater impact on attracting people and the vitality of bazaar. Natural elements gained the last rank and the reason is probably that the presence of natural elements in the bazaar space is very limited compared to other public spaces. Furthermore, in terms of aesthetics, the physical spaces in bazaar of Qazvin have been changed considerably; for example, the covering of the routes, electric wires, cooling systems etc. which are visually disturbing. So this can be a cause that buying stuff is the main reason for going to bazaar. This is where the functionality gains primacy compared to physical qualities. In addition, based on the evidence and findings, the pandemic of covid19 had a significant impact.

The internal dimension factors (physical and non-physical), create 6 main spatial qualities including accessibility, permeability, security, variety of activities, walking comfort and sensory desirability. To answer the second question, i.e. relationship between the vitality of an Iranian traditional bazaar and spatial qualities, the results of the field observations and spatial syntax analysis showed that among these 6 qualities, only accessibility (scored by distance to the main entrance) and walking comfort (scored by width of the road) -that are both aspects of built physical elements- had a significant relationship with the vibrancy and thus vitality of a traditional bazaar. This shows that in a place where the main reason of presence is related to shopping, reducing the distance to the desired location and also the ease of reaching it, is of the highest importance. While in the mentioned survey, most of the people (same as the author) agreed that variety of activities is the most effective factor. Therefore, parts with the lowest variety of activities (such as jewelry or cotton zone) were expected to have the lowest vitality but that was not the case. In practice, variety is ranked in the fourth place (with no significant relationship), therefore the research hypothesis was not proved. It can be concluded that the variety of activities may be a major quality which attracts people to the bazaar area, but does not count for the vitality in sub areas.

Vitality in the traditional bazaar, as a public space with special physical and social conditions, is different from other urban public spaces but there is a significant positive relationship between vitality and the total spatial qualities scores (as the last chart in **Table 7**). Thus, it can be concluded that by increasing the intensity of the sum of the spatial qualities in the bazaar, the number of people and consequently vitality will also increases- and it does not necessarily depend on increasing the variety of activities. At the end, further studies on other cases can be performed in future to generalize the results of this research.

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GELENEKSEL BİR İRAN ÇARŞISININ CANLILIĞINI ETKİLEYEN MEKANSAL NİTELİKLER: KAZVİN ÇARŞISI ÖRNEĞİ

Geleneksel çarşılar, tarih boyunca her zaman canlı olan İran şehirlerindeki önemli özel kamusal alanlar arasında yer almıştır. Bu çalışmanın temel amacı, bir çarşının canlılığı üzerinde etkili olan fiziksel-mekansal boyutları analiz etmek ve bu kamusal alan türünde canlılık ile mekânsal nitelikler arasındaki ilişkiyi tartışmaktır. Buna göre araştırma hipotezi şudur: "Aktivite çeşitliliği", Kazvin geleneksel çarşısının canlılığı üzerinde en etkili mekânsal niteliktir. Bu araştırmada kullanılan mekansal nitelikler, geleneksel İran çarşısı örneği üzerinden tanımlanmış canlılık göstergelerine uygun olarak seçilmiştir. Bu göstergeler erişilebilirlik, geçirgenlik, yürüme konforu, güvenlik, aktivite çeşitliliği ve duyusal cazibe olarak sıralanmıştır. Bu çalışmada odaklanılan örnek, Safevi döneminden kalma, şehrin en eski geleneksel toplanma alanlarından biri olan Kazvin çarşısıdır. Araştırma yöntemi hem nicel hem de nitel olarak uygulanmıştır. İlk aşamada, saha çalışmasında (Mekan Sentaksı (*Space Syntax*) yöntemi ile), ana çarşı güzergahı 7 bölgeye (her bölge 50 metre uzunluğunda olmak kaydıyla) bölünmüş daha sonra kişi sayısı kaydedilerek (altı günde) ortalaması alınmıştır. İkinci aşamada, yukarıda belirtilen altı mekansal

nitelik, her bölgenin alt güzergahlarında ilgili ölçülerle analiz edilmiştir. Değişkenler arasındaki ilişkinin daha kesin analizi için Pearson korelasyon katsayısı testi kullanılmıştır. Testin sonuçları, canlılık ile en önemli ilişkinin erişilebilirlikle, ikinci olarak da yürüme konforuyla kurulduğunu göstermektedir. Belirli fiziksel ve sosyal koşullara sahip bir kamusal alan olan geleneksel bir çarşıda canlılık, diğer kamusal alanlardan farklı olarak değerlendirilebilir, ancak genel olarak, canlılık ile tüm mekânsal nitelikler arasında anlamlı bir pozitif ilişki vardır; dolayısıyla bir çarşıdaki mekansal niteliklerin yoğunluğunun artmasıyla kullanıcı sayısının ve dolayısıyla canlılığın da artacağı sonucuna varılabilir. Ayrıca kullanıcıların çoğu, aktivite çeşitliliğinin insanları çarşıya çekmede en etkili faktör olduğunu ifade etmiştir. Ancak uygulamada, birinci aşamada olduğu gibi, çeşitlilik niteliği dördüncü sırada yer almaktadır (geçirgenlik, güvenlik ve duyusal cazibe gibi diğer niteliklerle aynı anlamlı ilişki olmadan) ve araştırma hipotezi kanıtlanamamaktadır. Sonuç olarak, aktivitelerin çeşitliliği, insanları çarşı alanına çekmede önemli bir nitelik olabilir ancak alt alanlardaki canlılık için bu durum geçerli değildir, buna karşın erişilebilirlik ve yürüme konforunun en etkili mekansal nitelikler olduğu görülmektedir.

SPATIAL ASPECTS AFFECTING THE VITALITY OF AN IRANIAN TRADITIONAL BAZAAR: THE CASE OF BAZAAR

Traditional bazaars are among the important, specific public spaces in Iranian cities that have always been lively throughout history. The main purposes of this study are to analyze the physical-spatial aspects which affect the vitality of a bazaar and to realize the relationship between vitality and spatial qualities in that public space type. Accordingly, the research hypothesis is: "variety of activities" is the most effective spatial quality in the vitality of Qazvin traditional bazaar. The spatial qualities used in this research are selected in relevance to internally defined indicators of vitality in the case of Iranian traditional bazaar. They include accessibility, permeability, walking comfort, security, variety of activities and sensory desirability. The case study is the bazaar of Qazvin, one of the oldest traditional gathering spaces in the city; a remnant of the *Safavid* era. The research method has been applied both quantitatively and qualitatively. On the one hand, in a field observation (space syntax method), the main bazaar route was divided into 7 zones (each zone 50 meters in length), then the number of people was recorded and averaged (in six days); on the other hand, the six spatial mentioned qualities were analyzed by relevant measures in the sub-routes of every zone. The Pearson correlation coefficient test was used for a more precise analysis of the relationship between variables. Results of the test showed that the most significant relationship of vitality is with accessibility and then, with walking comfort. Vitality in a traditional bazaar, a public space with particular physical and social conditions, is almost different from other public spaces, but in general, there is a significant positive relationship between vitality and the total spatial qualities scores. Therefore, it can be concluded that by increasing the intensity of the spatial qualities in a bazaar, the number of people and thus vitality will also increase. Furthermore, most of the people believed that variety of activities is the most effective factor in attracting people to the bazaar. However, in practice (as found in the first phase), the quality of variety was in the fourth rank (with no significant relationship the same as other qualities, i.e., permeability, security and sensory desirability), and the research hypothesis was not proven. Consequently,

variety of activities may be a significant quality in attracting people to the bazaar area but does not count for the vitality in sub-areas, whereas accessibility and walking comfort were found to be the most effective spatial qualities.

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